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Dynamic Determinants of Dividend Policies in Korean Firms: A Decade-Long Panel Analysis

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ABSTRACT: This study conducts an extensive exploration of the determinants influencing dividend policies among Korean firms, focusing on the interplay between firm-specific attributes and macroeconomic conditions over the decade from 2011 to 2020. Leveraging a dynamic panel data model and employing the System Generalized Method of Moments (GMM) for estimation, we examine a dataset comprising 302 non-financial entities listed on the Korean Stock Exchange. The analysis highlights the significance of prior dividend yield, reinforcing theories of dividend smoothing and signaling, and reveals the varied impacts of factors such as business risk, firm size, ownership structure, and economic indicators like inflation and the term premium on dividend payouts across different industries. The findings underscore the importance of considering both micro-level firm characteristics and broader economic conditions in understanding and predicting dividend behavior. This research contributes to a more nuanced comprehension of the factors determining dividend policy within Korean corporations, emphasizing the critical importance of both sector-specific attributes and macroeconomic influences in the context of the financial environment following the global credit crisis. By integrating macroeconomic variables into our analysis, this study addresses a significant lacuna in the existing literature, which has traditionally concentrated on firm-specific variables.

KEY WORDS: Determinants of Dividend Policy, Dividend Smoothing, Dynamic Panel Data Model, Endogeneity, System GMM
JEL Code: G19, G35

INTRODUCTION

The conundrum of dividend policy, its determinants, and its implications on shareholder wealth has captivated finance scholars and practitioners for decades. Despite the extensive exploration of dividend policy within the ambit of corporate finance, the detailed nuances of what influences dividend policy, particularly in the trajectory of Korea's economic advancement from an emerging to a developed market, continue to present a rich area for scholarly inquiry. This research undertakes a thorough examination of the diverse factors influencing dividend policy in Korean corporations, exploring the intricate relationship between company-specific elements and the broader macroeconomic environment.

Dividend policy, a pivotal aspect of corporate financial management, serves as a mechanism for distributing earnings to shareholders, influencing investment decisions, and signaling firm value. The theoretical underpinnings of dividend policy, as debated by eminent scholars, range from the seminal irrelevance proposition of Miller and Modigliani (1961) to the bird-in-hand theory (Linter, 1956), each offering distinct perspectives on the relevance of dividends. However, the dynamics of dividend policy, influenced by a confluence of firm-specific characteristics and broader macroeconomic factors, necessitate a nuanced analysis, particularly in economies characterized by rapid development and regulatory shifts, such as Korea.

The Korean financial landscape, marked by its resilience and evolution in the aftermath of the global credit crisis, presents a unique milieu for examining the determinants of dividend policy. This study, therefore, seeks to bridge the gap in the literature by employing a dynamic panel data model and the system Generalized Method of Moments (GMM) estimation to analyze a dataset of 302 Korean non-financial firms listed on the Korean Stock Exchange from 2011 to 2020. Our methodology allows for a robust examination of the lagged effects and dynamic relationships inherent in dividend policies, thereby addressing the limitations of previous studies that have predominantly focused on static analyses.

Our research contributes to the burgeoning literature on dividend policy by elucidating the role of not only traditional firm-specific factors but also macroeconomic variables in

shaping the dividend policies of Korean firms. In doing so, we provide empirical evidence supporting the theories of dividend smoothing and signaling, while also uncovering the differential impact of variables such as business risk, firm size, ownership structure, inflation, and the term premium across various industries. This comprehensive analysis not only enhances our understanding of dividend policy in the Korean context but also offers valuable insights for policymakers, investors, and corporate managers navigating the complexities of dividend distributions in emerging markets.

By reevaluating the determinants of dividend policy through the lens of both firm-specific and macroeconomic factors, this study endeavors to shed light on the nuanced dynamics governing dividend decisions in Korean firms, thereby contributing to a more informed and strategic approach to dividend policy formulation in similar financial ecosystems. In the subsequent section, we present the Literature Review. This will be succeeded by the Methodology section, encompassing Data and Variables. Subsequently, we will delineate the Empirical Results. The paper will culminate with the Conclusion.

LITERATURE REVIEW

The scholarly investigation into the determinants of dividend policy within South Korean corporations has traditionally emphasized the analysis of firm-level variables. This body of research meticulously examines the intricate relationships between these variables and the dividend distributions of firms. Yook (1989) made early contributions to this domain, uncovering the negative correlations between dividend distributions and factors such as sales growth rates, the proportion of equity held by principal shareholders, and the firm's beta coefficient. An exhaustive survey by Won and Kim (1999) revealed that variables such as net income, the availability of earnings for dividends, future cash flow requirements, anticipated future earnings, historical dividend patterns, industry-standard dividend practices, and prevailing market interest rates play significant roles in shaping dividend policy decisions. Sul and Kim (2006) further advanced this understanding by demonstrating the positive influence of foreign shareholdings on dividend yields. Song (2007) identified a beneficial link between dividend yield and both previous dividend yields and profitability ratios, alongside a negative correlation with firm size and leverage. Shin, Kim, and Kim (2008) extended these findings, reporting positive relationships between profitability ratios and dividend payments, including a dividend premium, while also noting adverse effects from leverage, business risk, and trading turnover ratios. Despite the wealth of empirical research focusing on the South Korean context, conclusions drawn from these studies present a degree of ambiguity regarding the determinants of dividend policy.

