Examining the Relationship between Price of Equity and Dividend Policy of Firms Operate in Service and Industry Sectors of ISE

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Abstract

This study utilizes financial pooled data and investigates the relationship between the price of equity with payout and retained earnings of firms that operate in Istanbul Stock Exchange (ISE), Turkey. Three regression models are constructed to test the hypotheses. The results suggest that the determinants of price of equity presented by the finance theory appear to be relevant for the ISE service and industry sectors. Payout and retained earnings both seem to have an effect on the level of equity price of the firms. Furthermore, the results indicate that time and sector affects the levels of equity price.

Keywords: Dividend Policy, Equity Price, Regression Analysis, ISE.

İMKB Sanayi ve Hizmet Sektörlerinde Faaliyet Gösteren Firmaların Hisse Senedi Fiyatları İle Kara Payı Dağıtım Politikası Arasındaki İlişkinin İncelenmesi

Özet

Bu çalışmada havuz veriler kullanılarak İstanbul Menkul Kıymetler Borsası (İMKB) sanayi ve hizmet sektörlerinde faaliyet gösteren firmaların hisse senedi fiyatları ile nakit temettü ve otofinansman arasındaki ilişki araştırılmaktadır. Araştırma hipotezlerini sınamak için üç regresyon modeli geliştirilmiştir. İMKB sanayi ve hizmet sektörlerinde faaliyet gösteren firmalar üzerinden elde edilen bulgular, finans yazınındaki hisse senedi fiyatları ile nakit temettü ve otofinansman arasında beklenen pozitif yönlü ilişki güçlü bir şekilde desteklemektedir. Firmaların nakit temettü ve otofinansman düzeylerinin hisse senetlerinin fiyatları üzerinde önemli bir etkiye

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sahip olduğu görülmektedir. Ayrıca araştırma sonuçları, sektör ve zaman faktörlerinin hisse senedi fiyat düzeyleri üzerinde etkili olduğunu göstermektedir.

Anahtar Kelimeler: Temettü Politikası, Hisse Senedi Fiyatı, Regresyon Analizi, İMKB.

1. Introduction

Maximizing the firm value is the main purpose of both a firm management and firm's dividend policy decisions. The shareholders of the firm expect profit from their investment via valuation and mostly payout of the firm's equity. Then, the firm's payout policy is important for valuation of the firms. However, besides distribution of dividend payout, expecting of valuation in equity price are contrary situations. In other words, amount of dividend payment should be optimized by satisfaction of firm investors, while firm should have enough cash that wouldn't cause financial problems or not to conduct it to a position of paying high interest rates. Accordingly, determination of the dividend payout is really complex and hard.

There are three main counter sights on dividend policy. Miller and Modigliani defend irrelevance between a firm equity price and its payout value in the atmosphere of assumptions which states effective market, rational behavior and definiteness (Miller and Modigliani, 1961). It is logically accepted but it may not be valid under real world conditions (Brigham, 1986:535). However, *bird in hand theory* which is been in favor of Gordon-Lintner and *theory of information content or signaling* support high quantity of dividend payout policy (Kargun, 1999:13). This theory is accepted by majority of investors, managers and academicians. High amount of dividend payout is preferred by especially small investors. A small investor tends to realize cash earnings and/or to get signals about the equity from dividend payouts. On the contrary, *Walter formula* which calculates equity price via expected payouts, *tax differential theory* which states less dividend payout produces less tax payments and *residual dividend theory* which states earning must be used primarily by firm necessities (Pekkaya, 2006). Walter formula, tax differential theory and residual dividend theory insists on high quantity of payout policy produces negative effect on firm value. Big investors usually prefer less dividend payout because of especially tax dif-

ferentials and reinforcement of firm cash position (Truong and Heaney, 2007). Small investors (Dong et al., 2005) and second largest shareholders (Gugler and Yurtoglu, 2003) prefer to receive dividend payouts. Taking into account of varying investors' demand is important; otherwise managers are penalized via a relatively lower stock price (Li and Lie, 2006). Small and big investors, who expect opposite wish in amount of dividend payout but alike in firm value, must be satisfied. Besides, cash position of a firm must be strong enough that not need to have cash with high interest rates (Pekkaya, 2006). Holder, Langrehr and Hexter find that firm which less indebted and traced low payout policy is more liquid and has less risk in bankruptcy (Holder et al., 1998).

