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Dynamics of Dividend Policy in Korea

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Abstract

The purpose of this study is to investigate the dynamic dividend policy of the firms in Korea. In particular, this study empirically tests whether Korean firms follow stable dividend policies as in developed markets where dividend smoothing is a stylized fact. The paper also identifies firm-level factors that influence the degree of dividend smoothing. For this purpose, 299 firms listed on Korea Stock Exchange over a twenty six-year period from 1981 to 2006 were investigated.

The empirical results show that Korean firms make dividend payment based on the stock's face value, which is very closely related to the average interest rate during the sample period. A change in dividend payments is less likely to reflect a change in the fundamentals of the companies. Instead, changes in the annual dividend payments are closely related to the interest rate of one-year time deposit. For the degree of dividend smoothing, the study finds that the majority of Korean firms pay smoothed dividends. However, the speed of adjustment to the target payout ratio is faster than that of the developed market. In addition, the results show that the long–term target ratio is significantly lower than the observed payout ratio. Dynamic dividend behavior in Korea is less explained by the Lintner model.

For the determinants of dividend smoothing, company risk, size, and growth factors play important roles in explaining the cross-section of dividend smoothing behaviour. But the relationship between these explanatory variables and the degree of dividend smoothing is systematically different between US and Korean firms. Growth is positively related to the degree of dividend smoothing as suggested by the previous studies. However, contrary to the theoretical predictions, empirical results show that the larger and older firms are more likely to smooth dividends in Korea. Leverage and controlling shareholder's ownership have insignificant effects on dividend smoothing. The results suggest that information and agency theories do not explain the dynamic dividend policy of Korean firms. Instead, the study finds that riskier firms tend to pay more smoothed dividends, supporting the prediction made by Kumar (1988). The results also show that there is a systematic difference in the degree of dividend smoothing between different types of ownership structure. The results suggest that ownership structure of the firm may play an important role in deciding the firm's dynamic dividend policy.

I. Introduction

One of the well-known dividend behaviors is the smoothing of firm's dividends relative to earnings. In his seminal paper, Lintner (1956) finds that firms in the US adjust their dividends smoothly to maintain a target long-run payout ratio. Lintner's finding of dividend smoothing has been confirmed by numerous studies since its publication. While dividend smoothing is a well known empirical fact, the empirical evidence is mainly based on the US market. Dividend policies of corporations are significantly different across countries because of the various institutional and financial market differences.[1]

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The purpose of this study is to investigate the dividend policy of firms in Korea. The focus is to investigate how Korean firms set their dynamic dividend policies in a different institutional environment than that of the developed market like the US. In particular, this study empirically tests whether Korean firms follow stable dividend policies as in developed markets where dividend smoothing is a stylized fact. The paper also identifies firm-level factors that influence the degree of dividend smoothing. The paper highlights the importance of institutional features to dividend policy and points to the advantages of studying dividend policy in different institutional environments. The results of this study provide useful insight into the role of institutional factors in creating dividend policy at the firm level.

Korea presents several interesting features for examining dynamic dividend policy. Firstly, Korea has been one of the most successful and fastest growing economies in the world since the

[1] Aivazian (2003) finds that empirical dividend policy equations of emerging market firms are structurally different from those of US firms .

1960s. The economic growth and transformation of the Korean economy has been identified by various researches.[2] From being a poverty stricken and economically backward country in 1962 with a GDP per capita of only US$82, it exceeded US$20,000 in 2007. Korea becomes one of the world's top 10 exporters, having the sixth largest foreign exchange reserves in the world. The Korean economy is currently the third largest in Asia and the 12th largest in the world.[3] This fast growing economy may have had significant effects on the firm's dynamic dividend policy. Many empirical researches document that firms are likely to pay stable dividend during the high growth period. Therefore, it will be interesting to find out how dynamic dividend policy is determined in a rapidly growing economy like Korea.

Secondly, the Korean ownership structure is often characterized by the dominance of one primary owner who manages a large number of affiliated companies with just a small amount of shares. Through a unique ownership structure called circular cross investments (i.e., the pyramid ownership control structure as well as cross-shareholding among subsidiaries), the owner is able to exercise ownership rights to control many companies in different industries. Consequently, there is a possibility of agency problem where controlling shareholders expropriate value from minority shareholders and influence dividend policy.

Thirdly, Korea has a different tax environment than the US. There is no capital gain tax on listed stocks in Korea while 16.5% of tax is applied to the dividend income. There is a possibility that difference in tax system may influence the degree of dividend smoothing in Korea since this unfavorable tax treatment of dividend income is more serious than the US.[4]

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[2] See Harvie and Lee (2002).
[3] On a PPP basis, see Wikipedia, 2008.
[4]This is for most investors who own less than 3 percent of total shares or market value of less than 10 billion won. As for majority (controlling) shareholders, if stocks are held for less than one year, a 30 percent capital gains tax rate is

Fourthly, Korea has experienced several capital market reforms to ensure a market mechanism based economy. From the early 1980s, the Korean government has implemented a wide range of deregulation policies to promote competition, liberalization and internationalization in the financial market. The issue of deregulation still remains a high priority for the government. For instance, the Korean government allowed foreign participation in the Korean stock market in 1992 with 10% ceiling. The pace of deregulation of the market was accelerated during 1996 and 1997 when the Korean economy was under a foreign currency crisis leading to the elimination of the ceiling regulation in May 1998. In addition, the capital market in Korea is growing very quickly. At the end of 2006, the Korea Exchange (KRX) was ranked 15th in terms of market capitalization and 9th in terms of trading value among the member exchanges of the World Exchange Federation.

