FOREIGN CORPORATE OWNERSHIP AND DIVIDENDS

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by

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Abstract

This paper investigates the relatively unexplored relationship between dividends and ownership structure in an emerging market setting. Using a unique panel dataset of foreign ownership and firm attributes of listed Korean firms, we first characterize foreign ownership after the full capital market liberalization in 1998. Foreign investors in Korea tend to overweight larger and profitable firms with large export sales and underweight highly leveraged firms with low market-to-book ratio. Then we explore the effects of the rise in foreign ownership on dividend policies in Korea. Firms make higher dividend payouts as the shareholdings of foreigners increase. This result is consistent with the agency theory view of dividends, i.e. dividends can substitute for direct monitoring of firms by large external shareholders.

JEL Codes: G01, G15, G32

Keywords: Corporate Governance, Institutional Ownership, Dividends

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1. Introduction

Several studies (e.g., Falkenstein, 1996; Kang and Stulz, 1997; Gompers and Metrick, 2001; Dahlquist and Robertsson, 2001; Chan et al., 2005) have examined the preferences of institutional investors. Kang and Stulz (1997) find that foreigners investing in Japan tend to underweight smaller and highly leveraged firms. They argue that foreigners invest in firms that they are better informed about to reduce the costs associated with informational asymmetries. As Kang and Stulz, Dahlquist and Robertsson (2001) find foreign owners of Swedish firms show a preference for large firms, firms paying low dividends, and firms with large cash positions on their balance sheets.

However, we have limited understanding of holdings of foreign investors in emerging markets. This study deepens the understanding of foreign investors by identifying firm attributes that are common to foreign shareholdings in the Korean stock market. Korea, an emerging market that opened its doors to foreign investors following the 1997 Asian financial crisis, serves as an excellent case study on changes in dividends and ownership structure. Variations in dividends and ownership structure are hard to observe as Myers (1984) documents that dividends are, for unknown reasons, "sticky" (have low variation over time and resistance to change), and ownership changes are difficult to document (La Porta et al., 1999). By analyzing the repeated observations for all non-financial firms listed in Korea during period 1998-2003, we explore the panel variation in share ownership and firm characteristics.

We find following results: foreign investors in Korea tend to overweight larger, profitable firms with large export sales, and underweight highly leveraged firms with low market-to-book ratio. Consistent with the traditional agency theory of dividends where it is argued that dividends can substitute for other monitoring devices (Rozeff, 1982; Easterbrook, 1984), we also find that the level of foreign ownership is positively associated with dividend payouts, controlling for various firm characteristics.

The paper is structured as follows. Section 2 describes the rise in foreign ownership in Korea following the full market liberalization in 1998. In Section 3, we outline previous empirical evidence on ownership preferences and characterize foreign ownership in individual Korean firms for the period 1998-2003. In Section 4, after reviewing the literature on ownership and dividend policy, we provide a brief overview of the dividend policy trends in Korea. Section 5 reports and discusses empirical results on the determinants of dividends using panel probit and Tobit estimations. Section 6 discusses the

potential endogeneity issues and provides further robustness checks. Section 7 concludes.

2. Foreign Ownership in Korea

2.1. Stock Market Liberalization

The Korean government "traditionally" controlled all the internal and global financial capital flows very tightly (Chang, 1993). Although formal financial liberalization can be traced back to the 1980s, these reforms were "cautious and slow in terms of … order and speed" (Park, 1996, p.252). The Korean government only started relaxing its control over the financial sector from the early 1990s as a consequence of Korea's economic success (Chang et al., 1998). Korea's securities market was opened to foreign investment for the first time in 1992 as foreign investors were allowed to own directly up to 3% of a publicly traded company with an aggregate limit of 10% for all foreign investors on an individual stock.

Table 1 shows the chronology of the individual and aggregate foreign investment ceilings for listed companies. The investment ceiling was gradually relaxed until 1997 as the Korean government's timetable for intended full liberalization was set for the end of 2000 (The Korea Securities Dealers Association, 2002). However, with the sudden onset of the financial crisis in 1997, the liberalization process and market opening accelerated following the International Monetary Fund (IMF) directives set in December 1997. The investment ceilings on listed companies were completely removed by May 1998.

Table 1. Stock Market Opening Process

Date	Individual Limit	Aggregate Limit
January, 1992	3%	10%
December, 1994	3%	12%
July, 1995	3%	15%
April, 1996	4%	18%
October, 1996	5%	20%
May 1997	6%	23%
November 1997	7%	26%
December 1997	50%	55%
May 1998	100%	100%

The table shows the investment restrictions for foreign ownership. The first column shows the dates for "Securities and Exchange Act" reforms relaxing the investment ceiling for foreign investment in listed companies. The second and third columns show the investment limitations for foreign individual and aggregate ownership, respectively.

2.2. Foreign Investors in Korea: A first look

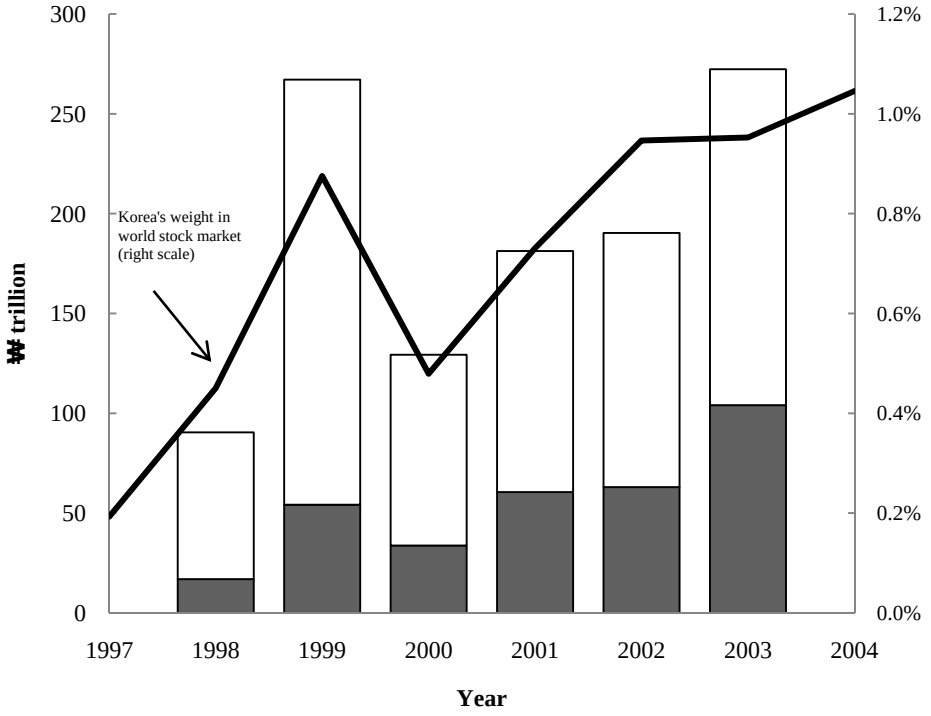
All "foreign investors"[1] are required to register (directly or through a proxy) with the Korean Financial Supervisory Service (FSS). This registration is required for foreigners investing in domestic securities including stocks, bonds, trust funds, stock index futures, stock index options and commercial papers. The Korean FSS tracks ownership of all publicly traded securities and publishes data on a yearly basis which can be obtained from the Korea Information Service Corporation. [2] Our dataset includes all non-financial Korean firms listed on the Korea Stock Exchange and KOSDAQ Stock Market from 1998 to 2003.[3] For each firm, we have the percentage of total equity held by foreign investors at the end of each year. Our unbalanced panel data has repeated observations for a minimum of 608 firms in 1998 and a maximum of 1,111 firms in 2003.

