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# Determinants of Dividend with Industry-wise Effect – Evidence from KSE 100 Index

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## Abstract

This research have identified the industry-wise effect of dividend policy among non-financial listed companies of KSE – 100 Index. For this purpose data from 2006 to 2011 for 53 companies of different industries i.e. Fuel and Energy Sector, Chemicals Sector, Cement Sector, Engineering Sector, Textiles Sector and Transport and Communication Sector have been taken. Multiple Regression Analysis has been used to identify the prominent determinant of Dividend and Industry effect was captured through incorporating six dummy variables for said industries. Results highlighted that apart from profitability most powerful determinant of dividend there are other factors of life cycle, tangibility of assets are prominent whereas capital structure, size of firm and cash flows per share is not significant determinant of dividend. Apart from these variable, Industry-wise effect shows that all the above significant determinants remains significant within industry except textile sector.

## 1. Introduction

Dividend policy is an important topic from of the basic theory of corporate finance topics and also the most controversial. Many researchers try to present empirical evidence and different theories, where the ultimate goal is to open the discussion for the top management but the issue is still unresolved. Among the top ten research problems in the financial literature, we do not have sufficient explanation regarding observed behavior of dividend of the firms. [Black (1976), Michaely and Allen (2003) and Brealey and Myers (2005)]. In Countries which are developed, dividends policy is a possibility for very careful research area for both the company management and investors (Glenn et al 1995.). In deciding whether to continue making earnings or whether to pay dividend of not is a question for firms with several reasons and that's why The "Dividend Puzzle", for the firms is still unresolved. Several hypotheses have been developed to shed light on the key issues of this mystery. Dividend distribution to shareholders by company is generally linked with the problems of the distribution of profits of the company, holding money for re-investment of the two, to promote the growth of the company. Retained earnings is key source of internal financing but higher retained earnings firm has paid less dividend or vice versa.

According to the theory of Pecking order, companies prefer to use the internal sources of capital first, then after internal financing, they go for debt and finally from the issuance of shares. Therefore, profitable business has more internal funds which indirectly results in giving big dividend. Some researchers believe dividends is not significant for optimal policy adaption as if business grows, as the flow of the interests of shareholders grows. All companies formulate their dividend policy in such a way that it will not create problem to distribute cash dividend payments. Bernstein (1996) and Aivazian et al (2003) concluded about this puzzle there are many important question regarding dividend payment which are to be answer. So there is no description of a single dividend in the literature, and researchers do not agree on one point. Administrations of firms can prevent the problem of agency to pay desired amount of dividend. And that's the reason that Optimal Dividend Policy is researchable in many ways. First, the company will be able to use the dividend as a financial instrument for signaling on the growth prospects of the company and the stability to the foreigner. Secondly, dividends play an important role in the capital structure of the company. According to the theory of "residual dividend" even if firms do not have the slightest chance of profitable investment, they pays dividends. However, many researchers argued that there is relationship between investment decisions and dividend. Typically, Firms do not like that due to the trend of the dividend, the stock price of the company gets under influence, Firms can build up the share price of a company also with higher dividend payments.

For over last fifty years, highly summarized, most theoretical and empirical studies have been conducted, and on the basis of that we can conclude three dominant view

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- I) Lintner (1962), Gordon (1963) argued that firms can adjust the market value aggressively.
  - II) Negative relationship between dividend and the value of firm. [Litzenberger and Ramaswamy (1979)]
  - III) Dividend policy does not affect the market value of the company. [Modigliani and Miller (1961)].
- However, it can be concluded that factors that determine the dividend policy are mixed.

## **1.2 Research Problem**

Although the determinants of dividend policies are mixed But it is still researchable that what are the prominent factors which has influence in the economy like Pakistan especially when it comes to industry wise effect.

*“This research will investigate that which factor of dividend is more powerful/influential factors among factors of existing literature i.e. Profitability, Cash flow, Size, Leverage, Life Cycle, Tangibility, Risk and Previous Year Dividend Payment in case of KSE 100 index’s Non Financial Companies”*

### **1.2.1 Research Question**

Above Research Problem be investigated by following Research Question?