There are many factors that effect determination of dividend policy of the firms. According to a country *legal regulation* which declares minimum dividend ratio, *inflation* which forces firm to high cash ratios in firm cashbox and *tax ratios* are major factors that affect dividend policy. *Liquidity* must be in satisfactory level and *new investment plans* must be conducted without worthy cash problem, so *regularity of profits* in the future period can be forecasted that results in regular dividend payout. There are also other factors such as, sector of the firm, indebtedness of firm and so on (Ceylan, 1999:16-18; Berk, 1995:368-370; Okka, 2005:413-415; Pekkaya, 2006). Dividend can be distributed by cash, by equity and/or by repurchase. Firm's payout instruments have influences on the relation between returns and spreads (Gottesman, 2006). Thus, for maximizing equity price, dividend payout determination by managers is really delicate and hard to decide. In decision process all of these factors should be considered. Black (1976) states that when one's concentrates on dividend payout, it is pictured as a kind of puzzle.

Ho (2003) states that a firm's dividend policy is affected by profitability, size, debt, risk, tangibility and growth. So, Ho investigates regression that affects firm's dividend payout by using these factors plus liquidity, stock beta and

market to book value in Australia and Japan (Ho, 2003). Dividend policies are also affected by firm size, profitability, cash balances, dividend history, growth opportunities and earned equity (Denis, 2007; DeAngola et al., 2006). Aivazion et al. (2003a) found that emerging market stocks are affected by the same factors as US firms but different in sensitivity. Five different questionnaire studies are made by Baker at al. (1999; 2000; 2001; 2002; 2006) on CEOs and top managers about determination of factors that affect value of NYSE, NASDAQ or Oslo Stock Exchange market firms. These studies support Lintner's finding and signaling theory, remaining stable earnings, stable dividend policy and they are changeable according to firms. In addition to these findings, regression results show that current dividends are more sensitive than past dividends in emerging markets (Aivazian et al., 2003b).

Payout policy is changeable even in the same country, for instance pricing mechanism urges managers to pay dividends in Hong Kong but not in Mainland, China (Zhang, 2008). Recently, stability in dividend payout is preferred and some researchers suggest a kind of payout by regular share repurchase instead of cash payouts which are little impact on equity price (Skinner, 2008; Brav et al., 2005; Gryglewicz, 2004; Bernstein Research, 1998:52).

Kanas (2005) states that there is nonlinear relationship between the stock price and dividend payout according to cointegration and Granger causality test in the stocks of UK, US, Japan and German market. After declaration of extraordinary and special cash dividends, investors may get abnormal return during declaration period (Gryglewicz, 2004) but no significant return post-declaration long-term period (Chou et al, 2007). However, Samad et al. (2007) find that there is no significant relationship between dividend payout stability and stock abnormal return even for different sectors.

The ISE is an emerging European stock exchange market only dates back to 1986 and after 1995 some regulatory arrangements on dividend policy are

placed; namely, current mandatory cash dividend payout at least 20% of earning is granted (Adaoğlu, 2000; SPK, 2008). However, instability in earning results in instability in dividend payout in Turkey. Accordingly, it is difficult to analyze dividend data taken from ISE.

In recent times, most of the studies are concentrated on determination of dividend policy factors. To determine these factors, investigators usually conduct questionnaire especially for administrators or CEOs of firms. This study investigates the relationship between the equity price and dividend payout, retained earnings, one-year lagged dividend payout, one-year lagged retained earnings, industry type, time affect using appropriate regression technique. Some studies mentioned above are about how current dividend payout is effected by the past dividend payout. Results of these studies show that, along with legal regulations, inflation, tax ratios, liquidity position, profitability, debt, risk, firm size, growth potential etc. factors, dividend history and sector of the firm also affect dividend decisions. Similarly in this study it is taken into account dividend variations which are stem from sectors. For determining of stock value of firm, current payouts, current retained earnings, one year lagged payouts and one year lagged retained earnings are considered. Since investors prefer stock mostly for its future expectations and dividend history may affect stock prices, then a stock value can be identified by these variables.

In 1964, Friend and Puckett use cross-section data to test the effect of dividend payout and retained earnings on price of share value. Prior to their study, most studies had related stock prices to current dividends and retained earnings, and reported that higher dividend payout was associated with higher price/earnings ratios (Copeland and Weston, 1992).