In 1998, there were 8,480 foreign investor registered with the Korean Financial Supervisory Service. U.S. and U.K investors comprised almost half of the registered foreign investors and their combined market value exceeded 60% of total foreign investors' market capitalization. The Financial Supervisory Service also reports that among these foreign investors, more than 65% were financial institutions and their market values accounted for 99.7% of the total foreign investor's market capitalization.[4] Therefore, we estimate that U.S. and U.K. financial institutions comprise about sixty per cent of the total value of foreign investment in Korea.

2.3. Foreign Ownership and the Korean Stock Market

The increased presence of foreign ownership in the Korean stock markets is shown in Figure 1. The white bars in Figure 1 show the aggregate market capitalization of the firms during the period 1998-2003. The gray-coloured part of the bars illustrates foreign ownership in terms of market value. During this period, the portion of foreign ownership in the Korean market increased from 18.7% to 38.2% of total market capitalization. Their market value has increased from 16.90 trillion Korean won in 1998 to over 100 trillion Korean won in 2003.[5]

Figure 1. Foreign Ownership in the Korean Stock Market



The figure shows foreign ownership in the Korean stock market on a yearly basis over the period 1998-2003. The bars depict the total market capitalization of the Korean stock market as well as foreign investors' share in the Korean stock market (gray bar). Both total market value and the foreign ownership value are expressed in terms of trillion Korean Won (₩) and are reflected on the left scale. The fluctuating line in the figure shows yearly observations of Korea's weight in the world market over the period 1997-2004, reflected on the right scale.

The fluctuating line illustrates Korea's weight in the global stock market.[6] At the end of 1997, Korea's market capitalization only accounted for about 0.2 per cent of total world stock market capitalization. Seven years later, Korea's weight in the world market increased to more than one per cent of world's total market capitalization. From 27th largest in 1997 by market capitalization, Korea became the 14th largest out of 56 stock exchanges around the world in 2004.

2.4. Foreign Ownership by Industry

Table 2 provides a summary of foreign ownership by industry at the end of 2003. Our sample can be classified into 41 industries by two-digit Korean Standard Industry Classification (KSIC). We present the summary for the ten largest industries by market capitalization. The first two columns present the number and the market capitalization of the firms in each industry. The largest industry category is "Electronic and Communication Equipment" with market capitalization of 95.5 trillion Korean Won. The 148 firms in this industry account for about 35.1% of the total market capitalization in our sample. The second and third largest industries are manufacturers of "Motor Vehicles" and "Basic Metals", at about 8.5% and 7.2%, respectively.

Columns three and four report the presence of foreign ownership for each industry. 46.1% of foreign investment is allocated to the "Electronic and Communication Equipment" industry. Among the 148 firms in this industry, 119 firms (80.4%) have positive foreign ownership.

Table 2. Foreign Ownership in the Korean Stock Market, by Industry

Industry	Firms in Industry		Firms with Foreign Ownership	
	N	MCAP (in %)	*N*	MCAP (in %)
Electronic & Communication Equipment	148	95.5 (35.1)	119	47.93 (46.1)
Motor Vehicles	47	23.1 (8.5)	36	9.52 (9.2)
Basic Metals	58	19.6 (7.2)	37	10.66 (10.2)
Utilities	10	16.4 (6.0)	9	4.23 (4.1)
Chemicals	126	15.9 (5.8)	103	3.45 (3.3)
Telecommunications	10	14.9 (5.5)	6	6.57 (6.3)
Professional Services	36	14.9 (5.5)	28	4.65 (4.5)
Wholesale Trade	67	10.0 (3.7)	47	0.96 (0.9)
General Construction	45	7.8 (2.9)	35	2.04 (2.0)
Transportation Equipment	7	7.6 (2.8)	6	2.23 (2.1)
Others	557	46.8 (17.2)	396	11.79 (11.3)
All	1111	272.3 (100.0)	822	104.0 (100.0)

The table shows foreign ownership by industry on the Korean stock markets in 2003. The first two columns show the total number of firms (*N*) and the total market capitalization (MCAP) in trillion Korean Won. The percentage of an industry's capitalization to total market capitalization is shown in parentheses. The third column shows the number of firms with positive ownership and corresponding percentage to the total number of firms in the industry. The last column presents the market capitalization of foreign ownership in the industry with the percentage of total foreign ownership shown in parentheses.

2.5. Top Holdings of Foreign Investors

Table 3 provides a summary of top ten holdings of foreign ownership in 2003. The second column presents the two-digit industry classification. The next three columns present the firm's foreign ownership, total market capitalization and foreign ownership as a percentage of total market capitalization. Samsung Electronics is the largest company in the portfolio held by foreign investors. Foreign investors control 60 per cent of the company with a corresponding investment of 40.85 trillion Korean won. The second and third largest companies held by foreign investors are POSCO and Hyundai Motor Company. The holdings are consistent with Merton (1987)'s observation that investors invest in the securities they know as these companies are well known companies in the global market.[7] As seen in the table, all top ten holdings are very large companies. It indicates that foreign investors seem to hold more shares in large firms. We have also checked this pattern of the data for the whole sample period (1998-2003), and found the same pattern for all years. Foreigners' preference for large firms seems to be robust both over time and industries.

Table 3. Top 10 Holdings by Foreign Investors in 2003

Company	Industry	Foreign MCAP (trillion ₩)	Total MCAP (trillion ₩)	FOREIGN OWNERSHIP
Samsung Electronics	Electronic and Communication Equipment	40.85	68.03	60.0%
POSCO	Basic Metals	9.64	14.50	66.5%
Hyundai Motor Company	Motor Vehicles	6.08	11.09	54.8%
KT Corp.	Telecommunications	5.78	12.70	45.5%
Korea Electronic Power	Utilities	3.97	13.70	29.0%
LG Electronics	Electronic and Communication Equipment	2.75	8.18	33.6%
Samsung SDI	Electronic and Communication Equipment	2.50	6.53	38.3%
Shinsegae	Retail	2.19	4.31	50.9%
Hyundai Mobis	Motor Vehicles	1.86	5.44	34.3%
SK Corp.	Professional Services	1.51	3.48	43.5%

The table shows foreign owners' top ten holdings in Korea by market capitalization. First column shows the two-digit KSIC industry classification. Second column shows the foreigners' share in terms of market value. The last column shows the percentage of foreigner's market value to total market capitalization.

3. Firm Characteristics and Foreign Ownership

3.1. Existing Empirical Findings

Existing empirical studies have observed some patterns in stock preferences of different types of investors. The first comprehensive documentation of stock holders' preferences is by Falkenstein (1996). Using cross-sectional data of U.S. mutual fund equity holdings for the period 1991-1992, Falkenstein shows that mutual funds have a significant preference for stocks with high visibility and low transaction costs, and avoid stocks with low idiosyncratic volatility.

Taking the same approach, Gompers and Metrick (2001) find that during the period 1980-1996, American institutional investors (with more than $100 million) invested in stocks that are larger, more liquid and have had relatively low returns in the previous year. On the other hand, recent literature has shown that smaller firms with low debt, low insider ownership, high profits and high cash reserves are targets for hedge funds in U.S. stock market (Brav et al., 2008; Klein and Zur, 2009) and similar stock characteristics are sought by activist (mainly U.S. and U.K.) hedge funds in Japanese firms (Buchanan, Chai and Deakin, 2009).