- Which is most prominent factor among said factors in case of dividend policy?
- Is prominent factor’s influence is consistent in all the industries or it varies from industry to industry?
- Which factors has more volatility and more consistency among researched factors?

### **1.3 Objectives of the Study**

The objectives of the present study are:

- To evaluate the sustainability of dividend policy by using Lintner’s (1956) model.
- To identify the role of various factors determining the firm’s dividend policy.
- To examine the Industry wise effect for dividend policy in case of Pakistan.

### **1.4 Limitations**

This study will not take into account the Financial Companies of KSE-100 Index as they are different in nature of operations. Moreover due to non-availability of Time Series data and limited scope of this term paper extensive study cannot be done.

### **1.5 Guideline for this Research Study**

In first section, background of dividend has been discussed with the research problem, objectives of the study, research question and limitations of the study. In Section II, detailed account is given for development of hypotheses and methodology adapted by past researchers for answering the similar research question that how they have investigated the dividend policy effect. Section III will consist of Research Methodology including conceptual framework, research design, sample and population with sampling framework, econometric models and variable used in this respect. Last Section IV comprises on results and conclusion obtained from this study.

## **2. Literature Review**

### **2.1 The effect of previous dividends**

Lag values of dividend payment have positive correlated and key indicator of firm’s ability to pay dividend in future (Lintner 1956). Moreover, the information asymmetry hypothesis assumes that divided policy is stable and company wants to maintain on its previous level (Baskin 1989)

### **2.2 The effect of profitability and cash flow**

Lintner (1956) highlighted that earnings of the firm is a primary factor of firm to pay dividends. To determine the effects of profits on dividends, earning per share (EPS) used as proxy. There are positive correlation between EPS and dividends. Brittan (1966) examines that cash flows is a more appropriate determinant of dividend policy. Cash flows highlighted the position of firm to pay dividends. In order to determine the relationship between cash flows and dividends, operation cash flows per share (CFPS) is used as proxy. There is expected that positive relationship between dividend payment and CFPS.

### **2.3 The effect of firm size**

The size of the firm is key indicator of firms’ dividend policy. Larger firms have normal less risk of financial distress and more advantage in capital markets in raising external funds and less depend on internal source of

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fund (Higgins, 1972). It is expected that there is negative relationship between the size of the firms and its ability of internal financing (Renneboog and Trojanowski 2005). The size of firms and dividends payments policy is also the proxy of agency problem. The logic behind this is that the larger the firm is, the more difficult to control the operation and management of firm. Dividend play a vital role to alleviating the agency problem. Aivazian et al, (2006) examines that high yield of dividend and size of firm is play supportive role to of firm access capital markets.

#### **2.4 The effect of leverage**

Agrawal and Narayanan (1994) examines that payout ratios is higher for levered firms. The many reason behind this. Higher leverage of firms' improves the firm ability to pay more dividends because firms that finance their operation and management activities through high borrowing constraints. Failure to repay these payments in the maturity time may lead to firm bankruptcy. Higher leverage is may result in lower dividend payments. Gugler and Yurtoglu (2003) and Aivazian et al. (2006) highlighted that negative relationship between leverage and dividends payment. Debt ratio (liabilities divided by total assets, measured in book value terms) is used as proxy for leverage.

#### **2.5 The effect of life cycle**

(Grullon and Michaely, 2002; DeAngelo and DeAngelo, 2006; DeAngelo et al., 2006; Denis and Osobov, 2007) life cycle theory is used to explain the volatility of dividend payments. The explanation is based on tradeoff between the benefit and cost of paying dividends. The cost and benefits of dividends policy is different for different firms. High retained earnings of mature firms are able to give high dividends, while younger firms provide low dividend due to build up their reserves to finance growth opportunities. There is positive relationship between dividend and life cycle is expected.

