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# Dividend payout ratio in Ghana: Does the pecking order theory hold good?

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***Abstract***

*This paper makes an attempt to examine whether the 'pecking order theory' could explain dividend payout ratio in Ghana by analyzing the linkages, if any, between financial leverage, dividend payout ratio and corporate investment among listed firms in Ghana. Using data derived from financial statements of 33 out of 34 listed firms on the Ghana Stock Exchange for the period 2004 to 2009 and applying the Three Stage Least Square Technique to test the predictions in Ghana, the paper reveals that there is a positive significant interaction between financial leverage and dividend payout ratio among the listed firms in Ghana. The paper further indicates that profitability has the predicted negative influence on financial leverage, indicating that somewhat, the pecking order theory explains dividend payout ratio in Ghana but the ratio is very low. However, the paper did not show any significant relationship between financial leverage and investment as well as investment and dividend payout ratio among listed firms in Ghana. The paper, therefore, concludes that strengthening and enforcing the laws on dividend payment in Ghana is necessary to ensure a more frequent payment by firms so as to increase their market values through rise in share prices.*

***Key Words:*** *Pecking Order, Dividend Payout, financial leverage, corporate investment, Ghana.*
***JEL Classification:*** *G32, G35*

## 1. Introduction

Does the 'Pecking Order Theory' (POT) explain dividend payout ratio of firms in Ghana? This question, among others, has grabbed the attention of corporate finance managers since the conception of the POT in 1961. The POT looks at best corporate source of finance and suggests that in the face of a semi-strong efficient market, firms decide to finance new investments with retained earnings or internal sources over external sources of finance. However, when the internal sources prove to be inadequate, firms will first choose riskless debt followed by risky debt before settling on using equity to finance investment (Donaldson, 1961).

Baskin (1989) claimed that the pecking order theory can be combined with Lintner's 1956 dividend model to generate some specific predictions for financial leverage. Lintner (1956), postulates that, firms have a long run dividend payout target, but in the short run, smoothen out their dividend payout to avoid fluctuations, especially decreases in dividend payout. As a result, firms would pay and maintain high dividend payouts at the expense of profitable projects which are then financed with external funds. In conclusion, it was pointed out that, there exist a significant positive relationship between dividend payout and financial leverage, and that firms prefer to use internal sources of fund to finance investment and to pay dividend than external sources. This conclusion is in direct contrast to the static trade-off theory which suggests that if dividend payouts are high, external financing (debt) tends to be low, implying a negative relationship between financial leverage and dividend payout.

Corporate investment decision looks at what capital funds are used for. Dividend payout is the amount of dividend that is paid to shareholders of a firm. This study uses dividend payout ratio as proxy for dividend payout which refers to the proportion of total profit paid out to ordinary shareholders as dividends. Financial leverage means a situation whereby firms use more external debt in their capital structure. This term is also referred to as financial gearing in most finance literature.

Large dividend payout in a period would reduce funds available for investment in subsequent periods and that would lead to the tendency of raising equity or debt in the next period to finance investment. On the other hand, large investment outlay would lead to a reduction in available funds to finance dividend payout and increase the need for external debt financing during the next period to finance dividend payment. Based on this, the POT predicts a relationship that exists in the financing decisions of firms, that is, financial leverage, dividend payout and investment decision of corporate firms (Adedeji, 1998).

Baskin (1989) and Allen (1993) studied the effect of dividend yield and investment on financial leverage in the United States of America and Australia respectively whiles Adedeji (2002) looked at the interrelationship between financial leverage, investment and dividend payout ratio in the United Kingdom. This points to the fact that similar studies in developing countries are scanty hence the need to carry out research on developing countries to ascertain the application of POT. The difference in the number of studies may be due to financing objectives and practices in developing countries which differ from that of developed countries. For example, Cobham and Subramaniam (1998) points out that accounting and auditing standards in transitional economies are relatively lax as compared to those in developed countries. This shows that information asymmetry is more problematic and pervasive in developing countries (Tong and Green, 2005). In addition, capital markets in developing countries are less developed and so have a narrower range of financial instruments available, and a wider range of constraints on financing decisions than developed countries (Singh and Hamid, 1992, Tong and Green, 2005). Finally, developing countries are now shifting from state enterprises to privatization, shifting the goals and corporate strategies from their initial objectives. This has led to reliance on private financial institutions and organized capital markets to finance companies in developing countries (Abor, 2008).

Since most studies on POT tend to focus on developed economies with only a few looking at developing countries, the motivation of this study is therefore to add to the literature on developing economies by testing the POT on dividend payout ratio in a particular developing country such as Ghana to determine the interrelationship between financial leverage, dividend payout ratio and corporate investment. The study examines the issue by focusing specifically on 33 listed firms on the Ghana Stock Exchange (GSE) from 2004 to 2009 by using the 3-Stage Least Squares (3SLS) econometrics technique to identify the linkages. This study provides policy recommendations for strengthening dividend payout decisions in Ghanaian firms.

The rest of the paper is organized as follows; the next section explores related literature. The third and fourth sections look at methodology and results respectively while the final section concludes the paper.