This study consists of five sections. The first section is introduction and literature review. The second section is about empirical hypotheses. The third section describes the data and methodology. The results and discussion of em-

pirical study is given in the fourth section. The last section is the conclusion of this study.

2. Hypotheses, Dividend Policy and Price of Equity

The price of equity (*PE*) was used as a dependent variable to measure payout and retained earning behaviors in this study. The hypotheses of this study were based on the assumption that conventional finance theories can be applied to both service and industry sectors. Therefore, each independent variable was expected to have the same sign in both sectors and agree with the finance theories. However, the average price of equity from each sector was expected to differ because the optimal profit-equity mixes may vary in service and industry sectors. In order to easily compare the difference between two sectors, this study employed an industry dummy variable. Thus, the regression coefficient sign of sector dummy variable is expected to be negative. In this way, the first hypothesis of this study is expressed as follows (Table 1):

H1: Firm operates in service sector have a greater average profit than industry sector firm.

Turkey has experienced high rate of growth in the years of 2005 and 2006.[1] This growth most probably can leads to equity price increase or to formation of different equity price for these years. Accordingly, H2 and H3 hypotheses stated as follows (Table 1).

H2 and H3: There is a positive relationship between *PE* and time dummy variables.

Dividend payout was assumed to be an important variable in explaining equity price behavior. The expected relationship between equity price and dividend payout is positive as mentioned most of the studies above. Investors ex-

[1] The growth rate of Turkish economy realized as %7.6 in 2005 and %7.5 in 2006 (TUİK, 2008).

pect gain from increase in stock price that is correlated with current dividend payout. It is accepted that quantity of past dividend payout signals future dividend payouts. Thus, the fourth hypothesis of this study stated as follows (Table 1):

H4: Dividend payout *(DIVP)* is positively related to *PE*.

Retained dividend payout was expected to be also an important variable in explaining equity price behavior. The expected relationship between equity price and dividend payout is positive. Since big investors have a tendency to pay low tax for their gains, they prefer retained earnings. Retained earnings also strengthen the firm cash position and results less risk in bankruptcy as mentioned before. Thus the fifth hypothesis of this study stated as follows (Table 1):

H5: Retained earnings (*RE*) is positively related to *PE* (Table 1).

Table 1: Dependent and Independent Variable and Hypotheses

Code	Description of Variable	Variable Type	Hypothesized Sign
PE	Price of equity	Dependent	None
D-SEC	Sector dummy [0 for service and 1 for industry)	Independent	H1: -
D-2005	Time dummy variable (1 for 2005, 0 for otherwise)	Independent	H2: +
D-2006	Time dummy variable (1 for 2006, 0 for otherwise)	Independent	H3: +
DIVP	Dividend payout	Independent	H4: +
RE	Retained earnings	Independent	H5: +
L-DIVP	One year lagged dividend payout	Independent	H6: +
L-RE	One year lagged retained earnings	Independent	H7: +

In Turkey, compulsory reserve fund system exists. Dividend payout can be paid after reduction of deficit of previous year and firms must transfer money to reserve fund least possible amount from current year gains (SPK, 2008). Accordingly, one year lagged gain of firms is very important in paying current dividend payout. If a firm had a deficit in previous year then, it will pay less or no dividend payout in current gainful year as expected. So, we assume previous year dividend payout and retained earnings will affect the price of equity.

One year lagged dividend payout may expected to be an important variable in explain equity price behavior. The expected relationship between firm price of equity and one year lagged dividend payout is positive. Thus, the sixth hypothesis of this study stated as follows (Table 1):

H6: One year lagged dividend payout (*L-DIVP*) is positively related to *PE*.

One year lagged retained earnings was expected to be another important variable in explain equity price behavior. The expected relationship between firm price of equity and one year lagged retained earnings is positive. In other words, as one year lagged retained earnings go up then the prices of equity of firms go up. Thus, the seventh hypothesis of this study stated as follows:

H7: One year lagged retained earnings (*L-RE*) is positively related to *PE*.

