

EXISTENCE OF DIVIDEND SMOOTHING AFTER THE FINANCIAL CRISIS AND THE SENSITIVITY OF FIRM VALUE TO DIVIDEND SMOOTHING: EVIDENCE FROM KOREA

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ABSTRACT

This study examines whether there exist changes in dividend smoothing in Korea around the 2008 financial crisis, and analyzes the effect of dividend smoothing on firm valuation pre- and post-financial crisis. The results are as follows: First, the degree of dividend smoothing after the 2008 financial crisis has decreased by 20.5%. The market has positively reacted to smoothed dividend announcements, but the post-crisis market response diminished compared to the pre-crisis level. Second, the market shows a positive and increased (decreased) reaction for more (less) smoothing dividend announcements compared to the pre-crisis level. The results indicate that the market prefers greater dividend smoothing and that the effect of dividend signaling is reduced but still exists in Korea. Finally, a negative and significant coefficient sign of SOA for more smoothing dividend announcers indicates that dividend smoothing behavior plays an important role in the firm valuation for more smoothing dividends.

Keywords: Dividend Smoothing, Abnormal Returns, Firm Valuations, Speed Of Adjustment, Financial Crisis.

INTRODUCTION

Since Lintner's (1956) work, financial economists have explored the properties of stable dividends (Alli et al., 1993; Brav et al., 2005; Fama & Babiak, 1968) arising from signaling models (Bhattacharya, 1979; Ross, 1977). Dividend signaling theory, in which firms convey private information, has developed to explain excess abnormal returns following dividend change announcements (Aharony & Swary, 1980; Bernhardt et al., 2005; Pettit, 1972). Arguments have followed over which factors may affect dividend smoothing from a perspective of information asymmetry or agency theory (DeAngelo & DeAngelo, 2007; DeMarzo & Sannikov, 2016; Guttman et al., 2010; Lambrecht & Myers, 2012; Leary & Michaely, 2011; Mahmudi & Pavlin, 2013). The empirical evidence is still inconclusive about whether dividend announcements affect firm valuation and whether management uses dividends as a signaling device.

Paying dividends is closely related to a firm's financial status: a high level of dividends requires considerable cash. If a high level of dividends is maintained, it may have a negative impact on the liquidity of the firm because it requires a considerable dividend amount regardless of the corporate performance. On the other hand, a firm with a smooth dividend policy tends to pay stable dividends regularly. The financial crisis of 2008 halted rollover by financial institutions in developed countries, increasing volatility (Calvo & Mendoza, 2000) in the financial market in Korea (Kim, 2012; Stiglitz, 2010). This financial instability has increased the importance of securing cash and affected dividend stability (Rhee & Park, 2018). The financial crisis led market participants to question whether the information is reliable and whether dividend announcers are financially stable. These doubts are likely to result in diminished market response to dividend announcements. Thus the

reactions of the stock market are expected to be less sensitive than would have been the case in the pre-financial crisis period.

This study, using cash dividend data from Korean firms, analyzes the changes of dividend smoothing behavior in Korea in the pre- and post-financial crisis era, examines the market reaction to dividend announcements, and analyzes the relation between dividend smoothing and firm value around the financial crisis. This article attempts to improve the literature on tendency of dividend smoothing and firm values to dividend smoothing around the financial crisis. The empirical results show that the speed of adjustment (SOA) of Korean firms increased by 20.5% compared to the pre-crisis level. This indicates that the financial crisis caused Korean firms to forego smoothed dividends. The post-crisis market responses to dividend announcements are still positive but show decreased reaction compared to the pre-crisis responses, indicating the decreasing role of smoothing dividends as a signaling device in the post-crisis period. A negative and significant coefficient of the SOA for firms that decrease SOA suggests that dividend smoothing affects the value of firms with more smooth dividend.