Finally, unlike the US stocks, Korean stocks have a face value which plays an important role in deciding a firm's dividend policy. The Capital Market Promotion Acts of 1968 made it mandatory for listed corporations to pay annual dividends divided by its face value at a level equal to the interest rate on one-year time deposits.[5] Though this policy is not enforced, it is customary for most listed companies to set a dividend policy based on the face value of stock. Firms tend to pay annual dividends as a percentage of face value close to the one-year time deposit interest rate. A change in dividend payments is less likely to reflect a change in the fundamentals of companies as the signaling theory of dividend suggests. Instead, changes in the annual dividend payments are closely related to the interest rate of one-year time deposits rather than reflecting the future prospects of the firm. In fact, many investors in Korea still disregard

levied; otherwise, 20 percent is applied.

[5] This custom exists until 2003 when KRX mandates firms to announce dividend payment based on the market value by changing its corporate information disclosure system. For exchange listed firms, face value of stock is usually 5,000 KRW. For KOSDAQ listed firms, face value of stock is usually 500 KRW. In most cases, market price is significantly different from face value.

dividends and consider stock price appreciation as the major component of stock returns. It is assumed that the Korean investor's attitude towards dividends is expected to have an impact on the way firms set their dividend policy.

This paper contributes to the relatively limited literature on the determinants of dynamic dividend policy behavior in Korea. The diversity of dividend policies chosen by firms tends to indicate that the dividend smoothing decision is considerably more important for some firms than others. The existing dividend smoothing literature is extensive and well-known, yet there are few empirical investigations of the important question of why there are differences in dividend smoothing patterns amongst firms. In this paper, we explore how dividend smoothing differs across firms and empirically examines the factors that help to explain measured differences in the extent to which firms smooth their dividends.

A number of firm-specific factors play an important role in dividend signalling and agency cost explanations of dividend smoothing, thus implying that the absence of these factors in some firms and their strong presence in others could empirically explain cross-sectional differences in firms' dividend smoothing behaviour. Empirical studies of dividend behaviour tend to support the dividend smoothing theory, but have not focused on this paper's goal of using theoretical hypothesis concerning firm-specific factors to explain cross-sectional differences in firms' dividend smoothing behaviour.

The empirical results show that the majority of Korean firms pay smoothed dividends. However, the speed of adjustment to the target payout ratio is faster in Korea than those of developed markets such as the US and many European markets. The results imply that Korean

firms pay less smoothed dividend. Theoretical models of dividends based on company risk, size, and growth factors play important roles in the empirical explanation of the cross-section of dividend smoothing behaviour, but the relationship between these explanatory variables and the degree of dividend smoothing is systematically different between US and Korean firms.

Section II discusses the related studies. Section III introduces Lintner's measures of dividend smoothing. Theoretical considerations which might have an influence on dividend smoothing decisions are then introduced in order to explain differences in firms' dividend smoothing choices. The fourth section provides cross-sectional test results for theoretical explanations of differences in firms' dividend smoothing behaviour. This is followed by a concluding section highlighting and interpreting factors that are found to have an important influence on dividend smoothing choices.

II. Related Studies

The dividend smoothing literature has its roots in Lintner (1956). Numerous subsequent studies have shown the presence of dividend smoothing at the individual firm level and at the aggregate, economy-wide level (Fama and Babiak (1968); Laub (1972); Lee, Djarraya and Wu (1987); Marsh and Merton (1987); Garrett and Priestley (2000); Kumar and Lee (2001); Allen and Michaely (2003); Brav et. al. (2005)). There have been several studies in the attempt to offer an explanation as to why firms pay smoothed dividends. John and William's (1985) signalling explanation of dividend smoothing provided an important theoretical development of the dividend smoothing hypothesis. They showed that, in equilibrium, the optimal dividend policy was to pay smoothed dividends relative to stock prices. Their model implies that a

higher degree of information asymmetry lead to a higher degree of dividend smoothing. John and Nachman (1987) also developed a model to explain multi-period financing and dividend strategies. In their model, the optimal dividend payout depended on two factors. The first factor was the "current liquidation value" which is the total current market value of the firm being liquidated at the market. The second factor was the "relative value"; which is the ratio of true value of the signaling firm to that of the lowest value firm. They showed that the optimal dividend payment was an increasing function of the second factor and a decreasing function of the first factor. Therefore, the above two components offset each other and consequently keep the inter-temporal dividend series relatively stable. A different approach to the investigation of dividend smoothing was developed by Kumar (1988). In Kumar's (1988) model, there is a partial pooling of various firm types, and no separating equilibria exist. There is an equilibrium set of ranges of firm value and insiders who can credibly announce the exclusive ranges of the firm's true value through the specific dividend payment. In Kumar's signaling equilibrium, a unique level of dividends is associated with each distinct range of firm values. A firm announcing a level of dividend which is different from a certain range is regarded by the market as having a value in the lowest range. Unlike the dividend smoothing of John and Williams (1985), Kumar's dividend smoothing is represented by a step function of earnings, indicating that dividends are a discrete process. By performing comparative statistics, he predicted that risky firms would tend to smooth dividends more. Rozycki (1997) also demonstrated that the personal income tax provided managers with a motivation to smooth the dividend payments. He found that dividend smoothing had increased the wealth for a tax-paying investor by reducing the present value of the investor’s future expected income tax liabilities. He also showed that smoothing the dividend stream was more important to firms that have volatile earnings. Michaely and Roberts (2006) conjectured that ownership structure could play

an important role in dividend smoothing. According to the study, firms with a higher level of large shareholder's ownership are less likely to smooth dividends relative to earnings since they are less related to agency issues and asymmetric information.[6]

This paper utilizes factors that are either directly or indirectly suggested by these models and other factors that play an important role in agency cost and signalling theory models in order to empirically explain differences in firms' dividend smoothing behaviour.