#### **2.6 The effect of tangible assets (TANG)**

Booth et al (2001) highlighted the relationship between tangible assets and dividend policy. Higher the assets tangibility cause to use assets as collateral for debt. So these types of firms not used retained for future finance and firms have more cash, which used as distribution of dividends. This suggests a positive association between tangible and dividends. Aivazian et al. (2003) highlighted that firms operating in emerging economy have high level of tangible assets. This is because firms in emerging economy more financial hurdles.

### **3 Research Methodology and Econometric Modeling**

#### **3.1 Research Design**

This study is quantitative in nature and has been done through gathering financial figures of Dividend, Current Assets, Non-Current Assets, Total Shareholder's Equity, Cash Flows from Operation, Debt to Equity Ratio, Reserves, Share Capital Earning Per Share and Book Value per share of about Listed Companies of Six Industries of Karachi Stock Exchange 100 Index provided by State Bank of Pakistan under their Annual Report name Financial Statement Analysis and these industries are Fuel and Energy Sector, Cement Sector, Chemical Sectors, Engineering Sector, Transport and Communication Sector and Textile Sector.

Then above financial figures of said industries these are converted into Financial Ratios of Dividend per Share, Earning per share, Cash Flow per share, Log of Total Assets, Debt to Equity ratio, Life Cycle and Tangibility of Assets for Correlation and Regression Analysis.

Dividend per share of these six industries have been regressed as Dependent Variable and Independent Variables are Earning per share, Lagged Dividend per share, Cash Flow per share, Log of Total Assets, Debt to Equity ratio, Life Cycle and Tangibility of Assets and Also Industry wise dummy variable have been introduced to identify the industry Effect.

#### **3.2 Research Procedure**

The answer of First Research Question "**Which of the common factors of dividend policy are significantly related with each other?**" have been carried out by using Correlation. The second Research question of "**What are the factors who significantly cause dividend policy fluctuation?**" have been answered via Regression Analysis on statistical model for hypothesis testing that which of the Independent Variable among Earning per share, Lagged Dividend per share, Cash Flow per share, Log of Total Assets, Debt to Equity ratio, Life Cycle and Tangibility of Assets are causing Dividend per share and Also Industry wise dummy variable have been introduced to identify the industry Effect.

#### **3.3 Sampling Framework**

The Sampling Framework and Method in this research, comprises on All the Companies falling under heading of Mentioned Industries of KSE 100 Index which are taken by focused/purposive sampling. In selecting the sample, the following pre-determined criteria were as follows:

- ✓ The firm has published its complete financial statements for the period of 2011.
  - ✓ The firm does not have negative equity at the end of period 2011
  - ✓ The firm's stock has been actively traded during September 2013.
- The purposive sampling with the predetermined criteria above resulted in 53 companies as sample.

**Table: Sampling Framework**

<i>Types of Industry</i>	<i>Frequency</i>	<i>Excluded</i>	<i>Revised</i>
Financial Institutions & Banks	26	26	0
Fuel & Energy	17	0	17
Miscellaneous	12	12	0
Chemical	12	2	10
Engineering	11		11
Cements	7	2	5
Transport and Communication	7		7
Others	3	3	0
Textile	3		3
Paper & Board	2	2	0
Total	100	47	53

Secondary data was available in the form of "Financial Statement Analysis" published by State Bank of Pakistan for All the Non-Financial Listed Companies registered at Karachi Stock Exchange. However the conversion of available portable document file into MS Excel sheet required extensive filtration process and the Financial Variables of Dividend per share, Earning per share, Lagged Dividend per share, Cash Flow per share, Log of Total Assets, Debt to Equity ratio, Life Cycle and Tangibility of Assets of Sample Companies of KSE 100 Index have been taken for the year 2006 to 2011

### 3.4 Hypothesis

#### 3.4.1 Relationship of Factors of Dividend Policy (Correlation)

**HA1:** There is a significant statistical relationship among the EPS, Lagged DPS, CFPS, SIZE, Leverage, Life Cycle and Tangibility of Firm with the DPS of Nonfinancial Listed companies of Karachi Stock Exchange 100 Index.