Moreover, this corpus of literature has largely neglected the potential impact of macroeconomic variables on the determinants of dividend policy, leaving a critical gap in understanding the broader dynamics at play. Recent studies have underscored the importance of incorporating macroeconomic considerations into the analysis of dividend policies. For instance, Bass and Reddemann (2011), in their examination of United States data, discovered a positive association between inflation rates and dividend disbursements, a finding echoed in Australian contexts by Bass (2009). In exploring the effects of stringent monetary policies, Pandey and Bhat (2004) highlighted their influence on the dividend payout behaviors of Indian corporations. Jeong (2011) investigated Korean firms, revealing a significant linkage between dividend payments and average interest rates, while Rangasamy (2021) pinpointed inflation as a notable macroeconomic variable impacting dividend payouts in India.

These insights indicate that macroeconomic factors are instrumental in shaping dividend policies, a realization that remains underexplored within the Korean economic landscape. The omission of these macroeconomic variables in earlier empirical inquiries may account for discrepancies in findings. Thus, there is a compelling need for an encompassing study that integrates both firm-specific attributes and macroeconomic conditions to unravel the complex determinants of dividend policy in South Korean enterprises comprehensively. Our research endeavors to fill this gap by delving into the dynamic dividend policies of Korean firms, taking into account an array of firm-specific and macroeconomic variables. Through the analysis of a dataset comprising 302 firms listed on the Korea Stock Exchange (KSE) and consistently distributing dividends from 2011 to 2020, this study aims to shed light on the intricate interplay between these variables and their collective influence on dividend decision-making processes

Within the ambit of dividend policy research, a nuanced investigation into the determinants influencing firms' dividend yields is crucial. This study meticulously evaluates ten firm-specific variables alongside two macroeconomic factors [1], endeavoring to delineate their impact on the dividend policies of Korean firms.

The inquiry begins with the analysis of the one-year lagged dividend yield, posited as an indicator of a firm's historical

[1] Initially, we considered additional macro variables such as the GDP growth rate and the default risk premium in our analysis. However, we encountered two challenges: firstly, we obtained unsatisfactory empirical results when examining the relationship between these variables and the dividend yield. Secondly, we found a lack of previous literature exploring these specific macro variables in the context of dividend policy. Consequently, we decided not to invorporate them into our study.

dividend policy, serving as a market signal of stability and confidence. The relationship between profitability and dividend payouts is encapsulated by the Return on Equity (ROE), which, according to Fama and French (2001), exhibits a complex, sometimes contradictory influence on dividend decisions. Liquidity is posited to foster higher dividend payouts, premised on the rationale that financially solvent firms are better positioned to distribute dividends (Ho, 2003). The impact of leverage on dividend payouts is twofold; while Franlin and Muthusamy (2010) suggest a negative correlation due to debt obligations, an alternative perspective considers the propensity of financially robust firms to disburse higher dividends. The investment opportunity, as proxied by the price-to-book ratio [2], is anticipated to inversely affect dividend yield, a hypothesis supported by Knyazeva and Knvazeva (2012). Firm size presents a dichotomy in existing literature, with Labhane and Mahakud (2016) identifying a positive correlation, whereas Ahmed and Javed (2009) and Ramli (2010) report a negative association. Inside ownership is theorized to mitigate agency problems, thereby influencing dividend policies (Jensen & Meckling, 1976). Foreign ownership is speculated to elevate dividend payouts, predicated on the assumption that international shareholders favor higher dividends. Business risk, according to Easterbrook (1984) and Crutchley and Hensen (1989), can either deter or encourage dividend payouts based on varying theoretical perspectives. Lastly, the tax effect, contingent upon the prevailing tax framework and the firm's particular context, is expected to influence dividend distributions (King, 1977).

Furthermore, this investigation extends to macroeconomic variables, specifically inflation and the term premium, identified by Rangasamy (2021) as potential influencers of dividend policy. Inflation is posited to positively affect dividend payments, possibly due to its impact on the nominal earnings of corporations (Reddlemann, 2011). Conversely, the term premium, defined by the yield disparity between long-term government bonds and short-term lending rates, is hypothesized to negatively correlate with dividend yields[3], reflecting the adverse effects of increased borrowing costs on dividend capabilities.

Through an integrative analysis of both firm-specific and macroeconomic variables, this study aspires to furnish a holistic understanding of the dynamics governing dividend policies in Korean firms. It is anticipated that the findings will significantly enrich the corpus of existing literature, offering profound insights for policymakers, investors, and corporate managers committed to refining dividend policy strategies.