## 2. Theoretical Literature

There are various theories in the finance literature underlying the capital structure, investment and dividend decision of firms. The foremost among them is the perfect market model or the irrelevance theorem of Modigliani and Miller regarding the capital structure of firms.

Modigliani and Miller (1958) argued that the value of a firm is the same under different capital structures meaning no capital structure is better or worse than other for the firm's stockholders. They concluded that this is possible in a world where there are no taxes, transaction costs and individuals and corporations borrow at the same rate.

Further in 1963, they argued based on the assumption of a world without taxes and brokerage fees as well as perfect competitive market situation. They intimated that under such a market condition, all individual firms have the same belief concerning their future investments, profits and dividends and so the firms have their own investment plans ahead of time which cannot be altered by changes in dividend policy, hence dividend policy does not matter (Modigliani and Miller, 1963). However it's been argued that these assumptions do not hold in real world on the grounds that imperfection in the capital market do exist, suggesting that different sources of finance may be relevant to the investment decision of firms. Dividend decision is also important because it determines the payout received by shareholders and the funds retained by the firm for investment. As a result of setbacks to the Modigliani - Miller argument, many theories have contested its feasibility and one of the most prolific theories that objects to their ideology is the Pecking Order Theory which is briefly looked at below:

**2.1 The Pecking Order Theory**

The Pecking order theory was first proposed by Donaldson (1961) but did not receive much attention in the finance literature until Myers and Majiluf (1984) took it up and asserted that firms prefer internal equity to external equity. This was later affirmed by Fazzari et al. (1988) that firms prefer internal source of finance over external sources due to transaction cost, agency cost and information asymmetry.

Donaldson (1961) claimed that firms decide to follow the 'financing hierarchy' as posited by the Pecking order theory due to transaction cost and according to Zurigat (2009), this transaction cost includes compensation for the dealer placing the issue and other expenses such as legal, accounting and printing cost as well as registration fees and taxes. Donaldson further explained that firms that use internal finance experience less or no transaction cost as compared to the use of external funds.

Pecking Order Theory (POT) explains that firms follow the 'hierarchical' ordering due to the existence of information asymmetry which arises out of the fact that management of the firms have more knowledge regarding the investment opportunities and profitability of the firm than investors in the firm. Myers and Majluf (1984) posited that information asymmetry would lead to mis-pricing

of a firm's equity, which would impact adversely on existing shareholders wealth. The information asymmetry leads to problem of moral hazards which brings conflict between management and shareholders due to the separation between ownership and control [Jensen and Meckling, 1976]. Therefore to resolve the differences between them, an agency cost is incurred which increases the cost of raising external finance and consequently increases the reliance on internally generated funds as the cheapest source of financing.

**2.2 Predictions of the POT**

Adedeji (1998) pointed out that despite the varied explanations to why firms would like to follow the POT, the conclusion that firms relate their profitability and growth opportunities to their long term dividend payout ratios in order to minimize the need for external finance cannot be ignored. Out of this conclusion the following predictions are made:

1. Profitability has a negative influence on financial leverage because a firm that can generate more earnings would borrow less.
2. A negative interaction between long term dividend payout ratio and investment because high dividend payout ratio leads to low level of retained earnings which would lead to the reduction in available funds needed to finance growth opportunities.
3. No clear-cut relationship between financial leverage and dividend payout ratio or investment because the nature of their relationship depends on how firms respond to earning shortages, for instance:
    i. If firms respond to earnings shortage by borrowing to pay dividend and finance growth opportunities on a cumulative basis, then, the long term value of dividend payout ratio and investment should have a positive impact on financial leverage.
    ii. Firms can also respond to earnings shortage by borrowing to finance dividend and postpone or reduce investment, due to the reluctance to cut dividends. Therefore, financial leverage may have a positive relationship with dividend payout ratio and a negative relationship with investment.

**2.3 Empirical Literature**

Below are some related empirical works on the subject matter of this study.

Armajit et al (2013)researched into the **d**eterminants of Dividend Payout Ratios in the services and manufacturing firms in the United States, their study revealed that in the Services Industry, firms' dividend payout ratio is a function of profit margin, sales growth, and debt-to-equity ratio. For manufacturing firms they found that dividend payout ratio is the function of profit margin, tax,

and market-to-book ratio. The study also found that the results were different when the dividend payout ratio is defined as the ratio between the cash dividend that is the after-tax cash flow and not the after tax earnings of the companies.

Ardestani et al (2013) investigated the impact of investment opportunity set and corporate financing on dividend payout policy of Malaysian industrial products sector by selecting 62 listed companies on the main board of Bursa Malaysia. They used the Tobin's q to measure investment opportunity set and financial leverage while debt maturity was used to measure corporate financing. Their result suggests that investment opportunity set and debt maturity are the factors that significantly influence dividend payout policy of the sample firms. Additionally, profitability and risk play significant role in determining dividend policy in the industrial products sector of Malaysia.