III. Determinants of Dividend Smoothing

1. Measures of dividend smoothing

We measured the degree of dividend smoothing by using Lintner's partial adjustment model. Lintner (1956) modelled the change in corporation i's time t dividend per share, $\Delta D_{i,t}$, as varying proportionately with a speed of adjustment factor c_i times the amount by which last period's dividend is exceeded by the current desired payout (the desired payout ratio r_i times earnings per share $EPS_{i,t}$):

$$\Delta D_{i,t} = a_i + c_i\left(r_i EPS_{i,t} - D_{i,t-1}\right) + u_{i,t}$$

Or

$$\Delta D_{i,t} = a_i + b_{i,1} EPS_{i,t} + b_{i,2} D_{i,t-1} + u_{i,t} \qquad (1)$$

[6]. Empirical evidence suggests that management's reluctance to cut dividends is partly driven by investors' reactions to such announcements (i.e., Michaely, Thaler and Womack (1995), Grullon, Michaely, and Swaminathan (2002)). In addition, Brav et al. (2005) report that firms with high owner's concentration are more likely to pay dividends in response to temporary changes in earnings.

where a_i is a constant, $u_{i,t}$ is a normally distributed random error term, $b_{i,1}=c_i r_i$, *and* $b_{i,2}=-c_i$. Lintner (1956) tested a rearranged version of equation (1) on a sample of 26 firms using annual data for the time period from 1918 to 1941, and found that the model explained 85% of the variation in dividends. He found that the speed of adjustment averaged 30% per year, and the target payout ratio averaged 50% of earnings. Using a similar model, Fama and Babiak (1968) examined data for two samples of 201 and 191 U.S. firms over the 1947 to 1964 period. Their results showed a slightly higher speed of adjustment of 36.6%. The Lintner model of dividend smoothing with a slow adjustment to an equilibrium rate is still widely regarded as the standard model of dividend policy. A speed of adjustment parameter c_i close to 1 indicates no proportionate smoothing of dividends relative to percentage changes in earnings, whereas very low speed of adjustment parameter values indicate that dividends move independently of earnings.

2. Firm characteristics and dividend smoothing

Theory suggests a number of factors that are potentially relevant to empirical explanations of measured differences in dividend smoothing behavior.

a) Information Environment

Dividend signaling theory indicates that in the presence of asymmetric information, a firm's dividend policy can help to credibly convey information held by insiders concerning the firm's future prospects. The John and Williams (1985) model suggests that a firm's information environment is related to the extent to which dividends are smoothed relative to earnings. The John and Nachman (1987) model further implies that large fluctuations in a firm's quality attribute (true value) are more likely to lead to a higher level of dividend smoothing. For describing a firm's informational environments, listing years can be used as a good proxy. A firm with an older history on an organized stock exchange is expected to produce more public information to the general market investor. So the problem of information asymmetry will be less serious for a firm with a longer listing year. Therefore, it will be less likely to pay smoothed dividend. Size can also be proxy for firm's informational environments. In this respect, Atiase (1985) reported that less information was available for smaller firms. Freeman(1987) and Kross and Schroeder (1988) reported that market prices of large firms reflected earnings more than those of small firms. Richardson (1984) suggests that, since institutions have lower holdings in smaller firms because of liquidity problems and other constraints, analysts have less motivation to follow small firms due to reduced commissions from institutional trades. It is therefore possible that smaller firms have a greater proclivity to use dividends as a signal of

value. In fact, Eddy and Seifert (1988) reported that the information content of a dividend change was greater for smaller firms than for large firms. Ghosh and Woolridge (1988) and Dewenter and Warther (1998) found that the market reaction to dividend changes was a function of the degree of information asymmetry. All of these considerations imply that size is likely to reduce signaling needs and, consequently, the degree of dividend smoothing.

b) Risk

Kumar (1988) predicts that firms in riskier industries are also more likely to smooth dividends in order to develop a reputation for having low systematic risk. Results from earnings volatilities studies emphasize the relationship between risk and the incentive to smooth dividends, since high earning volatilities have been found to be associated with lower than expected future profitability and future stock returns (Ronen & Sadan, 1981; Chaney & Lewis, 1995; Billings, 1999). High risk companies with higher standard deviation of EPS would have a greater incentive to smooth dividend.

c) Leverage

Leverage is likely to become an important determinant of dividend smoothing behavior as higher leverage levels increase the riskiness of cash flows. The negative effect of financial leverage on dividend payments per se is already well-documented. Higgins (1972) and McCabe (1979) suggested that long-term debt had a negative effect on the amount of dividends paid. Rozeff (1982) found that firms with higher financial leverage paid lower dividends in order to avoid the cost of raising external capital.