3. Data and Methodology

In this study we utilize pooled data analysis to empirical examine the hypotheses formulated above. For this purpose total 65 stocks of firms are taken, which are industrial (47) and service (18) sector, from ISE 100 Index for last three years. The yearly balance sheets data of firms from 2004 to 2006 was retrieved from Istanbul Stock Exchange database (ISE, 2007) and yearly stock prices as average of June which is after declaration of balance sheet retrieved from OYAK Yatırım web site (OYAK Yatırım, 2007). To have less outliers and extreme values and for interpretation purpose both dependent and independent variables are expressed in logarithmic form. After deleting unavailable year data and extreme values, 50 observations were retained for analysis from service sector and after removing unavailable year data and outliers, 134 observations were analyzed from industry sector. Thus, 184 observations were analyzed for pulled data (Table 2). As explained before, the service sector was chosen as a reference point for comparison purposes (S=0).

Three basic models were introduced to examine the relationship between price of equity of the service and industry firms with dividend payout, retained earnings, one year lagged dividend payout, and one year lagged retained earnings, time and sector dummy variables. This type of analysis can control heterogeneity of observations, and reduce multicolinearity among the independent variables that are considered. Constructed models may be expressed as follows:

$$Ln(PE)_{it} = \beta_0 + \beta_1(D-SEC)_{it} + \beta_2(D-2005)_{it} + \beta_3(D-2006)_{it} + \beta_4 Ln(DIVP)_{it} + \beta_5 Ln(RE)_{it} + \beta_6 Ln(L-DIVP)_{it} + \beta_7 Ln(L-RE)_{it} + \varepsilon \quad (1)$$

$$Ln(PE)_{it} = \beta_0 + \beta_1(D-SEC)_{it} + \beta_2(D-2005)_{it} + \beta_3(D-2006)_{it} + \beta_4 Ln(DIVP)_{it} + \beta_5 Ln(RE)_{it} + \varepsilon \quad (2)$$

$$Ln(PE)_{it} = \beta_0 + \beta_1(D-SEC)_{it} + \beta_2(D-2005)_{it} + \beta_3(D-2006)_{it} + \beta_4 Ln(L-DIVP)_{it} + \beta_5 Ln(L-RE)_{it} + \varepsilon \quad (3)$$

In the above models *i* denotes firms (cross-section dimension) ranging from 1 to 65 and *t* denotes years (time series dimension) ranging from 1 to 3 (2004-2006).

As such the hypothesis formulated above are tested by including one dummy sector variable (SEC)[2], two time dummy variables (*D-2005* and *D-2006*[3]) for 2005 and 2006 years (2004 is considered as a reference year) and the logarithm of dividend payout, retained earnings, one-year lagged dividend payout and one-year lagged retained earnings. These dummy variables will capture the firm type (industry) and time specific-effects of the omitted as well as the included variables respectively. It is expected to have a heteroscedasticity problem in our sample which is likely to occur in pooled data analysis. Yet, our sample data didn't show heteroscedasticity problem. But there was a moderate first-order autocorrelation problem. To overcome this problem we applied Prais-Winsten autoregression estimation technique.

[2] This dummy variable is coded as 1 for industry and 0 for service sector.

[3] Time dummy variables are coded as 1 for relevant year and 0 for otherwise.

Autocorrelation is a correlation between successive values of the same variables. In such cases, if the ordinary least squares technique is used, the estimated standard errors of the regression will be biased downward and incorrect conclusions can be derived as to the significance of variables. Autoregression technique is an alternative to ordinary least-squares regression analysis in the presence of autocorrelation. One of the assumptions of ordinary least-squares regression is the absence of autocorrelation in residuals. In the presence of autocorrelation problem, the least squares regression gives inaccurate estimates. Autoregression procedures accounts for first-order autocorrelated residuals and provides reliable estimates of both goodness-of-fit measures and significance levels of chosen exploratory variables. Prais-Winsten autoregression technique is for estimating regression coefficients whose errors follow a first-order autoregressive process. It cannot be used when a series contains embedded missing values. Generally, the Prais-Winsten technique is preferable to the Cochrane-Orcutt technique (SPSS Inc., 1999).