Murekefu and Ouma (2012), studied the relationship between dividend payout and firm performance among listed firms in the Nairobi Securities Exchange. They found that dividend payout was a major factor affecting firm performance and the relationship was strong and positive. The study concluded that dividend policy is relevant and that managers should devote adequate time in designing a dividend policy that will enhance firm performance and therefore shareholder value.

Adelegan (2002) tested whether the size of the firm influenced the relationship between financial leverage, dividend payout ratio and investment of quoted firms in Nigeria as a way of underscoring prediction powers of the pecking order theory. He segregated 63 sampled firms into small and large firms and the results showed that dividend payout ratio has the predicted positive interaction with financial leverage but weak negative interaction with investment. No significant influence was found between financial leverage and investment.

Adedeji (1998) investigated the possible interaction among investment, financial leverage and dividend payout ratio in the United Kingdom (UK) by testing the predictions of the pecking order theory on 224 firms in the UK over a period 1993-1996. His results showed that dividend payout ratio has the predicted negative interactions with investment and the expected positive interaction with financial leverage but there was no significant interaction between financial leverage and investment.

Baskin (1989) and Allen (1993) looked at the effect of dividend yield and investment on financial leverage and the effects of dividend yield and financial leverage on rate of investment growth in the United States of America and Australia respectively. Both studies

found a positive relationship between financial leverage and investment in United States and Australia respectively.

The study further showed investment impacting positively on financial leverage but financial leverage not impacting significantly on investment. The study therefore concluded that there exists no clear-cut relationship between financial leverage and dividend payout ratio as well as corporate investment. He pointed out that the nature of their relationship depended on how firms respond to their earnings shortage.

## 3. Methodology

The study adopts the approach used by Adedeji (1998) and Adelegan (2002) to determine the relationship between investment, dividend payout ratio and financial leverage. According to their method,financial leverage is a function of dividend payout ratio and investment while controlling for other variables. They also defined dividend payout ratio as a function of financial leverage and investment when other variables are controlled while investment is a function of financial leverage and investment controlling for other variables.

Based on the above definitions, we obtained the following system of equations which is estimated by three stage least squares (3SLS) econometrics technique:

$$DV = D (FINLEV, INVEST, OTHERDV) \quad (1)$$

$$FINLEV = F (DV, INVEST, OTHERFINLEV) \quad (2)$$

$$INVEST= I (DV, FINLEV, OTHERINVEST) \quad (3)$$

Where,

DV, FINLEV and INVESTS stand for dividend payout ratio, financial leverage and investment respectively. OTHERDV represents other variables that influence dividend payout ratio. OTHERFINLEV represents other variables that influence financial leverage and OTHERINVEST represents other variables that influence investment.

### 3.1 Choice of Control variables

Selection of control variables were based on prior studies on the subject matter of this study. The study by Marfo-Yiadom and Agyei (2011) found out that dividend payout in Ghana is greatly influenced by profitability of the firm (PR), variability in earnings which is represented in this study as risk (RISK), corporate tax (TX), and liquidity or cash flow (CF). Abor, 2008 also found a firm's Size (SZ) to influence dividend payout ratio in Ghana.

Marfo-Yiadom and Agyei (2011) postulated that more profitable firms have a higher probability to pay dividend than less profitable firms. The Board of Directors of most firms recommends the payment of dividend when the firm makes sufficient profit, in order to prevent management from using the excess cash on perquisites. Hence, it is expected that profitability would have the expected positive relationship with dividend payout ratio. A study by Pruit and Gitman (1991) showed that variability of earnings or risk is a very important determinant of dividend policy. Firms that have stable earnings are often able to predict their future earnings and be willing to pay higher dividends than firms with fluctuating earnings. The *apriori* sign of risk to dividend payout ratio is negative.

Corporate income tax is expected to have a negative impact on dividend payout ratio. If the tax rate of a country is increased, 'all things being equal' there will be a reduction in the amount of distributable earnings left to be paid out as dividend hence the negative impact. Amidu and Abor (2006) explained that firms with higher cash flows or liquidity are more willing to pay dividend than companies with poor liquidity positions. This implies that firms with high amount of idle cash are more likely to pay some out as dividend in other to reduce shareholder - management agency problem. It therefore means an increase in cash flow would lead to an increase in dividend payout ratio depicting a positive relationship between cash flow and dividend payout ratio.

Abor (2008) asserted that the size of a firm has a positive impact on dividend payout. This may be explained to mean that larger firms have more valuable assets and higher reputation that could help them to access cheap loans thereby reducing the pressure them to rely heavily on retained earnings to pay dividends. Therefore, a positive relationship is expected between size of a firm and dividend payout ratio. Adedeji (2008) included in his study an industry average dividend yield (INDDY) which is also considered in this study to test whether firms target their average dividend yield when making dividend decisions and if firms do, then the variable is expected to have a positive influence on dividend payout ratio in Ghana.

For the other variables that influence financial leverage, Bokpin and Anastacia (2009) found size (SZ) of firm, asset tangibility which is proxied as structure (STR) of firms in this study, profitability (PR), ax (TX), and variability in earnings or risk (RISK) to greatly influence financial leverage in Ghana. Adedeji (2008) also found industry average debt ratio (INDFL) to influence financial leverage because firms with below average debt ratios are likely to easily raise more debt.