d) Growth

Signaling theory implies that firms with growth opportunities are more likely to pay dividends to convey this information to the market. At the same time, these firms will also have a greater need to retain a higher proportion of earnings to support their valuable investment projects. This combination of requirements leads to declining dividend payout ratios and smoothed dividends relative to earnings for firms with high growth rates. A further implication of this combination of requirements is that high growth firms are likely to be more sensitive to the tradeoff between dividend signaling needs and dividend signaling costs, whereas low growth firms will be much less sensitive to the tradeoff because they would not want to use costly signals. Therefore, growth is expected to be negatively related to the degree of dividend smoothing since the deviation from the smoothed dividend becomes a more expensive signal for high growth firms.

e) Financial Slack

Financial slack can also be considered a potentially important factor in the decision to smooth dividends. The presence of financial slack will, in theory, reduce external financing requirements and thus solve the "underinvestment" problem, thereby reducing the signaling needs of firms and the incentive to smooth dividends (Myers & Majluf (1984), John & Williams (1985)).

f) Ownership Structure

It is well known that a pattern of stable dividend payment can mitigate the agency costs of equity, while also signaling the consistent quality of the firm's earnings. Gomes (2000) and La Porta et al. (2000) argue that this solution depends on the ownership structure of the firm. Stable dividend may be an optimal solution for a firm with a dispersed share ownership. However, closely held firms may not need to signal earnings quality or solve the agency problem For instance, Dewenter and Warther (1998) applied the Lintner model to Japanese firms that were members of a Keiretsu and find that Keiretsu firm's paid dividend highly sensitive to corporate earnings. The results suggest that ownership structure affects the need for dividends to reduce the agency problem and to provide managerial monitoring. For closely held firms, the immediate change in fundamental value is less visible and, therefore, potentially less important for the dividend decision making process. In fact, Brav et al. (2005) reported that closely held firms regarded the consequences of dividend cuts and omissions to be less serious. They showed that closely held firms were more likely to pay dividends in response to temporary changes in earnings than the firms with diffused ownership. This discussion suggests that the firms with diffused ownership will be likely to smooth their dividend more compared with the closely held firms.

Theoretical explanations of differences in firms' dividend smoothing measures were examined in this study using the following cross-sectional regression model:

$$\gamma_1 = \beta_0 + \beta_1 \text{SIZE} + \beta_2 \text{LARGE} + \beta_3 \text{HISTORY} + \beta_4 \text{SLACK} + \beta_5 \text{EV} + + \beta_6 \text{LEVERAGE} + \beta_7 \text{GROWTH} \quad (2)$$

where firm size (Size) is estimated by the natural logarithm of total assets, growth is the growth rate in size over at least a ten year period, financial slack (Slack) is the ratio of accumulated retained earnings to total assets, financial leverage (Leverage) is the ratio of debt to equity, and earnings variability (EV) is measured using the standard deviation of earnings per share over at least a ten year period. Listing years (HISTORY) is measured by the number of years listed during the sample period. The percentage of the stock held by the largest shareholders (LARGE) is used as a proxy for the concentration of controlling shareholders. γ_i is measured by the speed of adjustment in equation (1). Theory implies the following coefficient signs: $\beta_1, \beta_2, \beta_3$ & $\beta_4 > 0$, β_5, β_6, & $\beta_7 < 0$.

IV. Empirical Results

Equations (1) were fitted to a sample of firms listed on Korea Stock Exchange over the twenty six-year period from 1981 to 2006 in order to estimate measures of the degree of dividend smoothing of firms. The following sample selection criteria were used:

(i) Firms had to have at least 10 years of earnings and dividend data during the period 1980-2006, as reported in the Korea Listed Companies Association database.

(ii) When estimating Eq. (1), all firms with non-positive EPS or zero dividends were eliminated from the sample to prevent the spurious results of dividend smoothing.

(iii) A further screen excluded firms with less than 10 observations for each firm characteristic variable used in the regression. From a total of 732 firms, 299 firms met these screening criteria.

The exclusion of firms with negative earnings and zero dividends has the advantage of eliminating "spurious dividend smoothing." This spurious dividend smoothing arises naturally

rather than being the result of conscious management of dividend policy. Dividend smoothing implies a deliberate effort on the part of managers to adjust dividend payments in response to variations in the earnings stream.

Table (1) shows the descriptive statistics. From this table the following remarks are found:

<Table 1> Sample Statistics

Variable*	Mean	Standard Deviation	Min	Max
γ_1	0.7033	0.2463	0.0870	1.4640
SIZE	18.6855	1.1652	16.3413	24.2445
LARGE	30.0319	11.9095	6.5146	82.3063
SLACK	0.1763	0.1099	0.0133	0.5811
EV	2.7466	4.1652	0.1472	44.4989
LEVERAGE	2.0524	1.2016	0.3529	8.2479
GROWTH	0.1383	0.0985	-0.0651	0.8482
Target payout ratio	0.1813	0.1462	0.0010	0.9225
HISTORY	18.9512	3.9915	13.0000	26.0000
DE	0.4057	0.2750	0.0738	3.5506
EXP	0.5191	0.2179	0.0556	0.9967

* Firm size (SIZE) is estimated by the natural logarithm of total assets, growth rate (GROWTH) is the average growth rate of size over a minimum of ten years prior to 2006 and a maximum of the twenty six years, financial slack (SLACK) is the ratio of accumulated retained earnings to total assets, financial leverage (LEVERAGE) is the ratio of debt to equity, and earnings variability (EV) is measured using the standard deviation of earnings per share over a minimum of ten years prior to 2006 and a maximum of the twenty-six years. Listing years (HISTORY) is measured by the number of years listed during the sample period. The percentage of the stock held by the largest shareholders (LARGE) is used as a proxy for the concentration of controlling shareholders. γ_1 is measured by the speed of adjustment in equation (1). EXP is the explanatory power of the Lintner model.