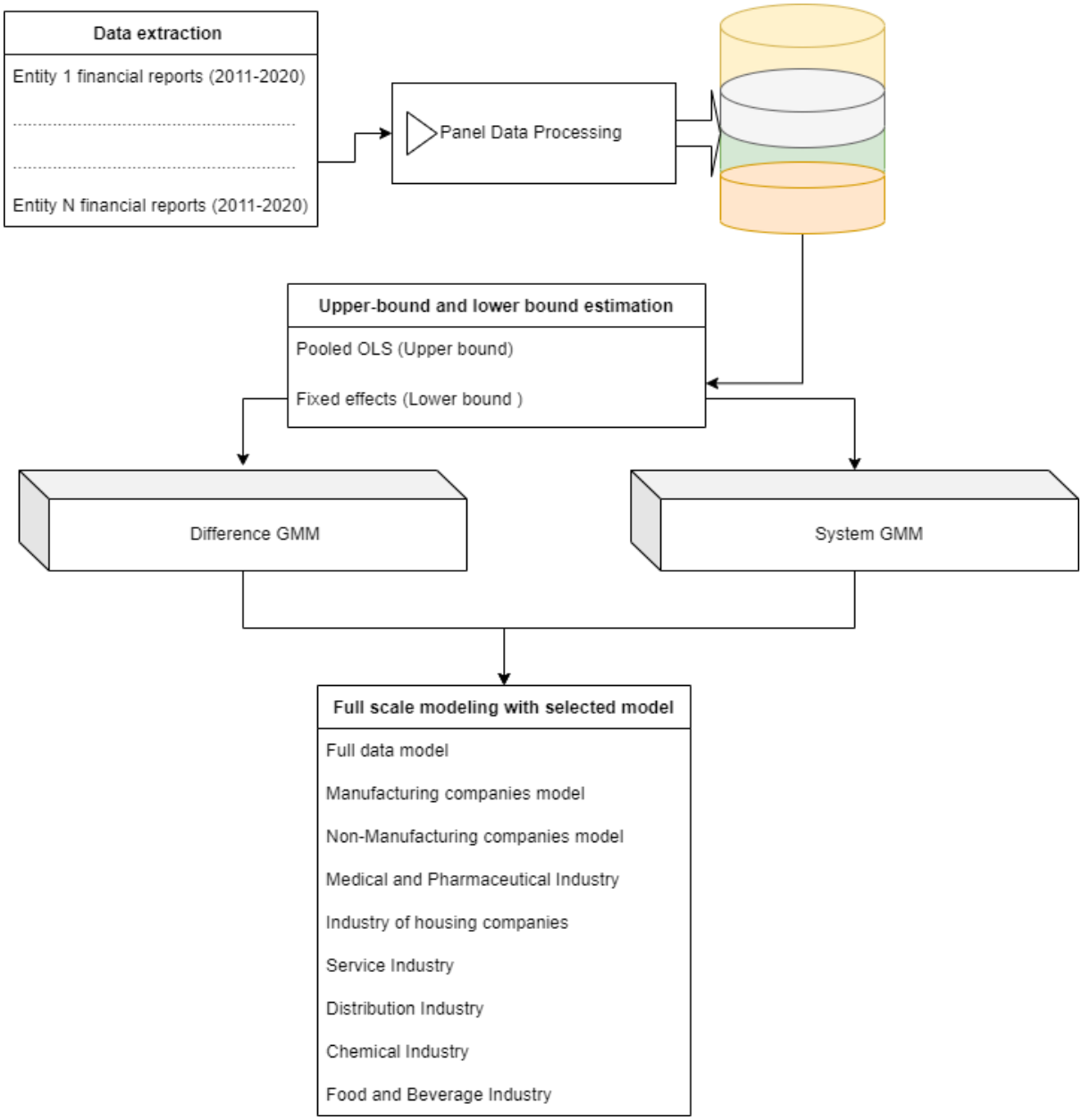
METHODOLOGY: DATA AND VARIABLES

Our dataset comprises 302 South Korean corporations that have consistently paid dividends from 2011 to 2020. These entities, all non-financial and publicly listed on the Korea Stock Exchange, represent a broad spectrum of the country's corporate landscape. The dataset, meticulously compiled from FnGuide—a specialized database accessible via subscription—incorporates a diverse array of variables. These include the dividend yield (Div) as a direct measure of dividend policy, Return on Equity (ROE) to gauge profitability, Current Ratio (CR) assessing liquidity, Debt to Equity ratio (DE) for leverage analysis, Price to Book ratio (PB) as an indicator of investment opportunities, and firm size (Size). Additionally, the dataset encompasses the percentage of stock held by major shareholders (Inside) to evaluate inside ownership, the proportion held by foreign entities (Foreign) to understand foreign ownership dynamics, the unlevered beta (Beta) to assess business risk, and the ratio of corporate tax to pre-tax profit (Tax) to examine tax implications on dividend decisions. Two macroeconomic variables are also considered: the inflation rate (Inflation), derived from the Consumer Price Index (CPI), and the term premium (TP), calculated as the differential between the yields of 5-year government bonds and the call money rate. Dividend yield, defined as a stock's annual dividend payments to its shareholders expressed as a percentage of the stock's current market price, serves as an indicator of the return shareholders anticipate from owning shares. Unlike dividend tendency, which relies on the face value, dividend yield utilizes the market value of the stock. Drawing on the findings of Choi and Jang (2014), who demonstrated the superior performance of dividend yield over face value-based dividend tendencies, our study adopts dividend yield as the dependent variable to capture the essence of dividend payouts.

