CHAPTER 4: RESEARCH RESULTS

Chapter 3 had established five research hypotheses derived from theoretical and empirical studies and presented a detailed description of the data used in this study. The sample consists of 263 public listed companies in Malaysia over 5 years, from 2005 to 2009. A time series and cross-section panel data was constructed. This Chapter will present the data analysis and results. The descriptive statistics for all variables in the study will presented in the next section, followed by some diagnostic tests, and finally, the regression model for the determinants of the dividend payment.

4.1 Summary Statistics

Table 4.1 presents the summary of descriptive statistics for all variables. This table reports the mean, standard deviation, maximum, minimum and the number of observations for each of the variables.

Table 4. 1

Descriptive Statistics for Dependent and Independent Variables

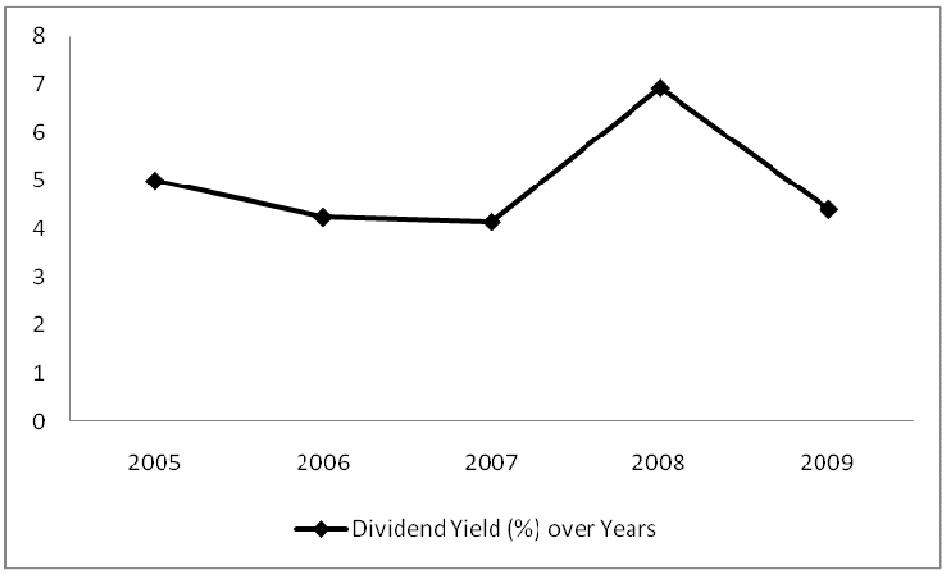
Variables	Proxy	Mean	Median	Stdev.	Min	Max	Obs.
Dividend	DVYLD	4.95	4.37	3.59	0.001	41.86	1305
Agency Cost	FCF	35.31	6.09	250.7	-3014.6	4494.80	1307
Size	MCP	19.16	18.78	1.60	16.24	24.57	1314
Profitability	EPS	0.15	0.09	0.28	-1.23	2.84	1315
Leverage	DER	45.82	30.29	48.12	0.00	247.04	1312
Growth	MBR	1.34	0.78	2.37	0.07	34.04	1314

The mean and median in the table above were computed to find the central tendency of each variable for the 263 firms in the sample. The standard deviation indicates the sample's dispersion level of the variables. According to the above table, the average dividend yield is 4.95% which means that about 5% of the share price of the public listed companies in Malaysia was paid as dividends to the shareholders during 2005-2009.

The figure 4.1 represents the average dividend yield over the five years. It had a decreasing trend from 2005 to 2007, but it increased gradually and reached the highest level 6.9% in 2008.

Figure 4.1

Average of Dividend Yield (%) over 5 over years



The average amount of free cash flow (as a measure for agency costs) is 35.3 million Ringgit (median is 6.0), which indicates that most of the firms in the sample had a high level of free cash flow.

The average debt to equity ratio is almost 46 % (median 30.3%) in public listed companies in Malaysia over 2005-2009. According to a study done by Nam (2004), after economic crisis ends in 2000, the Code of Corporate Governance was implemented in Malaysia. Thus, debt to equity ratio for Malaysian companies expected to decrease compared to previous years; since shareholders became aware about the risk of debt (Devi, 1998).

The mean for growth opportunity measured by the market to book value is 1.34%. Based on a previous study done in Malaysia, the average for growth opportunities for public listed companies was 1.1% for the 2002-2005 (Few, Mutalip, Lukman, Shahrin, & Othman, 2007). The results indicate that Malaysian firms have had higher growth opportunities since that time.