HYPOTHESES AND METHODOLOGIES

The 2008 financial crisis reduced liquidity supply and increased the volatility of the financial market and business risk; accordingly, firms' cash holdings have emerged as an important issue in the post-crisis era. In such an economic situation, stable and regular dividends can be a burden to management, but in the market, they can serve as a signal for the company's financial health. In addition, Lintner (1956) finds that US firms pay stable dividends, which are received positively in the market. Fama & Babiak (1968) support Lintner's (1956) argument by showing a correlation between dividend and profit. On the other hand, Brav et al. (2005) point out that in the case of insufficient corporate profit, additional external capital costs may arise if dividend reduction is not achieved through dividend smoothing. The dividend smoothing policy, which is managed from a long-term perspective, can be subordinated to the crisis situation. Thus, the following hypotheses are proposed:

H1-1 *Market response to dividend announcements will be lower than before the financial crisis.*

H1-2 *The market will show increasing reaction to more smooth dividends, but decreasing reaction to less smooth dividends.*

The dividend smoothing practice is based on the concepts of asymmetric information (DeMarzo & Sannikov, 2016; Lambrecht & Myers, 2012; Leary & Michaely, 2011) and the signaling aspect (Aharony & Swary, 1980; Bernhardt et al., 2005; Pettit, 1972). The advantage of dividend smoothing is that it does not convey unnecessary signals to the market by avoiding sudden dividend changes due to temporary earnings shocks. The market value of information about making dividends more smooth will be of better quality than less smooth dividends, and moreover it will be enough to reduce information asymmetry between management and outside investors. Thus, the second hypothesis is proposed:

H2 *Firm value is positively related with more dividend smoothing.*

In order to measure the market response to the dividend announcement of the dividend smoothing firm before and after the financial crisis, the market adjusted model (MktAdj), the mean adjusted model (MeanAdj), and the market model (MktM) are used. The three models are used to analyze market responses by supplementing the shortcomings of

each model. For each model, cumulative abnormal returns (CARs) are measured from day -1 to day +1, with the dividend announcement date as the event date. The CARs are measured using the market adjusted model of Equation (1). $R_{i,t}$ and $R_{m,t}$ are the returns of the firm the market returns.

$$CAR_{i(t1,t2)_MktAdj} = \sum_{t1}^{t2} (R_{i,t} - R_{m,t}), \quad (t1,t2)=(-1+1) \quad (1)$$

Equation (2) measures the CARs using the mean adjusted model. \bar{R}_i means the average return of firm i . In this study, the average return (30 days from -2 days to -31 days) before the event date is used.

$$CAR_{i(t1,t2)_MeanAdj} = \sum_{t1}^{t2} (R_{i,t} - \bar{R}_i), \quad (t1,t2)=(-1+1) \quad (2)$$

Equation (3) measures the CARs using a market model. The market model is measured by regression analysis of the single-factor market model $R_{i,t} = \alpha_i + \beta_i \cdot R_{m,t} + \varepsilon_{it}$, where $R_{i,t}$ is the return of firm i and $R_{m,t}$ is the market return. In this study, regression analysis is performed using 30-day (-2 days to -31 days) return before the event date.

$$CAR_{i(t1,t2)_MktM} = \sum_{t1}^{t2} (R_{i,t} - (\alpha_i + \beta_i \cdot R_{m,t})), \quad (t1,t2)=(-1+1) \quad (3)$$

In this study, the following regression equation analyzes the effects of the SOA and corporate characteristics on firm value. Because Black and Scholes (1974) point out that testing the effects of dividend policy on stock prices is the best method to examine firm valuation, either short-term measures of stock price or risk-adjusted returns have been used, while dividend-smoothing policy holds for a long-term period. Thus, Tobin's Q, the ratio of a physical asset's market value to its replacement value, is used to proxy firm value in this study. To control for year and industry effects, year (YR) and industry (IND) variables are used.

$$Q = \alpha_1 + \beta_1 SOA + \beta_2 CashD + \beta_3 ROA + \beta_4 INV + \beta_5 LEV + \beta_6 SIZE + \beta_7 CF + \beta_8 AT + IND + YR + \varepsilon_i \quad (4)$$

SOA represents dividend smoothness of Lintner's (1956) partial adjustment model. The lower (higher) the SOA, the more (less) smoothed the dividends. SOA is measured using dividend per share (DPS) and earnings per share (EPS), as used by Fama & Babiak (1968), Fama (1974), Leary & Michaely (2011), Michaely & Roberts (2012), and Rhee and Park (2018). Lintner's model measures the difference in firm dividend, obtained by applying the adjustment factor (c_i) to the difference between the target dividend (D_{it}^*) and the previous dividend ($D_{i,t-1}$). The target dividend is expressed as the target dividend propensity (r_i) and the earning of the firm ($D_{it}^* = r_i E_{it}$). When applied to Eq. (5), it is expressed as Eq. (6), where $\beta_1 = c_i r_i$, $\beta_2 = -c_i$, respectively, and SOA is c_i , i.e., $-\beta_2$.