[2] Tobin's q is the ratio between a physical asset's market value and its replacement value. Although it is not the direct equivalent of Tobin's q, it has become common practice in the finance literature to calculate the ratio by comparing the market value of a company's equity and liabilities with its corresponding book values (for example, Morck, Shleifer, and Vishny,1988). We have used "price-to-book (PB) ratio" as a proxy for Tobin's q.

[3] The term premium has been used in the time-series predictability literature, such as in Campbell (1987) and Fama and French (1989).

Figure 1. Methodology structure



The methodological framework of our study initiates with the extraction of data from the annual financial statements of these firms over the designated period, thereby creating a comprehensive panel dataset through a detailed preprocessing phase. This stage sets the foundation for the empirical analysis, wherein upper and lower bounds are determined—respectively derived from Pooled Ordinary Least Squares (OLS) regression and Fixed Effect regression analyses. A critical step involves comparing the estimates of the lagged dependent variable from both the Difference Generalized Method of Moments (GMM) and the System GMM against these bounds. Preference is accorded to the System GMM estimation, especially when the Difference GMM estimates closely align with or fall beneath the Fixed Effect estimates, indicating potential downward bias due to inadequate instrumentation (Blundell & Bond, 2000). This process culminates in the final analytical phase, adhering to the outlined model selection criteria.

Employing a dynamic panel data model as conceptualized by Blundell et al. (2000), we adopt the following general equation:

$$y_{it} = \alpha y_{i,t-1} + \beta x_{it} + \varepsilon_i + \epsilon_{it} \qquad i = 1,..,N \;\; t = 1,\dots,T$$

[1]

Where:

α, β, and φ are k × 1 vectors of parameters to be estimated,

y_{it} is a $1 \times k$ vector of the dependent variable of i at time t,

y_{it-1} is a $1 \times k$ vector of the independent variable of i at time t-1,

x_{it} is a $1 \times k$ vector of strictly exogenous covariates,

ε_i are time-constant unobserved entity effects,

ϵ_{it} are time varying residuals, and
t is a specific year, i is a distinct firm, and k signifies the number of independent variables.

Specifically, y_{it} and y_{it-1} are Div i at time t, and t-1, respectively. Exogenous covariates are $ROE, CR, DE, PB, Size, Inside, Foreign, Beta, Tax, DS, Inflation,$ and TP where Div is the dividend yield, ROE, CR, DE, PB, Size, Tax, Inside, Foreign, Beta, and Tax are firm specific variables, while DS, Inflation and TP are the macroeconomic variables. This model intricately incorporates lagged dependent variables to account for unobserved heterogeneity and the dynamic aspect of dividend smoothing behavior. Nonetheless, this inclusion raises concerns regarding endogeneity. To mitigate this, the first-differenced GMM approach by Arellano and Bond (1991) is employed, leveraging instrumental variables for refined estimations and addressing potential biases and endogeneity issues inherent in the independent variables. The system GMM estimator, as refined by Blundell and Bond (1998), integrates both level and differenced equations, offering an enhanced framework that addresses the limitations of the original difference GMM approach by employing lagged differences as instruments for level equations. This advancement ensures more robust and efficient estimates, particularly for variables with persistent temporal characteristics. To ensure the integrity and validity of our GMM-based findings, we conducted thorough robustness checks, including adjusting lag lengths and applying alternative estimation techniques such as the two-step GMM. These measures reinforce the reliability of our results and underscore our commitment to methodological rigor.

Our analysis, enriched by a blend of firm-specific and macroeconomic variables, adopts "system" and "difference" GMM estimators as proposed by Arellano and Bond (1991), Arellano and Bover (1995), and Blundell and Bond (1998) to circumvent inconsistencies arising from the correlation between lagged variables and unobserved entity effects. The effectiveness of the GMM estimator depends on the validity of the instrumental variables and the assumption of no serial correlation in the error term. Two specification tests, as proposed by Arellano and Bond (1991), are used to validate these assumptions. The first, the Hansen J test, inspects the overall validity of the instrumental variables by checking over-identification restrictions. The second, the Arellano–Bond test, scrutinizes whether the differenced error term ($\Delta\varepsilon t$) displays serial correlation, specifically second-order. A successful model fit is confirmed when the null hypothesis is accepted in both tests.

Table 1. Descriptive Statistics

Variable	Mean	Standard Dev.	Min.	Max.
Div.	2.713	2.47	0	48.48
ROE	7.432	10.501	-89.59	227.06
CR	225.12	234.12	17.84	4200.18
DE	93.551	99.247	3.6	2161.97
PB	1.099	1.053	0.13	11.28
Size	8.271	1.642	4.85	15.39
Inside	46.135	15.395	0.5	89.98
Foreign	13.501	14.259	0%	89.73
Beta	0.713	0.304	-1.02	2.07
Tax	0.272	3.046	-29.97	116.87
Inflation	1.740	0.713	0.6	3.1
Term Premium	0.56	0.304	0.09	0.95

1. All variables are expressed as percentages (%), except for Size, which is measured in natural logarithm (ln) of market capitalization. Additionally, the variables PB, Beta, Tax, and Obs. are expressed in numerical units.
2. There are 10 observations for variables 'Inflation' and 'Term Premium', while all other variables contain 3020 observations.