Prior studies have found that firm size (SZ) impacts greatly on financial leverage because larger firms can easily access loans than smaller firms, they also have better reputation and incur lower information cost in the debt market than small firms. Larger firms have other sources of income,

for instance, they can buy on credit due to their reputation but smaller firms may not be granted credit purchase due to the fear of they going bankrupt or folding up. As a result, larger firms would like to undertake credit purchase than to go for loan, whereas smaller firms would resort to loans to finance their activities. This means large firms use less debt in their capital structure than small firms. Therefore, it is expected that firm size be negatively related to financial leverage. Anfom (2008) suggested that firms with assets that have high collateralised value would be able to raise debt more easily; therefore inclusion of asset structure in the financial leverage model is appropriate. The expectation is that structure of assets would have a positive influence on financial leverage in that the more tangible and collateralised assets a firm have, the higher the likelihood of leverage.

Profitability is added to the financial leverage equation since highly profitable firms are more likely to use retained earnings than the use of debt, which would reduce financial leverage. Highly profitable firms can easily pay off their debt leading to a reduction in financial leverage (Anfom, 2008). The 'a prior' sign shows a negative relation between profitability and financial leverage. Abor (2008) showed that the effect of tax on financial leverage depends on changes in the marginal tax rate for any given firm. He added that firms with zero corporate tax rates and a high tax shield would use less debt with further explanation that, this happens because, tax shields lower the effectiveness of marginal tax rates on interest deduction. He concluded that, taxes do affect financial leverage but the magnitude very minimal. It is therefore expected that corporate tax would have a positive influence on financial leverage because of the tax shield advantage of debt. This means that an increase in corporate tax rate would lead to an increase in the use of debt in order to evade the higher burden of tax since interests on debt are deducted before taxes are calculated.

In terms of business risk, Abor (2008) again explained that firms with very high volatility in earnings would experience situations where cash flows might be too low to service their debt. On the other hand firms with high degree of business risk have less capacity for financial sustainability and this might lead to the use of less debt in their capital structure. Other studies have also confirmed this inverse relationship between risk and financial leverage (see Titman and Wessels, 1988, Adelegan, 2002). Some studies also suggest a positive relationship between risk and financial leverage (Jordan et al., 1998) however most of these results were based on studies in developed countries.

Furthermore, with the control variables that affect Investment, Bokpin and Onumah (2009) found that corporate investment in emerging markets are influenced greatly by profitability (PR),

sales growth (GRO), size of the firm (SZ) and q ratio (q). They explained that profitable firms in developing countries invest less in fixed assets, hence a negative relation between profitability and investment. Firm size also showed a negative relation with investment because larger firms tend to invest less in fixed assets. Both q ratio and sales growth revealed a positive impact on investment. Firms would increase their investment level if market price per share rises, leading to increased funds for investment which would also open the way for firms to exploit growth options available to them.

It must be noted that several other variables could not be used studies in estimating the various equations due to data unavailability, some of these variables include overseas profit, specialization ratio, irrecoverable advanced corporation tax, research and development as well as deferred tax among others.

**3.2 Model Specification**

From the theoretical framework, the following systems of equation were obtained after substituting the variables that is made up OTHERDV, OTHERFINLEV and OTHERINVEST into equation (1) to (3). The following regression equations obtained would be used to test the pecking order theory.

$$DV=\beta_1+\beta_2 FINLEV+\beta_3 INVEST+\beta_4 PR+\beta_5 RISK+\beta_6 TX+\beta_7 CF+\beta_8 SZ+\beta_9 INDDY+\mu \quad ----(4)$$

$$FINLEV=\beta_1+\beta_2 DV+\beta_3 INVEST+\beta_4 SZ+\beta_5 STR+\beta_6 PR+\beta_7 TX+\beta_8 RISK+\beta_9 INDFL+V \quad ---(5)$$

$$INVEST=\gamma_1+\gamma_2 DV+\gamma_3 FINLEV+\gamma_4 PR+\gamma_5 GRO+\gamma_6 SZ+\gamma_7 q+W \quad ----------(6)$$

where; *FINLEV* represents Financial Leverage which is measured by: $\frac{Totaldebt}{MVofthefirm}$

and $MVofthefirm$ =Market Value of the firm

*Totaldebt* = Long term debt + Current liabilities

Market value = total debt + market value of equity

*INVEST* represents Investment, which is measured as growth rate in total assets and given as:

$$\frac{Totalasset_t - Totalasset_{t-1}}{Totalasset_{t-1}}$$

*DV* represents Dividend Payout Ratio, measured by: $\frac{Dividend}{Distributableearnings}$

*PR* represents Profitability, measured by: $\frac{PBIT}{Totalasset}$

*where,*

$PBIT$ =Profit Before Interest and Tax

RISK represents Risk or Variability in earnings, measured by: $\frac{\Delta PBITD}{Totalasset}$