Non-U.S. studies have focused on the holdings of foreign investors. For example, Kang and Stulz (1997) examine the foreign investor (non-Japanese) preference for Japanese firms for the period 1975-1990 and show that foreign investors tend to invest in large, financially solid, and well-known firms. Dahlquist and Robertsson (2001) find that foreigners (non-Swedes) in the Swedish stock market prefer large firms, firms paying low dividends, and firms with large cash holdings for the period 1993-1997. Covrig et al. (2006) find these preferences for large and globally well-known firms to be consistent for foreign mutual fund managers from 11 developed countries. In addition, Ferreira and Matos (2008) find that foreign institutions in 27 countries tend to overweight firms with good governance and those cross-listed in the U.S.

3.2. Firm Characteristics

In this section, we characterize *FOREIGN OWNERSHIP* (measured as the percentage of shares owned by foreign investors) using our dataset of ownership and firm attributes of Korean firms. The following firm characteristics are chosen to enable easy comparisons with the existing studies.

(i) *FIRM SIZE*: Firm size is measured as natural log of total assets
(ii) *LEVERAGE*: This capital structure variable measures long-term financial distress. It is calculated as total debt divided by total assets.
(iii) *MARKET-TO-BOOK*: Market-to-book ratio is a valuation measure of the firm. It is defined as the market value divided by the book value of equity. Low ratios are referred to as "value firms" while "growth firms" have higher ratios.
(iv) *ROA*: Return on assets is measured as net income divided by the book value of total assets.
(v) *EXPORT INTENSITY*: Export intensity is measured as export sales divided by total sales. It is a proxy measure to test Merton's (1987) investor recognition hypothesis: overseas investors will be more familiar with firms with large sales abroad (Dahlquist and Robertsson, 2001).
(vi) *DIVIDEND PAYOUT*: Dividend payout ratio is defined as the value of (cash) dividends paid divided by net income

3.3. Empirical Results

In this section, we examine the investment behaviour of foreign ownership in Korea. To analyze the relations between foreign ownership and the different firm characteristics, we run multivariate Tobit regressions. We use the censored regression model proposed by Tobin (1958) to adjust for potential biases that may be caused by the prevalence of zero foreign ownership observations in the sample (Heckman, 1979).[8] The estimations are carried out on a year-by-year basis from 1999 to 2003, as well as in a panel regression.

The regression results are reported in Table 4. The numbers of left-censored firms which have zero foreign ownership are reported. In 1999, there were 230 firms without any foreign ownership which is equivalent to 38% of firms in the stock exchange.

We find positive and statistically significant coefficients for *FIRM SIZE* and *MARKET-TO-BOOK* for all years. The coefficients for *LEVERAGE* are negative and statistically significant for most of the years. *EXPORT INTENSITY* is only marginally significant at 10% for some years. The relationship between previous year's *DIVIDEND PAYOUT* and *FOREIGN OWNERSHIP* is not significant for 1999 to 2002. We only find a positive and significant relationship between previous year's *DIVIDEND PAYOUT* and *FOREIGN OWNERSHIP* for the last year (2003) of our sample.

In the panel regression, we confirm the individual year results. We find statistical significance for size, market-to-book ratio and leverage ratio.

3.4. Robustness Check

Another way to measure the presence of significant ownership is to identify the investors with at least 5 per cent ownership. This indicator for a significant or large shareholding block has been widely used to study corporate ownership (e.g., Shleifer and Vishny, 1986; Claessens et al., 2000; Hoskisson et al., 2002). In this section, for robustness purposes, we provide further evidence of the determinants of significant foreign ownership using a probit regression analysis.

Table 5 reports the results of our probit estimations using the same set of independent variables as in Table 4. The results are similar to the Tobit estimations reported in Table 4. The coefficients for *FIRM SIZE* are significant at the 0.1% level for all individual years in our sample. In the panel regression, the probability of a presence of five per cent or more foreign ownership appears to be positively influenced by previous year's *FIRM SIZE* and *EXPORT INTENSITY*, and negatively by *LEVERAGE*.

In this regression, we find stronger support for the firm recognition hypothesis as *EXPORT INTENSITY* is positive and significant for most of the sample years. Merton (1987) argues that investors simply prefer familiar firms and Huberman (1999) shows that familiarity also breeds investment. Our finding is consistent with Dahlquist and Robertsson (2001) who find that foreign investors prefer export oriented firms in their Swedish sample.

Another noteworthy pattern in Table 5 is the magnitude of *DIVIDEND PAYOUT* coefficient changes shown in the year-by-year cross-sectional estimations. The *DIVIDENT PAYOUT* coefficient is -0.52 and significant at 5% level in 1999. The coefficients gradually increase to a significant and positive value of 0.16 in 2003. These interesting results are further discussed in the later sections of this paper as we investigate the determinants of dividend policy in Korea during our sample period.

We also performed several more robustness checks on our results. The estimation results including the industry dummy variables also yield consistent results.

3.5. Foreign Ownership and Information Asymmetry

To sum up, foreign investors in Korea seem to prefer large firms with low leverage, high market-to-book ratio, and large export sales. The overall results are consistent with previous studies on foreign ownership (Kang and Stulz, 1997; Dahlquist and Robertsson, 2001).

Foreign investors may prefer large and low leveraged firms because foreign investors are likely to find themselves less informed about local firms than domestic investors (e.g., Dahlquist and Robertsson, 2001; Choe et al, 2005). Kang and Stulz (1997) argue that informational asymmetries are the driving force behind foreign investors' biases.

Table 4. Determinants of Foreign Ownership: Tobit Regression

	Dependent Variable: *FOREIGN OWNERSHIP*					
Independent Variable	1999	2000	2001	2002	2003	Panel
Intercept	-24.75***	-20.77***	-24.39***	-25.40***	-27.27***	-16.41***
	(-6.54)	(-7.18)	(-10.21)	(-11.60)	(-15.16)	(-14.03)
FIRM SIZE $_{(t-1)}$	4.79***	4.81***	5.54***	5.16***	6.01***	3.90***
	(9.97)	(9.76)	(14.35)	(12.71)	(19.24)	(16.54)
LEVERAGE $_{(t-1)}$	-5.06	-8.77**	-9.49***	0.36	-3.01*	-1.11**
	(-1.39)	(-2.92)	(-4.15)	(1.05)	(-2.14)	(-2.65)
MARKET-TO-BOOK $_{(t-1)}$	12.16***	0.36*	4.79***	5.47***	9.72***	0.27***
	(5.07)	(2.16)	(4.67)	(6.35)	(9.82)	(3.13)
ROA $_{(t-1)}$	-0.55	6.18	3.23	1.99	-1.18	-0.07
	(-0.13)	(1.38)	(0.92)	(1.44)	(-1.21)	(-0.17)
EXPORT INTENSITY $_{(t-1)}$	3.25	4.25+	2.76	0.53	2.30+	1.59
	(1.43)	(1.69)	(1.60)	(0.36)	(1.64)	(1.51)
DIVIDEND PAYOUT $_{(t-1)}$	-1.23	-0.06	1.21	0.71	1.64*	0.27
	(-1.20)	(-0.06)	(1.35)	(0.71)	(2.09)	(0.71)
Pseudo R^2 (%)	3.41	3.25	4.92	4.48	5.06	
F-Statistics	20.66***	17.37***	50.42***	28.45***	50.42***	
Wald χ^2						291.59***
Left-Censored Observations	230	274	320	258	289	1371
Uncensored Observations	378	429	508	712	822	2849

Note: Heteroskedasticity-consistent t-statistics are reported in parentheses.