#### 3.4.2 Causal Impact of Factors of Dividend Policy (Regression)

**HA2:** Common factors of Dividend policy i.e. EPS, Lagged DPS, CFPS, SIZE, Leverage, Life Cycle and Tangibility of Firm have statistical significant impact on DPS of Nonfinancial Listed companies of Karachi Stock Exchange 100 Index.

#### 3.4.3 Industry wise Impact of Factors of Dividend (Regression with Dummy)

**HA3:** There is a significant industry wise effect for Dividend Policy for Nonfinancial Listed companies of Karachi Stock Exchange 100 Index.

### 3.5 Econometric Modeling

Following are the econometric models to be utilized for hypothesis testing.

$$DPS_{it} = a + b_1EPS_{it} + b_2LDPS_{it} + b_3CFPS_{it} + b_4SIZE_{it} + b_5DR_{it} + b_6LC_{it} + b_7TANG_{it} + e_{it} \quad (1)$$

$$DPS_{it} = a + b_2X_{kit} + b_kD_{fe} + b_kD_{cm} + b_kD_{ch} + b_kD_{tx} + b_kD_{en} + b_kD_{tc} + e_{it} \quad (2)$$

Where,

DPS	=	Dividend per share	;	EPS	=	Earning Per Share
LDPS	=	Lagged Dividend per share;		CFPS	=	Cash flows per Share
SIZE	=	Log of Total Assets	;	DR	=	Debt to Equity Ratio
LC	=	Life Cycle	;	TANG	=	Tangibility of Assets
FE	=	Fuel and Energy Sector	;	CM	=	Cement Sector
CH	=	Chemical Sector	;	EN	=	Engineering Sector
TC	=	Transport and Communication;		TX	=	Textile Sector

### 3.6 Variable Description, Formulae and Expected Sign

The Variables of above econometric models are explained in following table

Variables	Descriptions/Factors	Formulae	Expected Sign
DPS	Dividend Paid to holder of one share	Total Dividend paid / No. of Outstanding Shares	Dependent Variable
EPS	Net profit available to holder of one share	Net Profit after Tax / No. of Outstanding Shares	Positive
LDPS	Dividend paid to holder of one share last year	Dividend paid last year / No. of Outstanding shares	Positive
CFPS	Cash flows from Operation per Share	Cash flows from Operation / No. of Outstanding Shares	Positive
SIZE	Size of Firms	Log of Total Assets of Firms	Positive
DR	Leverage of the firm	Ratio of Total Debt to Total Assets of Firm	Negative
LC	Life Cycle	Ratio of Retained Earning to Share Capital	Positive
TANG	Tangibility of Assets	Fixed Assets divided by Total Assets	Negative/ Positive

### 3.6 Plan of Analysis

The Plan of Analysis for this research is as follow:

- Hypothesis of H1a regarding Relationship of Common Factors of Dividend Policy has been tested by Correlation Analysis
- Hypothesis of H1b regarding causal impact of factors of dividend policy have been tested by multiple regression analysis, T-Statistics is benchmark for Individual Significance and F- Statistics for Join Significance
- Hypothesis of H1c regarding Industry Effect on Dividend policy have been tested by incorporating dummy variable technique in multiple regression technique on Statistical Equation (2) T test will be the criteria to Find out Industry Effect.

## 4 Results and Discussion

### 4.1 Correlation Analysis

	DPS	EPS	CFPS	SIZE	DR	LC	TANG
DPS	1.000						
EPS	0.586	1.000					
CFPS	-0.099	0.030	1.000				
SIZE	-0.035	-0.018	-0.025	1.000			
DR	-0.005	-0.012	-0.002	-0.051	1.000		
LC	0.684	0.654	-0.247	-0.019	-0.007	1.000	
TANG	-0.411	-0.370	0.055	0.145	0.008	-0.468	1.000

Above Table shows that Dividend per share is positively correlated with Earning per share (58.6%) and Life Cycle (68.4%) where as it is negatively correlated with Tangibility (41.1%), Cash Flows per share (9.9%), Size(3.5%) and Debt to Equity Ratio(0.5%). The relationship with Cash flow per share, Size and Debt to Equity Ratio is too low i.e. less than 10%.