*where,*

$\Delta PBITD$ =Annual change in profit before interest, tax and depreciation

*TX* represents Corporate Tax, measured by the ratio of company income tax divided by net profit before tax

*CF* represents Cash Flow or Liquidity measured by the use of working capital:

$$\frac{Currentasset - currentliabilities}{currentliabilities}$$

*SZ* represents size which is measured as the natural logarithm of total assets (*ln TA*))

*where,* $TA$ =Total Asset

*INDDY* represents Industry Average Dividend Yield

*STR* represents structure of assets, measured by: $\frac{FA}{MV}$

*where,*

$FA$ =Total net fixed asset and $MV$ =Market value of equity

*INDFL* represents an Industry's average total debt ratio in the previous year

GRO represents Sales growth, measured by: $\frac{Sales_t - Sales_{t-1}}{Sales_{t-1}}$

*Q* represents the *q*-ratio used as a proxy for expected growth and its represented by price-to-book value ratio.

The parameters $\alpha_1, \alpha_2, ....., \alpha_9$ ; $\beta_1, \beta_2 \ldots\ldots\ldots\ldots \beta_9$ ; $\gamma_1, \gamma_2 \ldots\ldots\ldots\ldots, \gamma_7$ are the regression parameters and $\mu$,V and W are the error terms.

An *apriori* expectation of the coefficients indicates that financial leverage ($\alpha_2$), profitability ($\alpha_4$), liquidity or cash flow of the firm ($\alpha_7$), size of the firm ($\alpha_8$) and the industry average dividend yield ($\alpha_9$) in the dividend equation would be positive. We also expect a positive sign in the coefficients of investment ($\beta_3$), size ($\beta_4$), structure of the firm ($\beta_5$), corporate tax ($\beta_7$) and industrial average total debt ratio ($\beta_9$) in the financial leverage equation. A positive sign is also expected of the coefficients of financial leverage ($\gamma_3$), profitability ($\gamma_4$), sales growth ($\gamma_5$), and q ratio ($\gamma_9$) of the investment equation. The coefficients of investment ($\alpha_3$) and riskiness ($\alpha_5$) of the dividend equation, dividend ($\gamma_2$) and size ($\gamma_6$) in the investment equation, riskiness of the firm ($\beta_8$) and

profitability ($\beta_6$) in the financial leverage equation are expected to be negative. The coefficient of tax in the dividend equation is also expected to be negative. Due to contradictions in previous studies with respect to the relationship between dividend payout and financial leverage, we can get either positive or negative relation between them.

**3.3 The Choice of Estimation Technique**

The classical linear regression model estimating technique of parameters is not suitable for estimating structural simultaneous equations as used in this study because it renders biased and inconsistent results due to correlation between the random error and the endogenous variables in the equations. In view of this, there are other methods for estimating systems of simultaneous equations and one of them is the Indirect Least Squares (ILS) which is used to estimate a single equation that is exactly identified. This cannot be applied to the model in this study since it contains system of equations and are over-identified. Another method is the two Stage Least Squares (2SLS) estimator which is efficient and consistent but ignores information associated with endogenous variables that appear in the system of equation but not in the individual equations and as such some information regarding the error covariance is lost (Fortenbery and Park, 2008). The Seemingly Unrelated Regression (SUR) method is also used at times in estimating simultaneous equation models but it accounts only for the correlation in the error terms across equations. It however fails to consider the endogeneity problem associated with each equation. As a result of the above stated shortcomings of the various methods, the three Stage Least Squares (3SLS) is considered appropriate for this study since it combines both the 2SLS and SUR methods. The 3SLS shows a contemporaneous correlation in the error terms across equations and the correlation of the right hand side variables with the error term. It is asymptotically more efficient than 2SLS hence the choice for the estimation in this study.

The 3SLS method involves first and foremost, ascertaining whether the system of equations are identified or not. A system of M equations containing M endogenous variables must exclude at least M-1 variables from a given equation in other for the parameters of that equation to be identified and be consistently estimated. Considering equations 4 to 6 based on the order condition, we can verify for identification problem using the formulae:

$K-k \geq M-1$, where K is the number of variables in the model, k is the number of variables in a given equation. M is the number of endogenous variables in the model. If $K-k = M-1$ the equation is just identified and if $K-k > M-1$, it is over-identified. An equation would not be identified when $K-k < M-1$.

The order condition tested on all three equations showed that the equations are over-identified, hence they can be estimated by using systems estimation methods because it considers all parameter restrictions caused by over-identification in the entire equation system and accounts for possible contemporaneous (cross-equation) correlation of disturbance terms.

### 3.4 Source of Data and Results

The study used an annualized cross sectional secondary data from 2004 to 2009, which was obtained from the Ghana Stock Exchange facts book on 33 out of 34 listed firms. The study period was chosen because it reflects the era of listing on the Ghana Stock Exchange of most quoted firms in Ghana. All the variables are represented by their average values instead of single point estimates because according to Titman and Wessels (1988) and Bennett and Donnelly (1993), the use of average values are better than the use of single point estimates for testing theories that are related to long term behavior of firms in other to avoid distortions caused by short term variations from the target.