On average firm's debt to equity ratio was 1.96, in dictating that firms raised almost two third of their capital by debt financing. In a fast growing economy like Korea, equity financing alone is not enough to support the high growth. Consequently, Korean firms resorted more to debt financing to sustain the high growth during the sample period. High leverage of Korean firms can be also due to the lending customs in Korea where the banks' credit decisions have a

tendency to be based on collateral and cross-loan guarantees rather than the firms' future profitability. Average firms EPS is 1,238 KRW and the maximum payment 5,680 KRW. On average, 30% of shares are owned by the controlling shareholder.[7] Average speed of adjustment is 68% and the target payout ratio is 18.3%. The model explained 51% of the variation in dividends. Compared with the US results, the table shows that dividend behavior in Korea is less explained by the Lintner model and dividends are more sensitive to the changes in temporary earnings.[8] For example, the one estimated by Lintner was approximately 30 per cent with the target payout ratio of 50 per cent. Lintner's implicit target payout ratio seems to be substantially higher than ours. Fama and Babiak (1968) found average speed of adjustment of approximately 0.37, slightly higher than Lintner's. The estimations of Lintner model for Korean firms suggest that dividend decisions are not based on long term target payouts, as originally hypothesized by Lintner (1956). This view is supported by the lower target payout ratios that deviate substantially from the observed payout ratios. For average dividend payment, Korean firms paid 480 KRW (or 0.48 USD) per share.[9] Average dividend payout ratio is 40.5%. Lower observed payout ratio in Korea can be due to the different tax treatment of dividend income tax relative to the capital gain tax. Dividends are taxed more heavily than capital gains and this unfavorable tax treatment of dividend income is more serious than the case in the US.[10] Therefore, Korean firms have less incentive to pay dividends to their shareholders. In addition, many investors in Korea disregard dividends and consider stock price appreciation as the major component of stock returns. Korean investor's attitude toward dividends also contributes to the lower dividend payout ratio. To further investigate the behavior of dividend payment in Korea, we compare the dividend yields (based on face value) with the deposit rates during the sample

[7] This is higher than US but smaller than those of the firms in Europe (Gugler and Weigand (2000)).

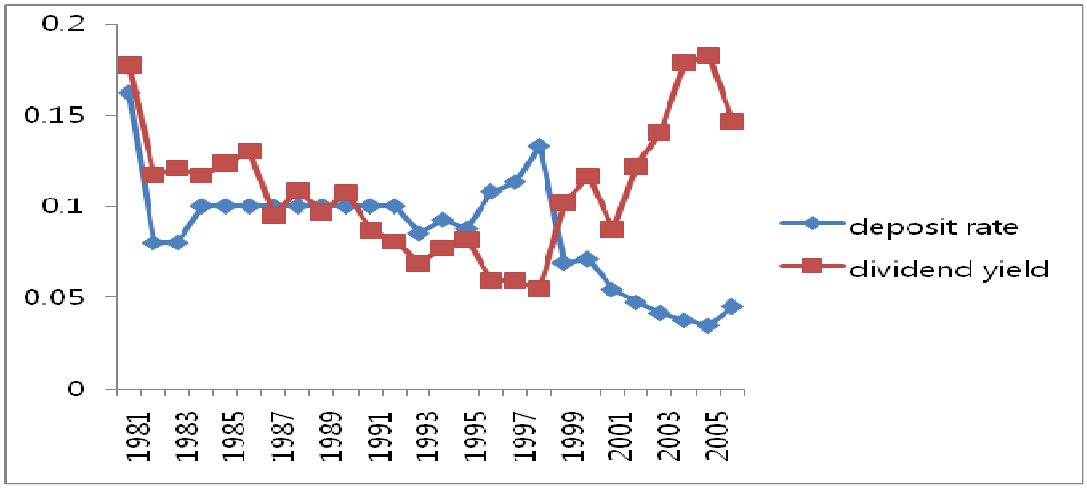
[8] Aivazian et al. (2003).

[9] Average dividend payout ratio is calculated by EPS*DE.

[10] There is no capital gain tax on listed stocks in Korea while 16.5% of tax is applied to the dividend income.

period. The average dividend payment is 10.9% of the face value of, which is 2.3 % higher than the average deposit rate during the sample period. However, Picture 1 and Table 2 show that there is a systematic relationship between dividend payment and deposit rate. Table 2 show that dividend yield is positively related to the average deposit interest rate from 1981 to 1995 when the rate was regulated by the government.[11] As the deposit rate was liberalized, dividend yield becomes negatively related to the deposit rate. The correlation coefficient between the dividend yield and the deposit rate was 68% during the period 1981 to1995, then, it becomes -89% during the period 1996 to 2006. The results indicate that the deposit rate plays an essential role in deciding dividend payment.