Table 1 provides a comprehensive statistical summary of the variables influencing dividend yield among the sampled firms. The dataset encompasses 302 Korean firms, revealing an average dividend yield of 2.713%, with an observed range from a minimum of 0% to a maximum of 48.48%. This variability underscores the diverse dividend distribution strategies employed across the sample. In terms of Return on Equity (ROE), the average stands at 7.432%, with the spectrum ranging dramatically from -89.59% to 227.06%. This indicates a wide variance in firm profitability, from significant losses to substantial gains in equity. The Current Ratio (CR) averages at 225.12%, suggesting that, on average, the firms' current assets are more than double their current liabilities, reflecting a strong liquidity position across the board. The Debt to Equity ratio (DE) mean of 93.551% highlights that the typical firm's debt level constitutes nearly 93.551% of its equity, illustrating varying degrees of financial leverage within the sample. The Price to Book ratio (PB) averages at 1.099, indicating that the market valuation of firms is generally slightly above their book value, albeit with

significant variability from 0.13 to 11.28. Market capitalization, represented through its natural logarithm, averages at 8.271, with a distribution ranging from 4.85 to 15.39, which points to a diverse scale of firms within the sample. Inside ownership averages at 46.135%, with values spanning from 0.5% to 89.98%, illustrating a broad range of control levels exerted by major shareholders. Foreign ownership averages at 13.501%, with a full range from 0% to 89.73%, highlighting varying degrees of international investment across firms. The unlevered beta, an indicator of business risk, has an average value of 0.713, ranging from -1.02 to 2.07, which suggests a diverse risk profile among the sampled firms. The average tax ratio stands at 0.272, with extremes ranging from -29.97 to 116.87, reflecting the differing tax burdens faced by firms. The inflation rate, derived from the Consumer Price Index (CPI), averages at 1.74% annually, with a range from 0.6% to 3.1%, indicating the macroeconomic conditions influencing the firms. Lastly, the term premium averages at 0.56%, with a minimum of 0.09% and a maximum of 0.95%, illustrating the interest rate environment's influence on firm operations. The standard deviation of these variables showcases the financial and economic diversity present within the sample, affirming that firms operate under a wide array of conditions

EMPIRICAL RESULTS

Unit Root Tests

To ascertain the stationarity of the variables under study, we commenced our analysis by deploying the Im–Pesaran–Shin (IPS) unit root test across the panel data. Proposed by Choi (2001), this test is particularly adept at handling unbalanced panels due to its flexibility in accommodating any number of lags. The foundational hypothesis of the IPS test posits the presence of a unit root across all panel entities. It operates under the premise that error terms are independently and normally distributed across both cross-sectional and temporal dimensions, permitting variance heterogeneity across panels (Im et al., 2003). In pursuit of rigor and to reinforce the robustness of our findings, additional tests were employed to corroborate the stationarity of our differenced data.

Table 2.Unit Root Tests

Variable	Im-Pesaran-Shin		Harris-Tzavalis		Levin-Lin-Chu	
	Level	1st Diff	Level	1st Diff	Level	1st Diff
	t-statistic p.value	t-statistic p.value	t-statistic p.value	t-statistic p.value	t-statistic* p.value	t-statistic* p.value
Div	-1.1267 0.1299	-11.7501 0.0000***	0.3983 0.0000***	-0.4240 0.0000***	-11.0355 0.0000***	-21.7364 0.0000***
ROE	-10.3101 0.0000***	-19.3319 0.0000***	0.0744 0.0000***	-0.4292 0.0000***	-55.5877 0.0000***	-41.7029 0.0000***
CR	-1.4214 0.0776*	-17.2335 0.0000***	0.4694 0.0000***	-0.1546 0.0000***	-14.6406 0.0000***	-34.2105 0.0000***
DE	-1.4316 0.0761*	-9.7416 0.0000***	0.4448 0.0000***	-0.0823 0.0000***	-14.8657 0.0000***	-17.1695 0.0000***
PBR	-1.1717 0.1207	-13.4311 0.0000***	0.5298 0.0000***	-0.1637 0.0000***	-14.8807 0.0000***	-28.1640 0.0000***
Size	-3.6824 0.0001***	-12.9389 0.0000***	0.6256 0.0000***	-0.1178 0.0000***	-20.9295 0.0000***	-29.7580 0.0000***
Inside	-1.1823 0.1149	-14.3278 0.0000***	0.6485 0.0000***	-0.1348 0.0000***	-7.9e+03 0.0000***	-7.8e+03 0.0000***
Foreign	-5.0154 0.0000***	-16.8026 0.0000***	0.6120 0.0000***	-0.1072 0.0000***	-26.3272 0.0000***	-43.8451 0.0000***
Tax	-7.1211 0.0000***	-20.0867 0.0000***	-0.0875 0.0000***	-0.5485 0.0000***	-17.1599 0.0000***	-31.8092 0.0000***
Beta	-6.8471 0.0000***	-19.2076 0.0000***	0.1513 0.0000***	-0.4330 0.0000***	-18.2058 0.0000***	-36.3476 0.0000***
Inflation	-6.7749 0.0000***	-2.3856 0.0000***	0.2442 0.0000***	-0.3434 0.0000***	-15.0798 0.0000***	-6.3274 0.0000***
Term Premium	-40. 903 0.0000***	-39.7427 0.0000***	-0.2364 0.0000***	-0.3434 0.0000***	-71.7763 0.0000***	-67.9952 0.0000***