4.2 Analyses of Measures

4.2.1 Multicollinearity

Table 4.2 presents the correlation matrix and VIF (variance inflation factor) for all the independent and dependent variables used in the analysis.

According to the results, there is no multicollinearity among the variables since the inter-correlations among the explanatory variables are low. To check further, another diagnostic test for multicollinearity is used, with the variance inflation factor (VIF) calculated for independent variables as follows:

VIF (B_i) = 1/ (1-R^2), where R^2 is the squared multiple correlation coefficient between X_i and the other independent variables. When R^2 is equal to zero, then

VIF has its minimum value of one (Maddala, 2001). Therefore the closer the value of VIF to one, the degree of multicollinearity is lower. If one of the VIFs is greater than 10, then the multicollinearity is a problem (Gujarati, 1995).

Based on the results in table 4.2, the VIF values are much lower than 10. With an average value of 1.3, the multicollinearity does not exist among the independent variables.

Table 4. 2

Correlation Matrix and Variance Inflation Factors

	Dividend Yield	Agency Cost	Size	Profitability	Financial Leverage	Growth
Dividend Yield (DVYLD)	1.000 -----					
Agency Cost (FCF)	0.111 0.000	1.000 -----				
Size (MCP)	0.123 0.000	0.329 0.000	1.000 -----			
Profitability (EPS)	0.043 0.115	0.276 0.000	0.449 0.000	1.000 -----		
Financial Leverage (DER)	-0.089 0.001	-0.018 0.505	0.113 0.000	0.006 0.816	1.000 -----	
Growth (MBR)	-0.030 0.265	0.240 0.000	0.415 0.000	0.506 0.000	0.112 0.000	1.000 -----
VIF		1.157	1.415	1.512	1.029	1.448

The present study used panel data analysis technique because the panel data allows for the control of individual heterogeneity. This heterogeneous cannot be controlled by time series and cross section analysis; hence, the results could be biased. Both the fixed effects model and the random effects model can be run in a panel data analysis (Baltagi, 1995). To determine which of these regressions

should be used in this study, two tests can be performed, as explained in the following sections.

4.2.2 Redundant Fixed Effects Test

The first test is the redundant fixed effects; which provided by EViews and test the significant of effects. Null hypothesis in this test is the effects are redundant.

To examine the significance of effects first the unrestricted model which includes all the effects is estimated (The results of this model is reported in appendix B). Then, the redundant fixed effects likelihood ratio is preformed. EViews estimates three restricted specifications i.e. with period fixed effects only, only with cross-section fixed effects and one with all the effects.

Table 4.3 consists of three sets of tests: the significance of the cross section effects, period effects only and the remaining is the significance of all the effects. According to the results, the sum of squares (F-test) and likelihood ratio (chi square test) and p-value (prob.) strongly reject the null hypothesis. In other words, all the results indicate that the effects are statistically significant.

Table 4. 3

Redundant Fixed Effects Tests

Effects Test	Statistic	d.f.	Prob.
Cross-section F	3.963810	(262,1021)	0.0000
Cross-section Chi-square	907.284558	262	0.0000
Period F	27.152951	(4,1021)	0.0000
Period Chi-square	130.711308	4	0.0000
Cross-Section/Period F	4.577635	(266,1021)	0.0000
Cross-Section/Period Chi-square	1015.122557	266	0.0000

4.2.3 The Hausman Test

As explained earlier, the analysis can be performed in fixed effects or random effects model. To choose between these two regressions models, Hausman test can be run to examine whether the difference between the random effects regression and the fixed effects regression is zero. In other words, H_0: random effect is preferred. Based on the present analysis, H_0 was strongly rejected (p-value= 0.000) which means that the fixed effects model was preferred.

Table 4. 4

Correlated Random Effects – The Hausman Test

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	P-value.
Cross-section random	117.330016	5	0.0000

4.3 Testing of Hypotheses

This section reports the results of the regression analysis. Table 4.5 includes an analysis of the dividend yield against the other independent variables.

Table 4. 5

Regression model results

Variable	Proxy	Coefficient	Std. Error	t-Statistic	Prob.
C		46.05417	1.887850	24.39504	0.0000
Agency Cost	**FCF**	0.000202	0.000242	0.833575	0.4047
Size	**MCP**	2.134652	0.100213	21.30111	0.0000
Profitability	**EPS**	0.669886	0.173610	3.858561	0.0001
Leverage	**DER**	-0.003411	0.001420	-2.401569	0.0165
Growth	**MBR**	-0.078827	0.051128	-1.541778	0.1234

Effects Specification			
Cross-section fixed (dummy variables) Period fixed (dummy variables)			
R-squared	0.853879	**Mean dependent var**	10.06622
Adjusted R-squared	0.815816	**S.D. dependent var**	8.829491
S.E. of regression	2.782380	**Sum squared resid**	7935.180
F-statistic	22.43337	**Durbin-Watson stat**	2.349331
Prob(F-statistic)	0.000000		

According to the results reported in table 4.5, it is concluded that the regression model fits the data and the whole model is statistically significant (R^2=0.85, P-value=0.00). As shown in the above table, adjusted R^2 is 0.815 which means about 82% of dividend yield variation is explained by independent variables in the model. In other words, in Malaysian public listed companies, dividend yield is affected by independent variables in the model.