< Picture 1> The relationship between deposit rate and dividend payment divided by face value



11 Korea has undertaken interest liberalization as a part of economic reforms since the curly 1990s. The four-phase plan for interest rate liberalization was announced in 1991 and deposit rate liberalization was completed in 1995 during the third stage of the interest rate liberalization plan.

< Table 2> The relationship between deposit rate and dividend payment divided by face value

Year	dividend payment/face value	deposit rate
1981	0.1771	0.162
1982	0.1168	0.08
1983	0.1208	0.08
1984	0.1166	0.1
1985	0.1233	0.1
1986	0.1301	0.1
1987	0.09477	0.1
1988	0.10859	0.1
1989	0.09655	0.1
1990	0.10705	0.1
1991	0.0868	0.1
1992	0.08054	0.1
1993	0.06854	0.085
1994	0.07705	0.0925
1995	0.08171	0.0875
1996	0.05907	0.1079
1997	0.05923	0.1132
1998	0.05446	0.133
1999	0.1017	0.069
2000	0.11631	0.071
2001	0.0871	0.0543
2002	0.12163	0.0473
2003	0.14036	0.0415
2004	0.17843	0.0375
2005	0.18239	0.0346
2006	0.14595	0.045
Mean (1981-2006)	0.1089	0.08620
Mean (1981-1995)	0.10573	0.09913
Mean (1996-2006)	0.0956	0.09146
Correlation (1981-2006)	-0.3901	
Correlation (1981-1995)	0.68343	
Correlation (1996-2006)	-0.8907	

Table 3 contains correlation coefficients between the variables used in the multi-variate regressions. Dividend smoothing measure, γ_i, has significant correlation coefficients with SIZE, HISTORY, EV, AND GROWTH. It is clear that several of the independent variables are highly correlated. The correlation between LEVERAGE and SIZE is positive and significant, indicating that large size firms have more leverage. Leading up to the financial crisis in 1997, it was believed that large conglomerates in Korea would never fail. This expectation had been formed because government used to save large firms in fear of the backlash of massive business and financial failures. Because of this 'too big to fail' moral hazard and lack of proper supervision of financial institutions, banks tended to lend excessive money to big corporations.

SLACK is negatively correlated to both SIZE and LEVERAGE, a finding that is consistent with the pecking order hypothesis of Myers and Majluf (1984). HISTORY has significant correlation coefficients with most of other independent variables in equation (2) except LEVERAGE and SLACK. The potential for multi-collinearity suggests the re-estimation of variations of Eq. (2) that only include uncorrelated variables.

<Table 3> Pair-wise correlation between variables

	γ_i	SIZE	LARGE	HISTORY	SLACK	EV	LEVERAGE	GROWTH
γ_i	1.0000							
SIZE	-0.2653 (<.0001)	1.0000						
LARGE	-0.0267 (0.6477)	-0.1447 (0.0127)	1.0000					
HISTORY	-0.3180 (<.0001)	0.2523 (<.0001)	-0.0663 (0.2557)	1.0000				
SLACK	0.0665 (0.2541)	-0.3894 (<.0001)	0.3424 (<.0001)	0.0431 (0.4598)	1.0000			
EV	-0.1776 (0.0022)	0.1130 (0.0521)	0.1306 (0.0246)	0.2048 (0.0004)	0.2519 (<.0001)	1.0000		
LEVERAGE	-0.0766 (0.1886)	0.4095 (<.0001)	-0.3063 (<.0001)	0.0053 (0.9274)	-0.6730 (<.0001)	0.0173 (0.7665)	1.0000	
GROWTH	-0.1248 (0.0318)	0.4919 (<.0001)	-0.0863 (0.1385)	-0.1097 (0.0595)	-0.2129 (0.0002)	0.0062 (0.9153)	0.2096 (0.0003)	1.0000

* Firm size (SIZE) is estimated by the natural logarithm of total assets, growth rate (GROWTH) is the average growth rate of size over a minimum of ten years prior to 2006 and a maximum of the twenty six years, financial slack (SLACK) is the ratio of accumulated retained earnings to total assets, financial leverage (LEVERAGE) is the ratio of debt to equity, and earnings variability (EV) is measured using the standard deviation of earnings per share over a minimum of ten years prior to 2006 and a maximum of the twenty-six years. Listing years (HISTORY) is measured by the number of years listed during the sample period. The percentage of the stock held by the largest shareholders (LARGE) is used as a proxy for the concentration of controlling shareholders. γ_i is measured by the speed of adjustment in equation (1). P-values are contained in parentheses.

Table 4 depicts results for the multivariate regression for the complete sample of dividend smoothing firms. Model 1 is estimated by using all the variables without regard to multi-collinearity, while Model 2 is measured by stepwise regression technique to minimize the problem of multi-collinearity. Results in Model 1 show that firm's size and listing years have significantly negative coefficients. The results imply that larger and older firms are more likely to smooth dividends. In addition, variability of EPS has also negative signs, indicating that riskier firms tend to pay more smoothed. Results from the estimation of variations of Model 1

that drop correlated variables from the regression are also consistent with the findings for the full model.