*+Significant at the 10% level; * Significant at the 5% level; **Significant at the 1% level; *** Significant at the 0.1% level*

Table 5. Determinants of Foreign Ownership: Probit Regression

	Dependent Variable: 1 if FOREIGN OWNERSHIP ≥5% and 0 if FOREIGN OWNERSHIP <5					
Independent Variable	1999	2000	2001	2002	2003	Panel
Intercept	-2.43***	-2.39***	-2.75***	-3.16***	-3.03***	-4.31***
	(-7.05)	(-9.32)	(-11.34)	(-13.37)	(-14.40)	(-15.19)
FIRM SIZE $_{(t-1)}$	0.42***	0.36***	0.46***	0.49***	0.50***	0.69***
	(8.70)	(7.82)	(10.37)	(11.60)	(13.77)	(13.39)
LEVERAGE $_{(t-1)}$	-1.21**	-0.70	-1.11***	-0.61+	-0.70**	-1.42***
	(-2.94)	(-1.48)	(-3.96)	(-1.94)	(-2.96)	(-6.20)
MARKET-TO-BOOK $_{(t-1)}$	0.89***	0.02+	0.30**	0.37***	0.65***	0.02
	(3.78)	(1.65)	(2.65)	(4.62)	(6.13)	(1.08)
ROA $_{(t-1)}$	-0.60	0.80	0.46	0.61	0.00	0.11
	(-1.15)	(1.81)	(1.11)	(1.62)	(0.08)	(1.10)
EXPORT INTENSITY $_{(t-1)}$	0.32	0.39*	0.32+	0.09	0.35*	0.52*
	(1.62)	(2.07)	(1.80)	(0.53)	(2.36)	(2.54)
DIVIDEND PAYOUT $_{(t-1)}$	-0.52*	-0.21	0.02	0.04	0.16*	0.03
	(-2.07)	(-0.94)	(0.25)	(0.50)	(2.26)	(0.34)
Pseudo R^2 (%)	19.71	15.67	17.81	18.55	19.71	
Wald χ^2						237.13***
Number of Observations	608	703	828	970	1111	4220

Note: Heteroskedasticity-consistent t-statistics are reported in parentheses.
*+Significant at the 10% level; * Significant at the 5% level; **Significant at the 1% level; *** Significant at the 0.1% level*

4. Dividends and Foreign Ownership

4.1. Dividends and Agency Theory

Since Modigliani and Miller's seminal studies (1958, 1961) showing the irrelevance of dividend policy, there has been a considerable amount of research identifying the rationale and determinants of corporate dividend policy. Agency theory is the most frequently cited explanation for the dividend puzzle. In adopting the agency theory argument of Jensen and Meckling (1976), Rozeff (1982) constructs a model in which dividends serve as a mechanism to reduce agency costs by distributing cash resources to shareholders. Easterbrook (1984) argues that by distributing resources in the form of cash dividends, firms' internal funds become inadequate which forces managers to seek external finance which is more effective than internal finance with respect to monitoring and disciplining management.

Rozeff argues that dividends provide indirect control benefits in the absence of active monitoring of a firm's management by its shareholders. According to this view, managers' and shareholders' interests are potentially in conflict in regards to dividend payments. Jensen (1986) argues that managers are reluctant to pay out dividends as they tend to act in their own interests, preferring instead to retain resources under their control. Easterbrook argues that outside shareholders have the opposite view of dividends. He argues that by virtue of their voting power, external shareholders may counter a tendency for managers preferring the excessive retention of cash flow. External shareholders who are likely to be exploited (La Porta et. al., 2002) can exert pressure on firms to pay out dividends.

Dividends potentially reduce agency costs and information asymmetry between insiders and outsiders (e.g., Bhattacharya, 1979; Miller and Rock, 1985). By paying dividends, firms undergo a market audit which serves to motivate managers to both reveal new information and reduce agency costs in order to secure future funds. Moh'd et al., (1995) argue that shareholders value this benefit of reducing both agency costs and information asymmetries as the benefit of monitoring exceeds the cost of new funding.

4.2. Review of Empirical Evidences

Recent empirical studies have emphasized the relationship between ownership and dividend policy. Short et al. (2002), and Grinstein and Michaely (2005)

find that large shareholders, especially financial institutions, have a preference for cash dividends. Mancinelli and Ozkan (2006) find further support for this positive relationship between large shareholders and dividends in Italian firms.

Gugler and Yurtoglu (2003) argue that the identity of the large shareholders, whether they are insider or external shareholders, is important. Truong and Heaney (2007) using a large number of firms from 37 countries argue that firms are more likely to pay dividends when the largest shareholder is not an insider. Using the U.K. panel dataset, Khan (2006) shows that a positive relationship exists for insurance ownership and dividends in large firms.

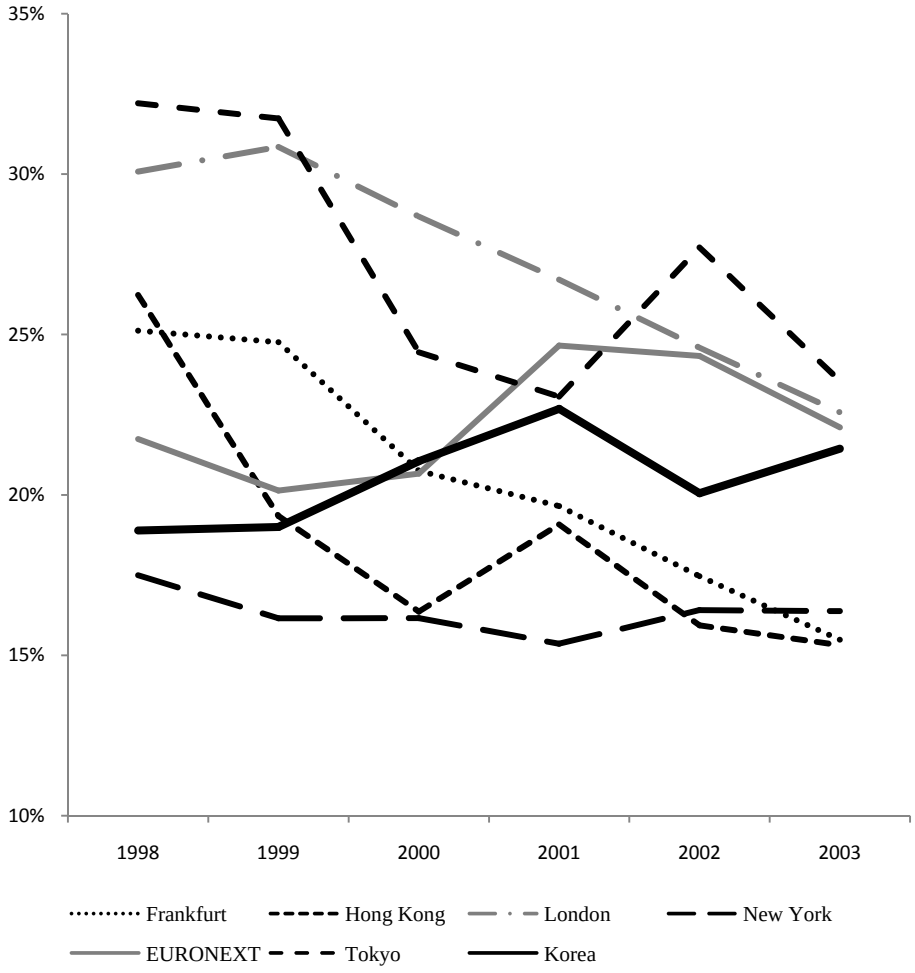
Empirical evidence on the relationship between foreign ownership and dividends is rather limited as many empirical studies on foreign ownership treat dividend payouts as an exogenous variable to ownership. Dahlquist and Robertsson (2001) find that foreign investors in Sweden prefer firms paying low dividends while Covrig et al. (2006) find that foreign fund managers have no preference for high dividends.