4. Results and Discussions

Table 2 presents the descriptive statistics of the variables used in this study. Firms operates in service sector had a higher price of equity level (9.33) than firms that operates in industry firms (8.35). Note that, initially, this fact is consistent with our empirical hypothesis H1. On the other hand, industry firms had much higher dividend payout (0.39) and one-year lagged dividend payout (0.29) opportunities than service firms (0.32 and 0.23 respectively). Both service and industry firms had equal retained earnings levels (0.41) in 2004-2006 period. The distribution of pooled and industry data show more asymmetric and leptokurtic distribution than service data. The skewness and kurtosis coefficient for pooled and industry data is much greater than 2 and 7 respectively. After taking the logarithm of data, then all variables approximately normally distributed (the skewness and kurtosis coefficients are less than 1.98 and 5.58 respectively). In

terms of price of equity (*PE*), ranging from a 1.03 minimum value to a 35.43 maximum value for service sector, from 0.36 to 94.71 for industry sector. The descriptive statistics in Table 2 certainly show that industry and service firms had similar dividend characteristics.

To examine the possible degree of multicolinearity and importance among exploratory variables, it is obtained the correlation matrix of dependent and independent variables that is presented in Table 3. As it is observed in Table 3, the correlations are not sufficiently large to cause strong multicolinearity problem in regression analysis, except the correlation between *L-DIVP* and *DIVP* (86.7%) variables.

Table 2: Descriptive Statistics of Financial Variables

	Variable	n	Min.	Max.	Mean	CV[4]	Median	Skewness	Kurtosis
Service	*PE*	50	1.03	35.43	9.33	102.89	5.95	1.40	0.81
	DIVP	50	0.00	2.09	0.32	171.88	0.04	2.04	3.60
	RE	50	0.00	2.38	0.41	139.02	0.16	1.83	2.80
	L-DIVP	50	0.00	2.09	0.23	200.00	0.00	2.72	7.83
	L-RE	50	0.00	2.49	0.47	131.91	0.27	1.83	2.93
Industry	*PE*	134	0.36	94.71	8.35	181.32	3.67	3.93	16.31
	DIVP	134	0.00	5.74	0.39	197.44	0.09	3.60	17.95
	RE	134	0.00	4.33	0.41	187.80	0.16	3.28	11.61
	L-DIVP	134	0.00	2.45	0.29	193.10	0.03	2.36	4.88
	L-RE	134	0.00	4.33	0.37	200.00	0.14	3.75	15.03
Pooled	*PE*	184	0.36	94.71	8.61	160.74	3.72	3.82	16.85
	DIVP	184	0.00	5.74	0.37	194.59	0.07	3.52	18.07
	RE	184	0.00	4.33	0.41	175.61	0.16	3.14	11.31
	L-DIVP	184	0.00	2.45	0.28	189.29	0.02	2.44	5.43
	L-RE	184	0.00	4.33	0.40	177.50	0.15	3.38	12.92

Table 3: Correlation Matrix

Variable	Ln(*PE*)	Ln(*DIVP*)	Ln(*RE*)	Ln(*L-DIVP*)
Ln(*PE*)	1.000			
Ln(*DIVP*)	0.769	1.000		
Ln(*RE*)	0.745	0.530	1.000	
Ln(*L-DIVP*)	0.713	0.867	0.508	1.000
Ln(*L-RE*)	0.680	0.571	0.666	0.541

A general look at Table 3 illustrates that all correlations between variables are highly significant from a statistical viewpoint.

[4] CV stands for initial letter of Coefficient of Variation

Table 4: Regression Results for Full Model (Model-1)

Variable	Coefficient	Standard Error	*p*-value	Standardized Coefficient	VIF
Constant	1.289	0.095	0.000		
D-SEC	-0.274	0.096	0.005	-0.114	1.031
D-2005	0.111	0.062	0.075	0.085	1.432
D-2006	0.189	0.064	0.003	0.146	1.479
Ln(*DIVP*)	1.083	0.159	0.000	0.453	4.516
Ln(*RE*)	0.837	0.113	0.000	0.356	1.945
Ln(L-DIVP)	0.196	0.186	0.294	0.072	4.511
Ln(*L-RE*)	0.294	0.120	0.015	0.126	2.134
Adj. R-SQR	%71.2	F (p-value)	0.000	Std. Error of Estimate	0.393
Leven Test (*p*-value)[5]	0.505	Durbin-Watson	1.970	Sample Size (n)	184

Note: Prais-Winsten Estimation Method is used.