<Table 4> Multivariate regressions of smoothing factor on firm specific variables*

	Model 1		Model 2	
Variable	Parameter Estimate	Pr > |t|	Parameter Estimate	Pr > |t|
Intercept	1.5603	<.0001	1.7156	<.0001
SIZE	-0.0252	0.0773	-0.0367	0.0007
LARGE	-0.0015	0.1954		
HISTORY	-0.0183	<.0001	-0.01627	<.0001
SLACK	0.1887	0.2765		
EV	-0.0060	0.0492	-0.00531	0.0582
LEVERAGE	0.0075	0.6561		
GROWTH	-0.2099	0.1855		
	R-Square= 0.1603 Adj R-Sq= 0.1398		R-Square = 0.1482 Adj R-Sq= 0.1342	

*Regressions of smoothing factor on firm-specific variables are reported. Computation of the smoothing factor is described in Table 1. P-values are contained in parentheses. Firm size (SIZE) is estimated by the natural logarithm of total assets, growth rate (GROWTH) is the average growth rate of size over a minimum of ten years prior to 2006 and a maximum of the twenty six years, financial slack (SLACK) is the ratio of accumulated retained earnings to total assets, financial leverage (LEVERAGE) is the ratio of debt to equity, and earnings variability (EV) is measured using the standard deviation of earnings per share over a minimum of ten years prior to 2006 and a maximum of the twenty-six years. Listing years (HISTORY) is measured by the number of years listed during the sample period. The percentage of the stock held by the largest shareholders (LARGE) is used as a proxy for the concentration of controlling shareholders. γ_j is measured by the speed of adjustment in equation (1).

The negative sign on the size variable is not consistent with theoretical predictions and indicates that dividend smoothing increases with size. Larger and older firms are relatively well-known to investors, and, therefore, face a less degree of information asymmetry regarding future prospects (Eddy and Seifert, 1988). Signaling theory suggests they have an increased incentive to smooth dividends since the information revealed with dividend changes is significantly high for smaller firms (Ghosh & Woolridge, 1988; Dewenter & Warher, 1998). However, the results for Korean firms provide the opposite evidence. It seems that dividend smoothing hypothesis

based on the signaling theory is not supported in Korea. The reason for this may be due to the dividend payment tradition in Korea. That is, most listed companies in Korea set a dividend policy based on the face value of stock to pay annual dividends (divided by face value of stock) equal to the one-year time deposit interest rate. Therefore, a change in dividend payments is less likely to reflect a change in the fundamentals of the company. Instead, changes in the annual dividend payments are closely related to the interest rate of one-year time deposits. Dividend yields (based on face value) were almost a proxy for interest rate trends during the test period rather than reflecting the future prospects of the firm.

The negative coefficient of variability of EPS is consistent with the prediction made by Kumar (1988). Kumar predicted that firms in risky industries would be more likely to smooth dividends in order to develop a reputation for having low systematic risk. Results from earnings variability studies emphasize the relationship between risk and the incentive to smooth dividends, since higher earnings variability has been found to be associated with lower than expected future profitability and future stock returns (Ronen & Sadan, 1981; Chaney & Lewis, 1995; Billings, 1999). High risk companies with higher standard deviation of EPS would therefore have an even greater incentive to smooth dividend.

A negative sign on the growth coefficient suggests that firms with high growth prospects smooth dividends more. The result is consistent with theoretical predictions, but the signs are insignificant indicating that the results are too weak to draw any significant conclusion. Leverage and large shareholder ownership also have insignificant coefficients. The results suggest that information and agency theories do not explain the dynamic dividend policy of Korean firms.

However, the insignificant sign of LARGE can be attributed to the two conflicting effect of ownership structure on dividend smoothing. It is well known that the firm's dividend policy is effective in reducing the expected agency costs, but may also depend on its ownership and control structure. Firms with more controlling shareholder's ownership may exhibit a different type of agency conflict, namely the expropriation of minority shareholders by majority shareholders. [12] On the other hand, in the presence of large shareholders, managerial discretion can be controlled to some extent and agency costs between managers and shareholders may be reduced because large shareholders have the ability and the incentives to monitor and discipline the management (Stiglitz, 1985; Shleifer and Vishny, 1986). This would in turn imply a lesser role for corporate payout policy to address agency problems between corporate insiders and outside shareholders. To further examine the role of ownership structure on the degree of dividend smoothing, the full sample is split into 4 groups of firms with high, medium high, medium low and low concentration of large shareholders. Only dividend smoothing measurements of the medium low concentration of large shareholders firms is significantly higher than those of the remaining group. For the medium low group, the explanatory power of the partial adjustment is also the highest. Results in Table 5 suggest systematic differences in the degree of dividend smoothing in medium low and the remaining sub-groups.

[12] . Empirical studies emphasize the potential conflicts of interest between controlling shareholders and other shareholders. For example, Shleifer and Vishny (1997) argue that when large owners gain nearly full control of the corporation, they prefer to generate private benefits of control that are not shared by minority shareholders (see also Faccio *et al.*, 2001; Holderness, 2002).

<Table 5> Degree of dividend smoothing and explanatory power of Lintner's model by the concentration of the largest shareholder*

	Low		Medium low		Medium high		High	
Variable	γ_i	Adj R-Sq	γ_i	Adj R-Sq	γ_i	Adj R-Sq	γ_i	Adj R-Sq
Mean	0.6642	0.5263	0.7467	0.5648	0.6633	0.4914	0.6553	0.4931
Standard Deviation	0.2242	0.2018	0.2129	0.2398	0.1913	0.1801	0.2636	0.2389

*γ_i is measured by the speed of adjustment in equation (1).