**** p<0.01, ** p<0.05, * p<0.1*

The ensuing results, delineated in Table 2, incorporate analyses from both the Harris-Tzavalis and Levin-Lin-Chu unit root tests, further broadening the spectrum of our stationarity verification. The IPS test, acknowledging the potential heterogeneity of slopes across panels, revealed that a significant majority of the variables—including Return on Equity (ROE), firm Size, foreign Ownership, Tax burden, Beta coefficient, Inflation rate, and Term Premium—demonstrate stationarity at the 1% significance level. Conversely, the Current Ratio (CR) and Debt to Equity ratio (DE) exhibited stationarity at the 10% level, as evidenced by p-values of 0.0776 and 0.0761, respectively. Variables not initially stationary were found to achieve stationarity upon first differencing. Parallelly, the Harris-Tzavalis and Levin-Lin-Chu unit root tests affirm the stationarity of the dataset, not just at their respective levels but also upon the application of first differences. Armed with this validated data, our analysis progresses to explore four regression models: (1) Pooled Ordinary Least Squares (OLS) estimation, (2) Fixed Effect estimation, (3) Differenced Generalized Method of Moments (GMM) estimation, and (4) System GMM estimation, with the outcomes presented in Table 3. This methodological approach ensures a comprehensive and nuanced analysis, grounded in the validated stationarity of our dataset, thereby setting a firm foundation for subsequent econometric modeling

Table 3. Model Upper-bound and Lower-bound estimation

	(1) Pooled OLS	(2) Fixed Effect	(3) Differenced GMM	(4) System GMM
Prev. Div	0.795***	0.365*	0.181	0.452*
	(0.014)	(0.214)	(0.187)	(0.25)
ROE	0.015***	0.013***	0.026	-0.082
	(0.003)	(0.004)	(0.033)	(0.068)
CR	0	0	0.022	0.017
	(0)	(0)	(0.019)	(0.016)
DE	0	0	-0.025	-0.067*
	(0)	(0)	(0.028)	(0.04)
PB	-0.179***	-0.131*	0.305	-0.064
	(0.035)	(0.074)	(0.35)	(0.376)
Size	0.028	-0.603***	-1.975***	0.898
	(0.027)	(0.137)	(0.742)	(0.674)
Inside	0.001	0.013*	-0.114	-0.053
	(0.002)	(0.008)	(0.133)	(0.045)
Foreign	0.001	0.015*	-0.004	-0.119
	(0.003)	(0.008)	(0.03)	(0.086)
Beta	-0.083	0.075	1.272	-0.039
	(0.087)	(0.091)	(1.036)	(0.976)
Tax	-0.004	-0.005	-0.005	0.042*
	(0.01)	(0.006)	(0.005)	(0.026)
Inflation	15.229***	18.309***	6.101	12.821
	(5.552)	(3.495)	(12.888)	(17.213)
Term Premium	-0.26***	-0.22**	-0.145	-0.522*
	(0.101)	(0.089)	(0.123)	(0.271)
cons	0.231	5.364***		0.89
	(0.259)	(1.381)		(6.998)
Observations	2718	2718	2416	2718
Hansen p-value			0.142	0.634
Ar1 p-value			0.077	0.082
Ar2 p-value			0.438	0.318

*Robust standard errors are in parentheses. *** p<0.01, ** p<0.05, * p<0.1*

Table 3 systematically outlines four distinct econometric models, guiding us through the evaluative process employed to select the most fitting estimation approach for our analysis. Initially, Models (1) and (2) serve the essential function of establishing both upper and lower bounds for our estimations, crucial for framing the scope of our inquiry. It is critical to acknowledge, however, that neither of these preliminary models addresses the crucial aspect of endogeneity, which is inherent to our analytical framework.

As the investigation progresses to Models (3) and (4), both

are designed with the capability to confront and account for the endogeneity issue. Yet, our analytical preference inclines towards Model (4), a decision underpinned by a nuanced understanding. Specifically, if the estimate derived from the Difference GMM method is equal to or less than the estimate from the Fixed Effect model, it suggests a potential downward bias in the former, likely stemming from inadequate instrumentation. In such instances, the System GMM estimation, as advocated by Blundell & Bond (2000), is considered more adept and, therefore, preferred for our purposes. Upon scrutinizing the System GMM model (Model 4), the robustness of our methodology is further validated through the non-rejection of the null hypothesis in both the Hansen J test and the serial correlation test. These outcomes collectively endorse the integrity of our instrumental variables and affirm the absence of autocorrelation within the model.