As it can be seen in Table 4, the regression coefficients of the dummy sector variable (*D-SEC*) are statistically significant in any three models at 10% significant level, and are also negative, similar to the expected negative relationship in the H1 hypothesis. The negative coefficient estimates for the *D-SEC* variables indicate that industry firms had a lower price of equity opportunities than service firms in the given period. The estimated regression coefficients for three models are -0.274, -0.293 and -0.243 respectively. These results provide strong support for H1 hypothesis.

Table 5: Regression Results without Lagged Variables (Model-2)

Variable	Coefficient	Standard Error	*p*-value	Standardized Coefficient	VIF
Constant	1.326	0.092	0.000		
D-SEC	-0.293	0.096	0.003	-0.123	1.004
D-2005	0.115	0.061	0.062	0.087	1.340
D-2006	0.190	0.061	0.002	0.146	1.346
Ln(*DIVP*)	1.320	0.108	0.000	0.551	1.397
Ln(*RE*)	0.962	0.106	0.000	0.409	1.402
Adj. R-SQR	%70.3	F (p-value)	0.000	Std. Error of Estimate	0.400
Leven Test (*p*-value)	0.392	Durbin-Watson	1.973	Sample Size (n)	184

Note: Prais-Winsten Estimation Method is used.

The next two hypotheses, H2 and H3, for the other two time dummy variables (*D-2005 and D-2006*) propose a positive relationship between price of equity and future growth opportunities. These results are expected, because Turkish economy has growth continuously in 2004-2006 periods. *D-2005 and*

[5] It stands for the significant level of Leven's test for equality of error variance.

D-2006 variables are statistically significant at 10% level, except *D-2005* in Model 3. To put in a different way, for Model 3, both service and industry firms in ISE had a 5.5% in 2005 and 15.7% in 2006 a higher price of equity based on 2004 (TUİK, 2008). The estimated cumulative *PE* growth rates for Model 1 and Model 2 are 0.111 (0.189 for 2006) and 0.115 (0.190 for 2006) respectively. The positive coefficients of the time dummy variables are consisted with the growth theory and these results show strong support for H2 and H3 hypothesis.

Our models also provides strong support for H4, H5, H6 and H7 concerning the relationship between dividend payout (and one-year lagged dividend payout) and retained earnings (and one-year lagged retained earnings) with price of equity levels. These variables are highly significantly different from zero at 10% level of significance in statistical viewpoint. These results point out that a high payout (or one-year lagged payout) and retained (or one-year lagged retained) earning levels are associated with a higher price of equity opportunities. These results are consistent with finance theory. Therefore, H4, H5, H6 and H7 are accepted. As it is expected that dividend payout is the most important variable for explaining the price of equity of the firms.

Table 6: Regression Results with Lagged Variables (Model-3)

Variable	Coefficient	Standard Error	*p*-value	Standardized Coefficient	VIF
Constant	1.442	0.122	0.000		
D-SEC	-0.243	1.126	0.057	-0.099	1.029
D-2005	0.055	0.077	0.477	0.043	1.394
D-2006	0.157	0.078	0.047	0.124	1.409
Ln(*L-DIVP*)	1.301	0.169	0.000	0.478	1.528
Ln(*L-RE*)	0.774	0.139	0.000	0.334	1.484
Adj. R-SQR	%52.2	F (p-value)	0.000	Std. Error of Estimate	0.501
Leven Test (*p*-value)	0.549	Durbin-Watson	1.943	Sample Size (n)	184

Note: Prais-Winsten Estimation Method is used.

Standardized regression coefficients are normally used for assessing the relative importance of exploratory variables. The greater standardized coefficient is the greater relative importance of a given variable and vice versa. Therefore, it is appeared that *Ln(DIVP)* and *Ln(L-DIVP)* (for Model 3) are relatively more