Given these systematic differences, it is likely that results in Table 4 for the full sample could be masking the effect of concentration of large shareholders due to a structural shift in the relationship between explanatory variables and dividend smoothing measures for the medium low and other groups. Equation (2) is re-estimated for sub-samples of firms in the medium low group and then the result is compared with the other groups (see Table 6). Chow tests (results not reported) indicate that the cross-sectional relationship between dividend smoothing measures and explanatory variables is different for the medium low sub-group. An interesting observation from Table 6 is the increasing role of growth in the empirical explanation of smoothing. Both the size and significance of growth are increased in the medium low group. In addition, the explanatory power of equation (2) is much higher for the medium low group, which suggests that ownership structure of the firm plays an important role in the dynamic dividend policy. It will be interesting to investigate why there is a structural shift in the relationship between explanatory variables and dividend smoothing measures for the medium low and the remaining groups. However, the investigation is beyond the scope of the current study, and it is a task for further study in due course.

<Table 6> Multivariate regressions of smoothing factor on firm specific variables by the largest shareholder ownership*

	Medium low group		Low, medium high, and high groups	
Variable	Estimate	Pr > |t|	Estimate	Pr > |t|
Intercept	1.5677	0.0032	1.4383	<.0001
SIZE	-0.0054	0.8396	-0.0267	0.098
HISTORY	-0.0338	0.0001	-0.0145	0.0011
SLACK	0.3035	0.345	0.1516	0.4366
EV	-0.0154	0.0949	-0.0056	0.0847
LEVERAGE	-0.0098	0.688	0.0153	0.4114
GROWTH	-0.4926	0.1098	-0.1540	0.3948
	R-Square =0.2509 Adj R-Sq=0.1738		R-Square= 0.1336 Adj R-Sq=0.1054	

*Regressions of smoothing factor on firm-specific variables are reported. Computation of the smoothing factor is described in Table 1. P-values are contained in parentheses. Firm size (SIZE) is estimated by the natural logarithm of total assets, growth rate (GROWTH) is the average growth rate of size over a minimum of ten years prior to 2006 and a maximum of the twenty six years, financial slack (SLACK) is the ratio of accumulated retained earnings to total assets, financial leverage (LEVERAGE) is the ratio of debt to equity, and earnings variability (EV) is measured using the standard deviation of earnings per share over a minimum of ten years prior to 2006 and a maximum of the twenty-six years. Listing years (HISTORY) is measured by the number of years listed during the sample period. The percentage of the stock held by the largest shareholders (LARGE) is used as a proxy for the concentration of controlling shareholders. γ_i is measured by the speed of adjustment in equation (1).

V. Conclusions

This study investigates the dividend policy of the firms in Korea. The focus is to investigate how Korean firms set their dynamic dividend policies in a different institutional environment than that of the developed markets like the US. In particular, this study empirically tests whether Korean firms follow stable dividend policies as in the developed markets where dividend smoothing is a stylized fact. The paper also identifies firm-level factors that influence the degree of dividend smoothing. For this purpose, 299 firms listed on Korea Stock Exchange over the twenty six-year period from 1980 to 2006 are investigated.

The empirical results show that the majority of Korean firms pay smoothed dividends. However, the speed of adjustment to the target payout ratio is faster than that of the developed market. Average speed of adjustment is 68% and the model explains 52% of dividend changes. Compared with the US results, dividend behavior in Korea is less explained by the Lintner model and Korean firms pay less smoothed dividend. Instead, Korean firms make dividend payment based on the face value of stock, which is very close to the average interest rate during the sample period. A change in dividend payments is less likely to reflect a change in the fundamentals of the company. Instead, it is closely related to the interest rate of one-year time deposits. The results also suggest that dividend decisions in Korea are not based on the long term target payouts, as originally hypothesized by Lintner (1956). This view is supported by the implicit payout ratios that deviate substantially from the observed payout ratios. The long–term target ratio is 18.3 % and is significantly lower than the observed payout ratio. The average observed payout ratio for Korean firms is also lower than that of US firms. The result can be due to the unfavorable tax treatment of dividend income in Korea.

For the determinants of dividend smoothing, company risk, size, and growth factors play important roles in the empirical explanation of the cross-section of dividend smoothing behaviour. However, the relationships between these explanatory variables and the degree of dividend smoothing are systematically different between US and Korean firms. Contrary to the theoretical predictions, empirical results show that the larger and older firms are more likely to smooth dividends. Leverage and ownership structure have insignificant effect on dividend smoothing. The results suggest that information and agency theories do not explain the dynamic dividend policy of Korean firms. The results also show that firms with high growth prospects smooth dividends more. In addition, the study finds that riskier firms tend to pay more

smoothed dividends, supporting the prediction made by Kumar (1988). Kumar predicts that firms in risky industries are more likely to smooth dividends in order to develop a reputation for having low systematic risk.

Finally, the study finds that there is a systematic difference in the degree of dividend smoothing between different types of ownership structure. For the firms with slightly below than the average largest shareholder's concentration, there is an increasing role of growth in the empirical explanation of smoothing. Both size and significance of growth are increased in the medium low group of largest shareholder's concentration and explanatory power becomes much higher for this group. The results suggest that ownership structure of the firm may play an important role in deciding firm's dynamic dividend policy. It will be interesting to investigate why there is a structural shift in the relationship between explanatory variables and dividend smoothing measures for the medium low and the remaining groups. However, the investigation is beyond the scope of this study, and I will leave the task for future study.

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