4.3. Worldwide Dividend Trends

Figure 1.2 shows the mean dividend payout ratios for large industrial companies from the world's major stock exchanges.[9] The average dividend payout ratio has fallen during this period 1998-2003 for all major exchanges except for Korea and EURONEXT. The average dividend payout ratio for the industrial stocks from the New York Stock Exchange was about 16% while the average industrial stocks listed in Korea Stock Exchange was about 20% during the sample period.

However, La Porta, Lopez-de-Silanes, Shleifer and Vishny (henceforth LLSV, 2000) argue that differences in dividend policy can be explained by the different levels of legal protection of minority shareholders. They find higher dividends in common law countries (where legal protection is generally higher) and argue that "dividends are an outcome of effective legal protection of shareholders, which enables minority shareholders to extract dividend payments from corporate insiders" (LLSV, 2000, p.27). In supporting the agency approach of dividends, LLSV argue that dividends can serve as a substitute for effective legal protection for external shareholders.

Figure 2. Global Comparison of Dividend Payout Ratio



The figure shows the time trend (1998-2003) of mean dividend payout ratios for Industrial stocks (Industry Classification Benchmark = 2000) from the world's major stock exchanges and Korea. Dividend payout ratio is calculated as the ratio of value of cash dividends paid to net income.

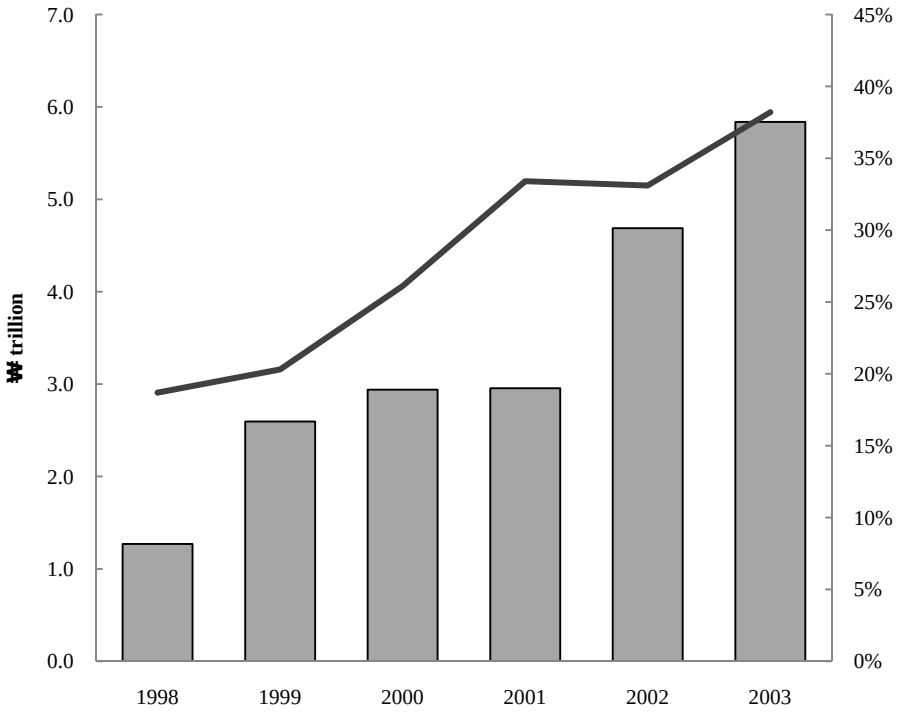
4.4. Increasing Dividends in Korea

The concept of dividend payments, returning cash to investors, is a relatively new financial concept in Korea. However, the total value of cash dividends paid out in the Korean stock market has dramatically risen over the period 1998-2003.

Contrary to Fama and French (2001)'s finding of "disappearing" dividends in the U.S., we find the dividend payments rising in Korea. In Figure 3, the bars show the aggregate value of cash dividends paid to all shareholders. During the period 1998-2003, the aggregate value of dividends paid has increased from 1.27 trillion to 5.84 trillion Korean Won.

Another new phenomenon in the Korean stock market during this period is the rise of foreign ownership as we have discussed in the earlier sections. The fluctuating line illustrates foreign investor's weight in the Korean stock market. Foreign investors' portions in the Korean stock market have increased from 18.7 per cent in 1998 to over 38 per cent of total market values in 2003.

Figure 3. Total Dividend Payments and Foreign Ownership in the Korean Stock Market



The figure shows the rise in dividends and foreign ownership on a year-by-year basis over the period 1998-2003. The bars depict the aggregate value of dividend payments made to all shareholders in the Korean stock market, reflected on the left scale. The fluctuating line in the figure shows the yearly observations of foreign investors' weight in the Korean stock market, reflected on the right scale.

5. Determinants of Dividends

In this section, we conduct various empirical analyses of the relationship between foreign ownership and firms' dividend policy. We focus on two decisions involving dividend policy: (1) whether or not to pay dividends, and (2) how much to pay.

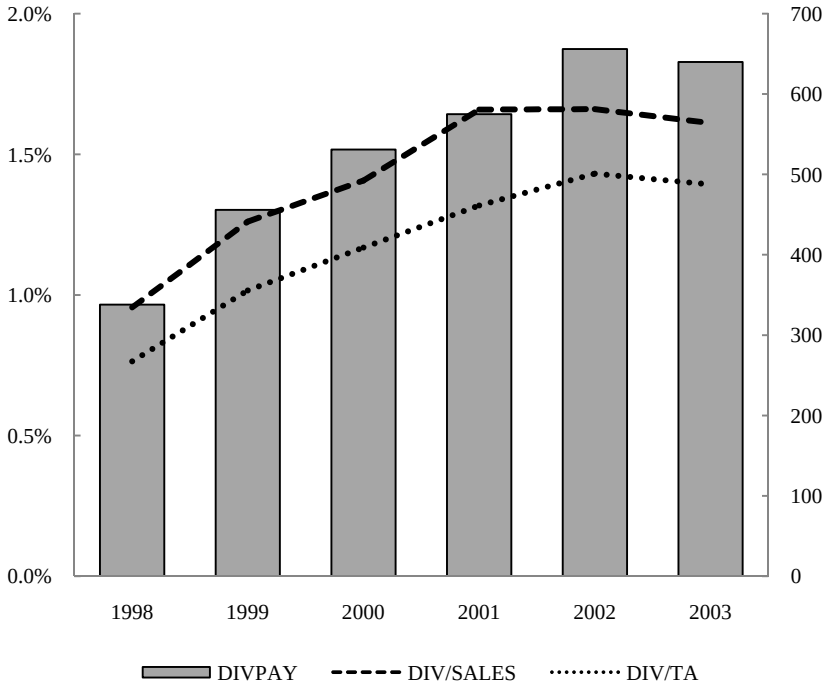
5.1. Measuring Dividends

We have several dependent variables that measure firms' dividend policy.

- *DIVPAY*: Dummy variable equal to 1 for firms that have non-zero dividends and 0 otherwise
- *DIV/SALES*: Ratio of total cash dividends to net sales
- *DIV/TA*: Ratio of total cash dividends to book value of total assets.
- *DIV/NI*: Ratio of total cash dividends to net income, also known as dividend payout ratio.