Within this refined System GMM framework, certain variables manifest as statistically significant. Notably, the lagged dividend yield demonstrates significance at the 10% level, bearing a positive coefficient. This finding is congruent with theories of dividend smoothing and signaling, suggesting a predictive consistency in dividend distribution practices. Additionally, two firm-specific variables, Leverage (DE) and Tax, emerge as significant at the same confidence level. Leverage is negatively correlated with dividend payouts, implying that firms with greater debt obligations tend to distribute lesser dividends between 2011 and 2020. This relationship may be attributed to the restrictive impact of leverage, such as stringent debt covenants and diminished funds available for dividends due to elevated interest expenses. In contrast, a positive relationship between dividend yield and Tax suggests that firms with higher tax liabilities are inclined to issue greater dividends, aligning with King's (1977) hypothesis that firms may leverage dividend disbursements to mitigate the disadvantages of retained earnings taxation. On the macroeconomic front, the term premium stands out as the sole variable achieving statistical significance at the 10% threshold, displaying a negative coefficient. This indicates that an ascendant yield curve, indicative of increasing debt costs, adversely affects the dividend yield, underscoring the complex interplay between macroeconomic factors and firm-specific dividend policies

Table 4. Full Data vs. Manufacturing Sector vs. Non-Manufacturing Sector based on System GMM Estimation

	(4) Full Data	(5) Manufacturing Sector Only	(6) Non-Manufacturing Sector Only
Prev. Div	.452*	.203	.809***
	(.25)	(.223)	(.143)
ROE	-.082	-.085	-.009
	(.068)	(.106)	(.029)
CR	.017	-.004	.026
	(.016)	(.006)	(.032)
DE	-.067*	-.041	-.013
	(.04)	(.04)	(.044)
PB	-.064	.02	-.392
	(.376)	(.442)	(.404)
Size	.898	-.043	-.283
	(.674)	(.311)	(.47)
Inside	-.053	-.013	-.045
	(.045)	(.028)	(.055)
Foreign	-.119	.004	.011
	(.086)	(.04)	(.045)
Beta	-.039	-.339	2.212**
	(.976)	(.759)	(.991)
Tax	.042*	.023	.002
	(.026)	(.026)	(.016)
Inflation	12.821	9.287	54.826*
	(17.213)	(13.388)	(31.821)
Term Premium	-.522*	-.357	-.432
	(.271)	(.228)	(.328)
cons	.89	7.811	-.093
	(6.998)	(5.252)	(8.879)
Obs.	2718	1692	1026

Hansen p-value	.634	.678	.162
Ar1 p-value	.082	.15	.072
Ar2 p-value	.318	.444	.239

Robust standard errors are in parentheses
**** p<.01, ** p<.05, * p<.1*

Table 4. System GMM Estimation Results based on Six Different Industries

	(7) Medical and Pharmaceutical Industry	(8) Industry of Holding Companies	(9) Service Industry	(10) Distribution Industry	(11) Chemical Industry	(12) Food and Beverage Industry
Prev. Div	.358*	1.136*	-.887	.862***	.501*	.174
	(.176)	(.587)	(1.118)	(.069)	(.266)	(.193)
ROE	.015*	-.051	-.008	-.096	.02	.066
	(.007)	(.064)	(.022)	(.07)	(.081)	(.039)
CR	.001	.002	-.009	.004	-.071	-.005
	(.002)	(.008)	(.012)	(.025)	(.081)	(.009)
DE	-.004	-.061	.033	-.064*	-.071	.011
	(.014)	(.055)	(.036)	(.038)	(.061)	(.011)
PB	.079	.808	.413	-.21	-1.404	-.17
	(.166)	(1.066)	(.863)	(.537)	(1.511)	(.204)
Size	-.357	-.192	-.708	.992*	-.887	-.943*
	(.232)	(.589)	(.755)	(.508)	(1.924)	(.51)
Inside	.001	-.07	-.115	-.129*	-.052	.007
	(.009)	(.081)	(.093)	(.073)	(.109)	(.021)
Foreign	0	-.005	-.1	-.148*	.152	.123*
	(.018)	(.062)	(.119)	(.079)	(.184)	(.07)
Beta	-.031	.195	-.769	.957	2.03	1.937*
	(.288)	(.799)	(.924)	(1.239)	(3.038)	(.94)
Tax	-.017	.145	.012	.134	.674	.003
	(.015)	(.152)	(.014)	(.208)	(1.055)	(.004)
Inflation	11.729	-.461	11.428	58.873**	-11.8	38.114*
	(11.965)	(24.941)	(18.44)	(27.821)	(48.436)	(19.433)
Term Premium	-.244	-.075	-.056	-.671*	.473	.312
	(.146)	(.319)	(.383)	(.375)	(.529)	(.249)
cons	3.278	11.156	14.171	5.577	29.553	5.474
	(1.884)	(11.386)	(8.997)	(7.776)	(29.784)	(6.358)
Obs.	162	333	225	297	450	144
Hansen p-val.	.88	.628	.972	.804	.947	.882
Ar1 p-value	.025	.101	.479	.126	.25	.026
Ar2 p-value	.726	.712	.756	.488	.635	.505