4.3.1 Agency Costs

As explained in the previous chapters, the free cash flow is used to measure the agency cost. Based on the results in table 4.5, the free cash flow has a positive coefficient but it is not statistically significant, which means the free cash flow does not appear to influence dividend payments in Malaysia.

This result is inconsistent with the hypothesis that firms with higher level of free cash flow have higher agency costs and as a result, higher dividend payments are needed to decrease the agency costs. This inconsistency with the previous studies can be related to the proxy that was used in the present study for agency costs. The most common proxies for agency costs are insider ownership and

dispersion of ownership. But data was not available for public listed companies in Malaysia during the period of this study; thus the free cash flow was inevitably used to measure the agency cost.

4.3.2 Size

Another variable used as a determinant of dividend payments in Malaysia is firm size. The results indicate that the coefficient on size which was measured by the natural logarithm of market capitalization is positively correlated to dividend yield as previously expected. This means that the larger the firm, the higher is the dividend payments, since larger firms have an easier access to the capital market and are therefore less dependent on internal funds compared to the small companies.

This result is consistent with the findings of Almalkawi (2008), Fama and French (2001) and Reeding (1997) who conclude that large firms are likely to pay dividends.

4.3.3 Financial Leverage

In the earlier chapters, a negative relationship between the financial leverage of the firm and dividend payments was predicted. Based on the results reported in table 4.5, the coefficient on debt to equity ratio is negative and statistically significant at 5%. In other words, with the higher level of debt, the Malaysian public listed firms tended to pay lower dividends to shareholders during 2005-2009. Regarding the emerging markets, Aivazian et al. (2003) found evidence that is consistent with this result.

As stated in the earlier chapters, when firms obtain debt, they have to pay a fixed amount to creditors. This fix commitment reduces the available funds for the managers; hence, the highly levered firms are willing to pay lower dividends.

4.3.4 Profitability

The estimation of earnings per share as a measure of profitability is positive and statistically significant at the 1% level. This result indicates that profitability of the firm was a crucial factor for dividend payments by Malaysian companies during 2005-2009. The positive relationship of profitability and dividend yield is accepted in several previous studies. These results are consistent with the earlier researches. Lintner (1956) concluded that net earnings are the key determinants of changes in dividends while Aivazian et al. (2003) confirmed that profitability affects dividend payouts in emerging markets, including Malaysia. Additionally the significant positive relationship between dividend yield and profitability is supported by the pecking order theory.

4.3.5 Growth Opportunities

The last hypothesis predicted the negative relationship between the dividend payouts and growth opportunities. Market to book value is used as a proxy for growth and investment opportunities. Based on results in table 4.5, the coefficient of market to book value is negative but statistically insignificant. The result shows that market to book value ratio does not affect the dividend yield. In Malaysia, the public listed companies pay dividend without considering their growth opportunities.

4.4 Summary of Research Results

This chapter has examined the main determinant of corporate dividend policy in Malaysia. In the first step, a time series and cross section (TSCS) panel data has been prepared with included the 1315 firm-year observation. The important descriptive statistics of dividend yield and other variables are provided in table 4.1. After testing the multicollinearity, the results showed that there is no multicollinearity problem among the independent variables. Then two other tests were to choose between the fixed and random effects. Both the redundant fixed effects test and the Hausman test indicated that the fixed effects model is preferred.

The regression analysis was used to test the hypotheses of the study. According to the results, among the five independent variables, only size, profitability and financial leverage had significantly influenced the dividend yield of Malaysian public listed companies in 2005-2009.

In Malaysia, it was found that a firm's size (measured by the natural logarithm of market capitalization) and profitability (earnings per share as a proxy for profitability) positively and significantly affect its dividend policy. These results are consistent with the pecking order theory. As expected, financial leverage (debt to equity ratio) of a company is negatively related to the dividend payments. Agency cost (measured by free cash flow) and growth opportunities (measured by market to book value) are not statistically significant, hence, they do not influence the dividend payments of Malaysian companies.