The most commonly used measure of dividends is dividend payout ratio, (*DIV/NI*). However, Khan (2006) argues that scaling dividends by total sales rather than net income is preferred because of the non-zero or non-negative property of total sales. The ratio of dividends to total assets has also been used in the recent literature (LLSV, 2000; Grinstein and Michaely, 2005). To ensure that our results are not driven by the scaling factor of dividends, we repeat our estimations using all of these dividend measures.

Figure 4. Time Trend of Dividend Measurements



The figure shows the time trend of our dependent variables over the period 1998-2003. The bars depict the number of firms paying dividends (DIVPAY) in Korean stock market, reflected on the right scale. The fluctuating lines in the figure show the yearly observations of dividends to sales (DIV/SALES), and dividends to total assets (DIV/TA) ratios, reflected on the left scale.

Figure 4 shows the time trend of our dependent variables for our sample period 1998-2003. The bars show the number of firms paying dividends (*DIVPAY*). The two fluctuating lines show the market mean value of *DIV/SALES*, and *DIV/TA*, over time. Firms in the Korean stock market, on average, returned less than 1% of their total sales to shareholders in 1998. This ratio increases over time. In 2003, firms returned on average more than 1.5% of their total sales to shareholders as cash dividends.

Table 6. Descriptive Statistics and Correlation Matrix

	Variables	Mean	SD	1	2	3	4	5	6	7	8
1	*DIVPAY*	0.600	0.490								
2	*DIV/SALES*	0.009	0.016	0.461*							
3	*DIV/TA*	0.007	0.010	0.611*	0.721*						
4	*DIV/NI*	0.179	0.465	0.315*	0.235*	0.262*					
5	*FIRM SIZE*	4.616	1.481	0.151*	-0.006	-0.059*	0.068*				
6	*LV*	0.520	0.610	-0.172*	-0.151*	-0.166*	-0.047*	0.055*			
7	*MB*	0.566	1.779	0.001	0.083*	0.090*	-0.009	-0.128*	-0.071*		
8	*ROA*	0.003	0.499	0.133*	0.077*	0.112*	0.030*	0.032*	-0.166*	0.026	
9	*FOREIGN (%)*	5.091	11.917	0.168*	0.113*	0.172*	0.066*	0.327*	-0.040*	0.047*	0.034*

*Notes: * Significant at the 5% level (two-tailed test)*

5.2. Descriptive Statistics

Table 6 presents the descriptive statistics and correlation coefficients. The table shows mean and standard deviations for all our dependent variables, firm characteristics variables, and foreign ownership variable discussed in the earlier section. *FOREIGN OWNERSHIP* is positively and significantly correlated with all dividend measures: *DIVPAY* (0.168), *DIV/SALES* (0.113), *DIV/TA* (0.172) and *DIV/N*I (0.066).

To provide an initial assessment of the differences between firms that pay dividends and do not, we compare the firm characteristics in Table 7. We have 3,196 observations for dividend paying firms (DIVPAY = 1) and 2,135 observations for non-paying firm (DIVPAY = 0). Columns (1) and (2) report mean and median values for the firms that pay dividends. The next two columns report the same summary statistics for firms that do not pay dividends. Columns (5) and (6) report the univariate test results comparing the dividend paying and non-paying firms. The t-statistics for the mean differences and Wilcoxon signed-rank tests for the median differences are given. The results show significant differences (at 0.1% level) between the groups in both mean and median for *FIRM SIZE*, *LEVERAGE*, *ROA*, and *FOREIGN OWNERSHIP*.

The summary statistics on *FIRM SIZE*, measured as the log of total assets, indicate that the dividend paying firms are larger than the firms that do not pay dividends. The next variable relates dividend policy to firm's capital structure. The average book value debt to total asset (*LEVERAGE*) is lower for the firms that pay dividends. The significant differences between firm's profitability measured, return on asset (*ROA*), indicates that the profitable firms pay higher dividends. Dividend paying firms also have higher valuation ratio, measured as the market-to-book ratio. However, the *MARKET-TO-BOOK* is only significant for its median values.

On the ownership differences, dividend paying firms have higher foreign ownership: an average of 6.726% foreign ownership (about 4 percentage points higher than the firms do not pay dividends).

Table 7. Dividend Payers vs. Non-Payers

	Summary Statistics				Tests for Difference Between the Groups	
	DIVPAY=1		*DIVPAY=0*			
	Mean	Median	Mean	Median	t-stat on Diff.	Wilcoxon
Variables	(1)	(2)	(3)	(4)	(5)	(6)
FIRM SIZE	4.799	4.531	4.342	4.057	11.183***	12.300***
LEVERAGE	0.435	0.442	0.649	0.599	-12.719***	-22.924***
MARKET-TO-BOOK	0.568	0.335	0.564	0.268	0.078	9.295***
ROA	0.057	0.047	-0.079	-0.017	9.828***	39.465***
FOREIGN OWNERSHIP	6.726	0.400	2.644	0.030	12.428***	15.133***

Notes: The first two columns report the mean and median of the characteristics for the dividend paying firms. Columns 5 and 6 report the t-statistics for the average difference, and the Wilcoxon signed rank statistics for the median difference.

* *Significant at the 5% level*

** *Significant at the 1% level*

*** *Significant at the 0.1% level*

5.3. To Pay or Not to Pay

We use a probit regression model for panel data to examine the role of foreign ownership in firms' decisions whether or not to pay. While controlling for the relevant firm characteristics presented in Fama and French (2001), we estimate the probability of firm's decision to pay dividends (DIVPAY=1). We also include year and industry dummy variables to control for industry effects and time effects across the sample.

The results of panel probit estimations are reported in Table 8. The regression results are consistent with those in Table 7. The results suggest that larger firms, firms with lower debt ratios, and firms with higher market-to-book ratio and return on assets (ROA) are more likely to pay dividends. The dividend decision is also related to foreign ownership. The estimated *FOREIGN OWNERSHIP* coefficient is positive and statistically significant (at 0.1 per cent level).

The third column reports the calculated marginal probability effects at the multivariate point of means. The marginal effects imply that a marginal change in foreign ownership from the sample average of 5.091% is associated with a 0.41 percentage point increase in the probability of firm paying dividends, other things equal. Overall, controlling for firm characteristics, we note that the greater the foreign shareholdings, the more likely firms are to pay dividends.

Table 8. Panel Probit Analysis of Dividend Paying Firms

	Dependent Variable: *DIVPAY*		
Independent Variables	Coefficient	t-statistics	Marginal Probability
Intercept	0.9194	1.22	
FIRM SIZE	0.4841***	10.00	16.40%
LEVERAGE	-4.3822***	-17.08	-148.46%
MARKET-TO-BOOK	0.0345*	2.47	1.17%
ROA	0.1847**	3.31	6.26%
FOREIGN	0.0121**	3.27	0.41%
Industry Dummy	Included***		
Year Dummy	Included***		
Wald χ^2	446.43***		
Number of Firms	1111		
Number of Observations	5331		

Notes: Industry dummies and year dummies are not reported but both are jointly significant.
** Significant at the 5% level; **Significant at the 1% level; *** Significant at the 0.1% level*

5.4. How Much to Pay?

We now investigate the levels of dividend payouts. We estimate the effects of firm characteristics and foreign ownership on three dividend payout ratios (*DIV/SALES*, *DIV/TA*, and *DIV/NI*). We use a panel Tobit model because the dividend distribution is censored from below at zero.[10] As we discussed in the previous section, about 40 percent of our sample firms do not pay dividends, thus showing a zero dividend ratio. Therefore, OLS estimates of coefficients might be inconsistent and biased towards zero (Greene, 1981). The Wald chi-square test indicates that all specifications of all models are statically significant (at 0.1% level) as a whole. Industry dummies and year dummies are included as they are all jointly significant.