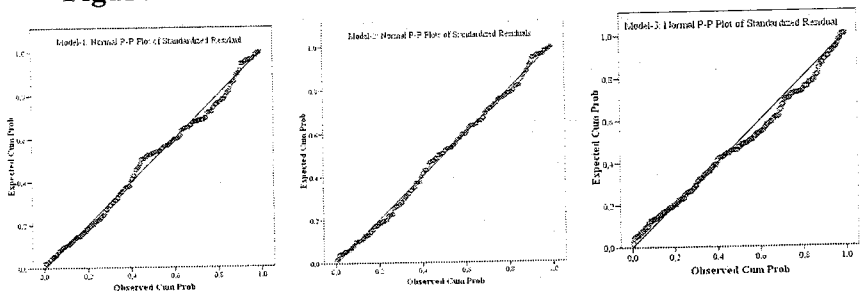
important than other variables in explaining regression functions. The standardized regression coefficient for *Ln(DIVP)* and *Ln(L-DIVP)* are 0.453, 0.551 for Model 1 and Model 2 and 0.478 for Model 3 (the one-year lagged). The coefficient of *Ln(L-DIVP)* is not statistically different from zero at 10% level of significance in Model 1, due to multicolinearity problem. Table 3 gives the correlation matrix among dependent and independent variables. It is clear from the table that the correlation among independent variables is substantial. The correlation between *Ln(DIVP)* and *Ln(L-DIVP)* is 0.867, suggesting that one of two variables is redundant. Consequently, it may not necessary to include both variables in regression model. This does not imply that just because *Ln(L-DIVP)* is not included in the regression model it is not an important variables. All that is being implied is that one of them is redundant. As it can be seen from Model 3, *Ln(L-DIVP)* is an important potential variable to explain *Ln(PE)*.

The three regression models were statistically significant as presented in Table 4-Table 6. Although the models were significant, the explanatory power of the third model (Table 6) was not satisfactorily high as Model 1 and Model 2. The adjusted *R*-Square values for Model 1, Model 2 and Model 3 are %71.2, %70.3 and %52.2 respectively. This signified that, especially for Model 3, the independent variables might be of limited value in predicting the exact price of equity level of service and industry firms. Thus, it is difficult to consider third regression model as a good predictive model. However, since the model was designed to explore the relationship to its determinants, not to predict price of equity levels, moderate *R*-square should not be a critical issue in this study.

There is no first order autocorrelation problem in all models, the Durbin-Watson statistics are 1.970, 1.973 and 1.943 correspondingly. Multicolinearity tests were also conducted with variance inflation factors (VIF), and the VIF values were well below the problematic level of 10 (Gujarati, 1995). There is no heteroscedasticity problem in the data used. Constant variance test are realized

with Leven's test of equality of error variances. The significant levels of the Leven's test statistics for the three models are 0.505, 0.392, and 0.549 respectively.

Figure 1: Normal P-P Plots of Standardized Residuals



For model adequacy the normal probability plots for three regression models are given in Figure 1. If the residuals are from normal distributions, the plotted values should fall roughly along the line. This is true for most of the values of all models, especially for Model 2.

5. Conclusion

This study has investigated the relationship between the price of equity and dividend payouts, retained earnings on a sample of firms operate in ISE over the period of 2004-2006 using accurate regression technique. Furthermore, one sector and two time dummy variables were used in regression models. The dummy variables captured the firm type (sector) and time specific effects of the omitted as well as the included variables. We tested hypotheses discussed in prior research and finance theory in the context of the firms that operate in industry and service sectors of ISE. We investigate whether this typical pattern also holds in ISE industry and service sectors. The results of this study provide strong support for all hypotheses as stated by finance theory.

It is really abnormal to expect simultaneously from companies that distribution of high rate of dividend payout and higher rate of growth. Modified divi-

dend payout policy by financial managements should be stable that satisfies investors along with not to block promotion of firm and let firm to catch opportunities for growth. Accordingly, since retained earnings are vital for both utilizing investment facilities and the least cost of capital for companies, then firms will have more opportunities for growing.

However, most of the investors expect dividend payout either for signaling of the firms or bird in hand theory. Residual dividend theory and tax differential theory is also widely accepted by researchers and investors. Results of our study advocate both these theories, in other words, dividend payout and retained earnings have positive effect on stock value. The lagged dividend payout and retained earnings are also the important determinants of equity price, most probably because of compulsory reserve fund system in Turkey.

These two determinants of equity price are almost equally important, but dividend payout is more important determinant of equity price than retained earnings. It can be said that dividend payout is more worthy by stock investors. At the other side of coin as stated by the managers of the firms, firms that will not pay dividend may be punished by investors via not buying stocks. As a result, dividend policy of a firm must be delicately balanced not only for satisfaction of investors by dividend payout, but also for caching growth opportunities of the firm by retaining earnings.

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