## 4. Empirical Results

The following are the estimation results from the study which are presented firstly in a descriptive statistics form and then the regression results.

### 4.1 Descriptive statistics

The descriptive statistics here shows the summary statistics for 198 firm-year (i.e. 33firms *6 years) observations over the study period 2004 to 2009. This is seen in the table below:

**Table: 1 Summary statistics of 198 firm-year observations (2004-2009)**

| *Variable* | *Mean* | *Std. Dev.* | *Min* | *Max* |
|---|---|---|---|---|
| **Indfl** | 1.3787 | 3.5538 | 0.0812 | 21.0752 |
| **Str** | 0.2246 | 0.2636 | 0.0105 | 1.41914 |
| **Cf** | 4.1735 | 21.323 | -0.5745 | 122.8499 |
| **Dv** | 0.3922 | 1.1640 | -1.9833 | 5.8132 |
| **Finlev** | 0.4836 | 0.2587 | 0.0264 | 0.9995 |
| **Pr** | 0.0136 | 0.2603 | -1.3643 | 0.3172 |
| **Invest** | 0.3894 | 0.4092 | -0.0209 | 2.2754 |
| **Tx** | 0.2444 | 0.4285 | -0.8342 | 2.0147 |
| **Gro** | 0.5653 | 0.7667 | -0.128 | 3.1271 |
| **Q** | 345.94 | 1617.4 | -45.917 | 9153.818 |
| **Risk** | 1.7804 | 9.0575 | 0.0118 | 52.2193 |
| **Sz** | 13.163 | 2.3115 | 9.4204 | 18.2449 |
| **Inddy** | 56815.84 | 144019 | 0 | 785952.3 |

Table 1 above, shows that most of the observed variables exhibit considerable variability in their values as can be seen in their standard deviation values. It depicts that on the average; about 39.22% of total distributable earnings of the sampled firms are paid out as dividends. The mean value of the investment variable is 0.3894 which implies that the sampled firms grew by about 38.94% over the study period.

The average value for financial leverage was about 0.4836. This implies that about 48.36% of total assets were financed by debt. This value is quiet modest compared to 60% for firms in Germany and France, and 64.3% for South Korean firms as shown in Kasozi (2009), It is also higher compared to 44% for firms in South Africa and United States, and then 30.38% for Chinese firms.

Size of firm variable was estimated using the natural logarithm of total assets and the mean value was 13.1636. This value when converted gives about GH¢522 million which is quite small compared to the maximum value of is over GH¢95 billion The measure of variability in earnings or risk was about 178.05%, this shows a high level of variability in returns of the GSE listed firms as compared to 34% for the Johannesburg Stock Exchange (JSE) and 31% of Chinese firms (Kasozi, 2009). The table further shows that the average annual profitability of the observed listed firms in Ghana is 0.0136. This shows that profit before interest and tax grows by 1.36% per annum. This value is very low as compared to 30% for South African firms. The result is still low compared to firms in developed countries like United States (5.6%) and 2.38% for Chinese firms (Kasozi, 2009).

On the average, 22.47% of the asset structure of firms is made up of fixed asset that is comparable to 30% for South African firms and 29% for Swedish firms (Kasozi, 2009). The average corporate tax growth rate is 24.44%.

## 4.2 The Regression Results

The result in table 2 shows the estimated results of the three Stage Least Squares regression depicting the interaction between financial leverage, dividend payout ratio and investment.

**Table 2: The 3SLS Regression Results of the System of Equations**

| *Variable* | *Equation 4* | *Equation 5* | *Equation 6* |
|---|---|---|---|
| **Dependent** | ***DV*** | ***FINLEV*** | ***INVEST*** |
| ***DIV*** | | 0.041 | -0.021 |
| ***FINLEV*** | 2.051* | | -0.557 |
| ***INVEST*** | 0.886* | 0.446 | |
| ***PR*** | 6.196*** | -1.072** | 0.066 |

| | | | |
|---|---|---|---|
| ***RISK*** | 0.164*** | -0.018 | |
| ***TX*** | 0.921* | 0.027 | |
| ***CF*** | -0.0295*** | | |
| ***SZ*** | -0.118** | 0.038*** | 0.045** |
| ***INDDY*** | 1.41E-06 | | |
| ***STR*** | | -0.768* | |
| ***INDFL*** | | 0.009 | |
| ***GRO*** | | | 0.132 |
| ***Q*** | | | -1.02E-05 |

***, **, * denote significant values at 1%, 5% and 10% levels respectively.

Table 2 indicates that financial leverage (FINLEV) and dividend payout ratio (DV) have the predicted positive relation between them. This implies, as firms in Ghana increase their dividend payment it would lead to the reduction in available funds to finance profitable investment. Firms would then increase their debt by borrowing more (increase financial leverage) to finance viable projects. This is in line with the pecking order theory and supported by the findings of Adedeji(1998) and Adelegan (2002). In addition, this result shows that firms in Ghana respond to their earnings shortage by borrowing to pay dividends.