Table 9 reports the Tobit regression results. The results are consistent with the probit regression analysis reported in Table 8. We find positive and significant relationships between dividend payouts and *FIRM SIZE*, and *ROA*, suggesting that larger and profitable firms are more likely to pay higher dividends. The estimate coefficients for *LEVERAGE* in all models are negative and significant as expected. We also find that the coefficients for *MARKET-TO-BOOK* ratio

are positive and significant (except for the model (3) where the dependent variable is *DIV/NI*).

These results are consistent with the existing empirical findings (e.g., Fama and French, 2001; Khan, 2006; Mancinelli and Ozkan, 2006; Truong and Heaney, 2007) except for the positive and significant relationship we find for *MARKET-TO-BOOK* ratio. Our results suggest that "growth firms" are more likely to pay higher dividends which may be paradoxical to our common understanding of dividends. However, this finding gives first empirical support to LLSV (2000)'s "agency substitution" theory that we expect high growth firms to have higher dividend payouts than low growth firms in countries with low shareholder protection.[11]

On the results regarding the foreign ownership, we consistently find positive and significant relationship between foreign ownership and the level of dividend payouts. These results can be interpreted as a support for our argument that higher level of foreign ownership is associated with more dividends. These results are consistent with the agency theory on dividends (Rozeff, 1982; Easterbrook, 1984).

Table 9. Panel Tobit Analysis on Dividend Payout Ratios[12]

	Dependent Variables		
	DIV/SALES	*DIV/TA*	*DIV/NI*
Independent Variables	(1)	(2)	(3)
Intercept	0.0150 *	0.0126 *	0.2000
	(2.11)	(2.55)	(1.06)
FIRM SIZE	0.0028 ***	0.0011 ***	0.0855 ***
	(6.87)	(3.94)	(7.65)
LEVERAGE	-0.0496 ***	-0.0278 ***	-0.9942 ***
	(-21.59)	(-20.52)	(-14.50)
MARKET-TO-BOOK	0.0006 ***	0.0005 ***	0.0052
	(4.18)	(5.30)	(0.97)
ROA	0.0027 ***	0.0020 ***	0.0619 **
	(4.12)	(4.91)	(2.88)
FOREIGN	0.0001 **	0.0001 ***	0.0020 *
	(2.73)	(6.12)	(2.07)
Industry Dummy	Included ***	Included ***	Included ***
Year Dummy	Included ***	Included ***	Included ***
Wald χ^2	727.29 ***	760.65 ***	392.95 ***
Number of Firms	1111	1111	1111
Left-censored Observations	2135	2135	2135
Uncensored Observations	3196	3196	3196

Notes: Industry dummies and year dummies are not reported but both are jointly significant; t-statistics are reported in parentheses below the coefficient estimates.
** Significant at the 5% level; **Significant at the 1% level; *** Significant at the 0.1% level*

5.5. Persistence of Dividends

Lintner (1956) argue that firms are reluctant to reduce cash dividend payments since it may be viewed as a negative signal of future performance. In order to allow for this concept of persistence or state dependence in dividend policy behaviour, we include past dividends in the above models.

Table 10 reports the dynamic Tobit regression results. The coefficient estimates for lagged dividends are large and significant for models (1) and (2) where we use *DIV/SALES* and *DIV/TA* as the dependent variables. The size of the coefficient is consistent with the "dividend smoothing" behaviour noted by Lintner (1956) that firms adjust dividend payments gradually over time. However, in model (3) where we use *DIV/NI* as the dependent variable, the lagged *DIV/NI* is not significant.

Most importantly, the estimated results for all other determinants in our dividend models are consistent with the previous probit and Tobit regression analysis reported in Tale 8 and Table 9 even after controlling for the lagged dividends.

Table 10. Dynamic Panel Tobit Analysis on Dividend Payout Ratios

	Dependent Variables		
	DIV/SALES	*DIV/TA*	*DIV/NI*
Independent Variables	(1)	(2)	(3)
Intercept	0.0094	0.0059	0.2527
	(1.78)	(1.83)	(1.12)
Lagged Dividends[13]	0.4582***	0.5649***	-0.0252
	(23.21)	(21.95)	(-0.98)
FIRM SIZE	0.0019***	0.0009***	0.0887***
	(6.05)	(4.59)	(6.38)
LEVERAGE	-0.0325***	-0.0183***	-1.0772***
	(-16.17)	(-14.86)	(-12.67)
MARKET-TO-BOOK	0.0007*	0.0005*	-0.0132
	(2.09)	(2.52)	(-0.73)
ROA	0.0018***	0.0012***	0.0596*
	(3.54)	(3.95)	(2.49)
FOREIGN	0.0001**	0.0001***	0.0029*
	(2.90)	(5.20)	(2.51)
Industry Dummy	Included***	Included***	Included***
Year Dummy	Included***	Included***	Included***
Wald χ^2	1458.84***	1523.73***	334.16***
Number of Firms	1111	1111	1111
Left-censored Observations	1692	1692	1786
Uncensored Observations	2528	2528	2434

Notes: Industry dummies and year dummies are not reported but both are jointly significant; t-statistics are reported in parentheses below the coefficient estimates.
** Significant at the 5% level; **Significant at the 1% level; *** Significant at the 0.1% level*

6. Discussion of Potential Endogeneity

In the previous section, like the existing studies on ownership and dividends (e.g., Rozeff, 1992; Easterbrook, 1984; Gugler and Yurtoglu, 2003; Khan, 2006; Mancinelli and Ozkan, 2006), we have treated foreign ownership as exogenous variable in the dividend policy regressions. Recent research in strategy has also emphasized the impact of ownership on firm level strategy (Gedajlovic and Shapiro, 1998; Hoskisson et al., 2002) and found strong evidence of the impact of ownership on international diversification (Tihanyi et al., 2003), R&D strategy (Baysinger et al., 1991), and corporate social responsibility (Johnson and Greening, 1999). In addition, the identity and preference of owners also have impact on small business growth in the short run (Johnson, Conway and Kattuman, 1999), and human resource management practices (Bryson, Gomez, and Kretschmer, 2007) in U.K.

However, there is equally convincing evidence supporting the argument that higher dividends induce increased shareholdings of institutional ownership (Grinstein and Michaely, 2005), largest shareholders (Truong and Heaney, 2007), and domestic funds (Covrig et al., 2006). In addition, Allen et al. (2000) argue that firms paying dividends attract more institutional investors in the U.S. because dividends are taxed at lower rate or even untaxed for some institutions. However, this tax clientele effect does not apply in Korean stock markets as dividends can be taxed more for foreign investors depending on bilateral tax treaty agreements.[14]

One possible way to tackle this potential endogeneity problem is to use instrumental variables methods like two-stage least squares (2SLS). However, finding valid instrumental variable(s) in corporate finance literature, especially for firm ownership are known to be difficult (Himmelberg et al., 1999). Nevertheless, to address the potential endogeneity effect, we first apply the Wu-Hausman specification test to test for endogeneity (Wu, 1973; Hausman, 1978).[15]

Wu-Hausman test for exogeneity has been conducted for all dividend models and foreign ownership. The tests suggest that there is no significant endogeneity between them, allowing us to use the standard Tobit model over two-stage Tobit model.