#### 4.2 Regression Analysis

Dependent Variable: DPS				
Method: Panel Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
EPS	0.105098	0.022977	4.574126	0.0000
LDPS	0.464952	0.054523	8.527681	0.0000
CFPS	-0.006136	0.018704	-0.328042	0.7431
LOG(SIZE)	0.240957	0.083745	2.877277	0.0043
DR	0.000308	0.004190	0.073428	0.9415
LC	0.197849	0.083835	2.359991	0.0189
TANG	-5.534078	2.375322	-2.329822	0.0205
R-squared	0.602980	Mean dependent var		7.610481
Adjusted R-squared	0.595169	F-statistic		77.20372
Durbin-Watson stat	1.625906	Prob(F-statistic)		0.000000

Above Table indicates the causal relationship of factors of dividend policy. From the table we can see that our model is capturing 59.5% variation showing its goodness which is also supported by its F-statistics of 77.20. From the table we can also see that it is earning per share, Lagged Dividend per share, Size of the firm, Life Cycle of the firm and tangibility of assets are the factors which are significantly impacting dividend per share whereas cash flows per share and debt to equity ratio has not impact on dividend per share. Individual Factors has following results

- Coefficient of Earning per share is 0.10 means 1 Rupee of Earnings per share will result in 10 paisa of dividend payment
- Coefficient of Lagged Dividend per share is 0.46 means 1 rupees of last year dividend will make sure the dividend of 46 paisa this year
- Coefficient of Log(Size) is 0.24 means 1% increase in Total Assets of Firm will result in 24 paisa increase in dividend of this year
- Coefficient of life cycle is 0.19 means 1 times increase in ratio of Life time will increase dividend payment by 19 paisa this year, and lastly
- Coefficient of Tang is -5.53 means 1 times increment the tangibility of firm will result in decreasing dividend of this year by 5.5 times

## 4.2 Regression Analysis with dummy variable for Industry wise effect

Dependent Variable: DPS				
Method: Panel Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
EPS	0.106383	0.023095	4.606361	0.0000
LDPS	0.446770	0.055866	7.997171	0.0000
CFPS	-0.004795	0.018872	-0.254077	0.7996
SIZE	-5.30E-09	1.11E-08	-0.476044	0.6344
DR	-9.61E-05	0.004215	-0.022797	0.9818
LC	0.212703	0.088225	2.410906	0.0165
TANG	-4.578765	2.758807	-1.659690	0.0980
FNE	3.762474	1.570127	2.396286	0.0172
CEMENT	4.533462	2.649164	1.711281	0.0881
CHEMICALS	3.622665	1.730452	2.093479	0.0371
TEXTILES	0.498940	2.889582	0.172668	0.8630
ENGINEERING	4.768937	1.770884	2.692970	0.0075
TNC	3.884572	2.306477	1.684201	0.0932
R-squared	0.608917	Mean dependent var		7.538000
Adjusted R-squared	0.593377	F-statistic		39.18449
Durbin-Watson stat	1.616372	Prob(F-statistic)		0.000000

Above Table indicates the causal relationship of factors of dividend policy with incorporation of industry wise effect via dummy variable. From the table we can see that our model is capturing 59.3% variation showing its goodness which is also supported by its F-statistics of 39.20. From the table we can also see that when industry effect was incorporated in equation 1, the factor of size of the firm which was initially significant becomes insignificant whereas the factor of tangibility of assets which was initially significant at 95% now becomes significant at 90% confidence level. Furthermore, dummy variable results are showing that out of six industry it is only textile sector which is not prominent with said result means we are inclusive to say something with respect to textiles sector on the basis of KSE 100 index result however, other industries such as fuel and energy sector\*\*, Cement Sector\*, chemicals sectors\*\*, engineering sector\*\*\* and Transport and communication sector\* have significant impact in dividend policy.

[Note: Significance Level \*\*\* = 99%, \*\* = 95%, \* = 90%]

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