Unexpectedly, dividend payout ratio (DV) had no significant impact on investment (INVEST) in Ghana however investment (INVEST) had a positive significant effect on dividend payout ratio (DV).The positive impact of investment (INVEST) on dividend payout ratio (DV) could be that firms would not like to reduce dividend payment even if they increase investment because a reduction in dividend payment sends a bad signal to investors and may lead to a reduction in the market price of shares and this may have an adverse impact on the market value of firms. It would send a message to investors that management of the firm is incompetent. Managers in an attempt to safeguard their self-esteem would not like to reduce dividend payment but would rather increase debt or equity to finance dividend payment. This indicates that dividend decisions of firms in Ghana are independent of the investment decisions they make.

The result also shows that there is no significant interaction between investment (INVEST) and financial leverage (FINLEV). This also confirms the findings of Adelegan (2002) and that of Adedeji (1998).

The control variables indicate that profitability (PR) of the firm has a significantly positive impact on dividend payout ratio (DV) as expected. Highly profitable firms have high dividend payout ratios as predicted by the pecking order theory. This is expected because firms making more profit would borrow less but less profitable firms have no choice than to seek external financing

and consequently accumulate more external debt. The results further show that Profitability (PR) has no significant impact on investment (INVEST).

Risk (RISK) of the firm shows a positive significant effect on dividend payout ratio (DV), this finding contravenes the theories in existing finance literature. This implies that risky firms with unstable earnings pay more dividends than stable firms with less risky earnings. Again, the result might be due to the nature of dataset and the period under study, as about 6% of the firms under study have stable earnings but never paid dividends throughout the study period. The rest of the firms that had stable earnings did not pay dividends regularly throughout the study period. The results show no significant impact of risk (RISK) on financial leverage (FINLEV).

The result further shows there is a positive significant impact of corporate tax (TX) on dividend payout ratio. This result is also contrary to existing literature but consistent with the study by Amidu and Abor (2006) on listed firms in Ghana. An increase in corporate tax (TX) is associated with increase in dividend payout ratio (DV). This happens when corporate income tax is higher than capital gains tax and when that happens, firms would want to pay greater part of their profit to shareholders as dividends in order to evade the higher corporate tax burden and pay smaller amount as capital gains tax.

Cash flow (CF) revealed a negative significant influence on dividend payout ratio (DV). The result is contrary to the expectations of this study. This relation means that firms with high amount of idle cash with management would pay smaller amount of dividends. Managers do that in order to maximize perquisites on the job at their own benefit. This has always been the cause of the shareholders and management agency conflict.

Size of firm (SZ) had a negative significant impact on dividend payout ratio (DV) and significant positive influence on financial leverage (FINLEV) and investment (INVEST). Only the impact of size (SZ) on financial leverage (FINLEV) satisfied our expectation. This implies that larger firms pay fewer amounts of dividends, and in this study it is observed that most of the sampled large firms made losses in most of the years under study and hence, did not pay dividends. Size of firm had a positive impact on investment because; some large sized firms might have started investing in fixed assets due to some of their fixed assets becoming obsolete.

Industrial average dividend yield (INDDY) proved not to have any significant influence on dividend payout ratio (DV). Likewise industrial average total debt ratio (INDFL) has no significant effect on financial leverage (FINLEV). Sales growth (GRO) and q ratio (q) do not also have any significant impact on investment at least for the case of Ghana.

## 5. Conclusion

The study sought to test the Pecking Order Theory on dividend payout ratio in Ghana by applying the 3SLS method of estimation on 33 listed firms on the Ghana stock exchange from 2005 to 2009. The findings revealed that financial leverage and dividend payout ratio have the predicted positive relationship over the study period for listed Ghanaian firms as supported by the Pecking Order Theory. The study also revealed that the interaction between financial leverage and investment was not significant and this is consistent with the OLS results by Adedeji (1998). The findings further showed that, there is no interaction between investment and dividend payout ratio among listed firms in Ghana, this particular finding is similar to that of Adelegan (2002). This implies that the dividend decisions made by listed firms in Ghana are independent of their investment decisions.

In addition, profitability of the firm has a positive significant effect on dividend payout ratio and a significantly negative impact on financial leverage. This result is also in harmony with the predictions of the pecking order theory; also firm size has a significant inverse relationship with dividend payout ratio and then a significant direct influence on financial leverage and investment. The findings further indicate that risk or variability of earnings positively affect dividend payout ratio. This may be the case as most listed firms did not pay dividends within the greater part of the period under study amidst having stable earnings. One contradictory finding with regards to existing literature was the significant positive relation between corporate tax and dividend payout ratio, however it is consistent with the study by Amidu and Abor (2006) on listed firms in Ghana. The study also found that cash flow negatively influence dividend payout ratio and was significant but the other exogenous variables did not show any significant impact in the study.