In addition, our results presented in Section 3 and 9 do support our view that dividend outcomes are endogenously determined by exogenous foreign ownership. Table 4 reports that dividend payout at *t-1* does not affect foreign ownership in the following year, at *t*. Yet, in Table 9 reports the finding that foreign ownership has positive and significant relationship with dividend payouts, controlling for relevant firm characteristics. These results suggest that it is indeed the presence of foreign ownership which increases dividends rather than high dividends increasing foreign ownership.

Lastly, we conduct a few more robustness checks to strengthen our argument. First, we take companies with significant increases in level of foreign ownership in the first years (1998-1999) of stock market opening and show that these companies do not have higher dividend ratios than the other companies. These comparisons are reported in Table 11. Those companies with significant increases in foreign ownership from 1998 to 1999, on average, did not pay higher dividends than the other companies (i.e., the difference in mean and median values for these two groups are not statistically significant).

Table 11. Comparison of Significant Increases in Foreign Ownership (1998-1999) and Others

	Summary Statistics				Tests for Difference Between the Groups	
	$\Delta FO_{(1999)} \geq 5\%$		$\Delta FO_{(1999)} < 5\%$			
	Mean	Median	Mean	Median	t-stat on Diff	Wilcoxon
Variables	(1)	(2)	(3)	(4)	(5)	(6)
DIV/SALES $_{(1999)}$	0.010	0.007	0.008	0.004	1.666	1.832
DIV/TA $_{(1999)}$	0.007	0.006	0.007	0.004	0.530	1.445
DIV/NI $_{(1999)}$	0.198	0.093	0.171	0.108	0.572	0.458

Notes: The first two columns report the mean and median of the dividend variables for the firms that had significant increases in foreign ownership. Columns 5 and 6 report the t-statistics for the average difference, and the Wilcoxon signed rank statistics for the median difference.

** Significant at the 5% level; **Significant at the 1% level; *** Significant at the 0.1% level*

Table 12. Comparison of Significant Foreign Ownership in 2003 and Others

	Summary Statistics				Tests for Difference Between the Groups	
	$FO_{(2003)} \geq 5\%$		$FO_{(2003)} < 5\%$			
	Mean	Median	Mean	Median	t-stat on Diff	Wilcoxon
Variables	(1)	(2)	(3)	(4)	(5)	(6)
$DIV/SALES_{(2003)}$	0.014	0.010	0.007	0.0002	6.578 ***	9.263 ***
$DIV/TA_{(2003)}$	0.012	0.010	0.006	0.0001	8.610 ***	8.889 ***
$DIV/NI_{(2003)}$	0.229	0.168	0.166	0	2.418 *	5.867 ***

Notes: The first two columns report the mean and median of the dividend variables for the firms that have significant foreign ownership. Columns 5 and 6 report the t-statistics for the average difference, and the Wilcoxon signed rank statistics for the median difference.
** Significant at the 5% level; **Significant at the 1% level; *** Significant at the 0.1% level*

Then, we take companies with high levels of foreign ownership at the end of our sample period (year 2003), and show that these companies have higher dividend ratios than other companies. Table 12 shows that those firms with significant foreign ownership, measured as 5% or more foreign ownership, pay higher dividends than those firms with less than 5% of foreign ownership. On average, the firms with significant foreign ownership in 2003 have 1.3 to 2 times higher dividend ratios than the other firms.

These two simple exercises further support our argument that rises in foreign ownership in Korea led more firms to pay dividends and increase dividend payout levels.

7. Conclusion

By using a rich panel dataset on foreign ownership and firm-specific attributes, we characterize foreign ownership in Korean firms with great detail. Foreign investors seem to prefer larger and export oriented firms with low leverage and high market-to-book ratio. Our findings are unique to other empirical studies that capture the stock preferences of investors as our data captures the investment behaviour of foreigners in relatively unknown, emerging, and recently liberalized stock market.

The study also contributes to the limited empirical literature on ownership structure and dividends in emerging markets. We find that dividend policy is a function of firm size, capital structure (measured as leverage ratio), valuation (measured as market-to-book ratio) and profitability (measured as return on assets). Most importantly, we find that foreign ownership has significant influence on dividend policy that the firm adopts.

Our results are consistent with the agency model of dividends argument set forth by Rozeff (1982) and Easterbrook (1984). In addition, the evidence of high dividend payouts in companies with high levels of foreign ownership in post-1997 financial crisis and subsequent market liberalization support the view that external shareholders extract dividend payments from corporate insiders as a substitute for effective legal protection (LLSV, 2000).

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Notes

[1] Except for some government-regulated companies (e.g., Korea Tobacco and Ginseng Co., Korea Electric Power, Korea Gas Corporation) which have a 40% aggregate limit for foreign investors.
Nuntry; or an international financial organization or association established by a treaty.
[2] FSS started to provide this data publicly from 1998 but discontinued the service in 2003.
[3] We exclude financial firms because financial data for financial firms are not comparable to those of nonfinancial firms (e.g. La Porta et al, 2002). In addition, many financial firms were the first to go through restructuring following the 1997 financial crisis. Many de-listings, mergers, privatizations, and foreign LBOs limit data collection.
[4] The rest, 0.3% of total foreign investors' market capitalization, is held by foreign individual investors.
[5] ₩100 trillion (KRW) is approximately equal to $83 billion (USD) (using the exchange rate quoted at the end of year 2003). To put this figure into perspective, in 2003, Microsoft Corporation was the world's largest company by market capitalization with $264 billion.
[6] Korea's weight in the global stock market is calculated as the ratio of total market capitalization of Korean companies to the total market capitalization of the world's 56 stock exchanges (data source: World Federation of Exchanges).
[7] POSCO is the world's second largest steel maker by market value. Hyundai Motor Company is the world's fourth largest automaker in terms of units sold.
[8] OLS estimations or truncated estimations using sample firms with only positive foreign ownership may create various problems. See Wooldbridge (2002) for more discussion.
[9] Large Industrials are companies that belong to Industry Classification Benchmark code of "2000".
[10] Greene (2004) raises concern for "incidental parameters problem" in panel Tobit models. He finds a large positive finite sample bias when T is very small (T=2 or 3). However, given our panel estimates are based on our sample year of T=6, our estimates are less affected by the potential bias and inconsistency concerns (as Greene recommends T = 5 or more).
[11] Korea's investor protection scores are relatively low. Korea's "cash flow rights," and "control rights" are scored at 0.18 and 0.24, respectively. Compared to 27 countries sample mean of 0.29 for "cash flow rights" and 0.39 for "control rights," Korea has one of the lowest scores (LLSV, 1998, 2002).
[12] Decomposition analysis has been performed to demonstrate the relative importance of different explanatory factors. The variance of the dependent

variable (*DIV/TA*) is explained by: *FIRM SIZE* (1.05%), *LEVERAGE* (11%), *MARKET-TO-BOOK* (0.4%), *ROA* (34.95%), *FOREIGN* (1.92%), Residuals (50.68%).

[13] *DIV/SALES* $_{(t-1)}$, *DIV/TA* $_{(t-1)}$ and *DIV/NI* $_{(t-1)}$ are used for model (1), (2) and (3), respectively.

[14] Income tax withholding rates for the U.S. investors on dividends are 10 or 15%, and Capital gains are 0 or 11%, depending on the percentage of shares owned. The bilateral tax treaties between U.K. and Korea grants the U.K. investors of 0% tax rate on capital gains and 5 or 15% tax on dividends. (Source: The National Tax Service (KOREA), as of January, 2002).

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