Robust standard errors are in parentheses
**** p<.01, ** p<.05, * p<.1*

Table 4 elucidates the outcomes derived from applying the System Generalized Method of Moments (GMM) estimation across nine distinct analytical scenarios. Specifically, result (4) encapsulates findings pertinent to the aggregate dataset, mirroring those delineated in Table 3. Meanwhile, results (5) and (6) dissect the dataset into manufacturing and non-manufacturing sectors, respectively, revealing nuanced divergences in statistical significance among identified variables. Unlike the comprehensive dataset where previous dividend yield, Debt to Equity (DE) ratio, Tax, and term premium manifested statistical significance, the manufacturing subset (result 5) displays no significant variables. Conversely, within the non-manufacturing sector (result 6), the previous dividend yield is significantly aligned with dividend smoothing and signaling theory at the 1% level, unlevered beta underscores business risk with a 5% significance level, and inflation rate as a macroeconomic indicator is significant at the 10% level, suggesting nuanced

influences on dividend distribution practices in these sectors. Further dissection into specific industries, represented by results (7) through (12), underscores the variance in statistically significant determinants across sectors such as medical and pharmaceutical (M&P), holding companies, service, distribution, chemical, and food and beverage (F&B) industries. Each result transcends the validation thresholds set by both the Hansen J test and the serial correlation test, affirming the robustness of the system GMM estimation methodology employed. Notably, in the M&P industry, both previous dividend yield and Return on Equity (ROE) exhibit significant impacts on the current dividend yield at a 10% level, resonating with established dividend theories. The holding companies industry solely highlights the significance of previous dividend yield in influencing current dividend distributions. Contrastingly, the service industry reveals no significant variables, indicating a distinct industry-specific dynamic in dividend policies. In the distribution sector, a comprehensive array of variables including previous dividend yield, leverage, firm size, inside ownership, foreign ownership, inflation rate, and term premium significantly influence dividend yield, showcasing a complex interplay of factors affecting dividend decisions. This is particularly evident as size positively correlates with dividend yield, suggesting that larger firms within this industry are inclined towards higher dividends. Conversely, variables such as leverage, inside ownership, foreign ownership, and term premium exhibit a negative relationship with dividend yield, highlighting diverse factors restraining dividend distributions. The chemical industry singularly attributes significance to the previous dividend yield concerning current dividend distributions. Meanwhile, in the F&B industry, variables such as size, foreign ownership, beta, and inflation rate are all significantly linked to the current dividend yield at the 10% level, albeit with varying implications on dividend policies.

Collectively, these findings elucidate the diverse determinants of dividend payouts across different industries, underscoring the significant role played by both firm-specific factors and macroeconomic variables in shaping dividend policies of Korean firms from 2011 to 2020. This comprehensive analysis not only contributes to the academic understanding of dividend distribution determinants but also offers practical insights for stakeholders navigating the complexities of dividend policies in varying industry contexts.

CONCLUSION

Through a comprehensive examination encompassing both firm-specific and macroeconomic factors, this study has enhanced our understanding of the determinants affecting dividend decisions. The analysis identified that prior dividend yield, leverage (DE), and taxation levels hold statistical significance at the 10% level among firm-specific variables. This aligns with existing literature, supporting the relationship between prior dividend yield and theories of dividend smoothing and signaling. Conversely, we observed an inverse relationship between leverage and dividend payouts, whereas firms subjected to higher taxation demonstrated a propensity towards increased dividend distributions between 2011 and 2020. Furthermore, a notable negative correlation between the term premium (TP) and dividend yield was discovered, signifying that heightened relative debt costs adversely impacted dividend disbursements among Korean firms during this timeframe.

Disaggregating the data further to explore industry-specific variances, we encountered notable differences in determinant factors. While the manufacturing sector did not show statistical significance for any independent variables, the non-manufacturing sector highlighted previous dividend yield, equity beta, and inflation rate as significant influencers. The affirmative correlation of prior dividend yield and equity beta with dividend payments endorses the principle of dividend smoothing and implies that elevated business risks may catalyze higher dividend distributions. Additionally, a positive interplay between inflation and dividend yield within the non-manufacturing domain suggests inflationary pressures contribute to heightened dividend payouts. Intriguingly, industry-specific analyses unveiled more nuanced determinant variations. In the medical and pharmaceutical sector, both previous dividend yield and Return on Equity (ROE) emerged as impactful, indicating that profitability significantly influences dividend practices. The distribution industry illustrated the significance of a broader spectrum of factors, including prior dividend yield, leverage, firm size, inside and foreign ownership, inflation, and term premium, on dividend distributions. The chemical and food and beverage sectors also manifested unique determinant profiles affecting dividend outcomes.

The study's exploration into dividend smoothing is further complicated by endogeneity, arising from managerial decisions and intrinsic firm characteristics. This necessitates a dynamic analytical framework, for which we employed a dynamic panel data model, incorporating lagged dependent variables to elucidate the temporal intricacies of dividend smoothing. Utilizing the system generalized method of moments (GMM) estimation revealed pronounced variances in dividend policies across industries, although the economic underpinnings of these discrepancies remain unexplored.

Our findings contribute novel insights into the domain of dividend policy research, particularly highlighting the significant influence of macroeconomic factors during the period of 2011 to 2020—a time characterized by substantial transformations in the Korean financial landscape post-global credit crisis. Diverging from prior research predominantly centered on firm-specific variables, our study broadens the investigative lens to encapsulate critical macroeconomic determinants, thereby offering a more holistic perspective on dividend policies in Korea. The observed variability in dividend determinants across industries underscores the

necessity for sector-specific policy formulation and strategic planning. This underscores the imperative for policymakers and industry stakeholders to adopt nuanced, sector-aligned approaches in dividend strategy development, ensuring alignment with the unique dynamics of each industry

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