The study therefore recommends that policies and laws governing dividend payment should be strengthened and enforced to ensure a more frequent payment by firms in order to increase their market values through share price increases. Also since profitability drives dividend, dividends also influence the share prices of the listed companies on the Ghana Stock Exchange. Therefore firm managers may use dividend payments to convey information on the competitiveness of their firms. For fiscal purposes, Government should monitor firms closely to declare their proper profits which form the bases of their tax obligation to the state so as to prevent them from channelling the greater proportion into higher dividend payments to shareholders as a way of tax evasion.

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# Appendices

## Appendix A: Identification Determination

### Appendix A1: Endogenous coefficients matrix

| | **Dv** | **Finlev** | **Invest** |
|---|---|---|---|
| **Dv** | -1 | .5 | .5 |
| **Finlev** | .5 | -1 | .5 |
| **Invest** | 0 | .5 | -1 |

**Appendix A2: Exogenous coefficients matrix**

| | Pr | tx | cf | Inddy | risk | sz | str | indfl | q | gro |
|---|---|---|---|---|---|---|---|---|---|---|
| **Dv** | .5 | .5 | .5 | .5 | .5 | .5 | 0 | 0 | 0 | 0 |
| **Finlev** | .5 | .5 | 0 | 0 | .5 | .5 | .5 | .5 | 0 | 0 |
| **Invest** | .5 | 0 | 0 | .5 | 0 | .5 | 0 | 0 | .5 | .5 |

Eq 4 is identified
Eq 5 is identified
Eq 6 is identified
System is identified

## Appendix B: Correlation

**Appendix B1: Correlation among variables**

| | dv | Finlev | Invest | Indfl | str | cf | Pr |
|---|---|---|---|---|---|---|---|
| Dv | 1.0000 | | | | | | |
| Finlev | 0.4050 (0.0194) | 1.0000 | | | | | |
| Invest | 0.2341 (0.1897) | 0.0787 (0.6632) | 1.0000 | | | | |
| Indfl | 0.1190 (0.5095) | 0.3478 (0.0473) | 0.0562 (0.7562) | 1.0000 | | | |
| Str | -0.1606 (0.3721) | -0.2527 (0.1559) | 0.5994 (0.0002) | -0.1903 (0.2889) | 1.0000 | | |
| Cf | -0.3536 (0.0435) | -0.1555 (0.3876) | -0.0774 (0.6685) | -0.0353 (0.8453) | -0.0854 (0.6364) | 1.0000 | |
| Pr | 0.1873 (0.2965) | -0.0694 (0.7013) | 0.1516 (0.3997) | 0.0470 (0.7950) | -0.2412 (0.1764) | 0.0132 (0.9420) | 1.0000 |
| Avgdiv | -0.0328 (0.8563) | 0.1221 (0.4986) | -0.2003 (0.2636) | 0.0266 (0.8831) | -0.0601 (0.7396) | -0.0820 (0.6503) | 0.0157 (0.9311) |
| Tx | -0.0357 (0.8438) | 0.0139 (0.9389) | -0.1474 (0.4131) | 0.0380 (0.8338) | -0.2704 (0.1281) | 0.7414 (0.0000) | 0.1400 (0.4372) |
| Gro | 0.3386 (0.0539) | 0.0216 (0.9050) | 0.2030 (0.2571) | -0.0723 (0.6894) | -0.0524 (0.7723) | 0.2667 (0.1335) | 0.2103 (0.2402) |
| Q | -0.0155 (0.9318) | 0.1899 0.2898 | -0.0164 (0.9277) | -0.0324 (0.8578) | -0.1507 (0.4026) | -0.0403 (0.8237) | 0.0127 (0.9439) |
| Risk | -0.0745 (0.6801) | 0.0140 (0.9385) | -0.1860 (0.3001) | -0.0365 (0.8403) | 0.1824 (0.3097) | -0.0267 (0.8827) | -0.9504 (0.0000) |
| Sz | -0.1169 (0.5171) | 0.3783 (0.0299) | 0.1333 (0.4597) | 0.0815 (0.6520) | 0.0847 (0.6395) | -0.2931 (0.0978) | 0.1745 (0.3315) |

**Appendix B2: Continuation of correlation among variables**

| | Inddy | tx | gro | q | risk | Sz |
|---|---|---|---|---|---|---|
| **Avgdiv** | 1.0000 | | | | | |
| **Tx** | -0.1031<br>(0.5680) | 1.0000 | | | | |
| **Gro** | -0.0923<br>( 0.6095) | 0.2104<br>(0.2399) | 1.0000 | | | |
| **Q** | 0.0885<br>(0.6242) | 0.0404<br>(0.8235 ) | -0.0204<br>(0.9101) | 1.0000 | | |
| **Risk** | -0.0595<br>(0.7422 ) | -0.0993<br>(0.5823 ) | -0.1336<br>(0.4585 ) | -0.0420<br>(0.8166) | 1.0000 | |
| **Sz** | 0.5862<br>(0.0003) | -0.1794<br>(0.3179 ) | -0.1434<br>(0.4259) | 0.3545<br>(0.0430) | -0.2344<br>(0.1892) | 1.0000 |

**NOTE: p-values are in parentheses**