$$\Delta D_{i,t} = D_{i,t} - D_{i,t-1} = \alpha_i + c_i (D_{it}^* - D_{i,t-1}) + \varepsilon_{it} \quad (5)$$

$$\Delta D_{i,t} = \alpha_i + \beta_1 E_{it} + \beta_2 D_{i,t-1} + \varepsilon_{it} \quad (6)$$

CashD represents the cash dividend amount and is measured as a function of the natural log of a firm's cash dividend amount. To measure a firm's profitability, return on assets (ROA) is used as the ratio of net income divided by total assets. Investment (INV) is the capital expenditure divided by total assets, and leverage (LEV) is the long-term debt

divided by total assets. Firm size (SIZE) is measured as the log of total assets. A firm's cash flow (CF) is measured as earnings before interest and taxes, plus depreciation less taxes, and normalized with total assets. A firm's asset tangibility (AT) is measured as the ratio of property, plant, and equipment divided by total assets.

DATA

This study used cash dividend data and financial statement data from companies listed on the Korea Exchange Market from 2000 to 2015. Financial statement data were extracted from TS-2000, and stock price data were collected using KIS-VALUE. The sample should have a minimum of 8 years of DPS and EPS data for the period 2000–2015 to measure SOA. Zero DPS, dividend omissions, financial institutions, and public institutions were excluded from the sample. For a legitimate analysis, firms are required to pay dividends for both the pre- and post-crisis periods. Of the total 742 firms, the 108 companies that met the selection criteria were selected as the final research sample. Because the financial crisis began in 2007 with the subprime mortgage shock in the U.S. and was moderated by the Financial Stability Plan of the US Department of the Treasury in February 2009, the years from 2007 to 2009 are not included in the analysis. The 2001–2006 period was classified as pre-crisis, and the 2010–2015 period was classified as post-crisis.

Table 1 shows the summary statistics pre- and post-crisis. The post-crisis SOA is 0.600, which is about 20.5% higher than the pre-crisis level of 0.498. In line with Rhee and Park (2018), this suggests that firms avoid long-term stable dividends in the aftermath of a financial crisis. Post-crisis ROA, INV, and CF are 0.039, 0.038, and 0.046, respectively, which are about 26.4%, 32.1%, and 28.1% higher than the pre-crisis levels of 0.053, 0.056, and 0.064, respectively. Post-crisis LEV, SIZE, and AT are 0.026, 13.060, and 0.433, respectively, which are about 36.8%, 2.1%, and 11.9% higher than the pre-crisis levels of 0.019, 12.794, and 0.387, respectively. The results indicate that firms' profitability, investment level, and cash flow are decreased compared with those of pre-crisis, while leverage, firm size and asset tangibility are increased.

		SOA	CashD	ROA	INV	LEV	SIZE	CF	AT
Pre-crisis	Avg	0.498	8.020	0.053	0.056	0.019	12.794	0.064	0.387
	Stdev	0.237	1.648	0.046	0.077	0.036	1.372	0.067	0.150
	Max	0.991	13.628	0.246	0.314	0.249	17.873	0.338	0.860
	Min	0.011	4.174	-0.113	-0.371	0.000	10.417	-0.117	0.062
	N	329	329	329	329	329	329	329	329
Post-crisis	Avg	0.600	8.004	0.039	0.038	0.026	13.060	0.046	0.433
	Stdev	0.246	1.591	0.058	0.156	0.046	1.320	0.058	0.195
	Max	0.999	14.887	0.943	0.405	0.244	18.945	0.294	0.993
	Min	0.016	1.099	-0.102	-1.895	0.000	10.570	-0.147	0.041
	N	444	444	444	444	444	444	444	444
t-stat		-5.779	0.133	3.579	2.110	-2.189	-2.729	3.775	-3.780

Table 2 provides the Pearson's correlations of variables. Firms' SOA has a negative and significant correlation with CashD, SIZE, and AT. CashD has a positive and significant correlation with ROA, INV, SIZE, CF, and AT, while a negative and significant correlation with LEV. ROA has a positive and significant correlation with SIZE and CF, while a negative and significant correlation with LEV. INV has a positive and significant correlation with LEV, SIZE, and CF. LEV has a positive and significant correlation with AT, while a negative and significant correlation with CF. SIZE has a positive and significant correlation with CF and

AT.

	SOA	CashD	ROA	INV	LEV	SIZE	CF	AT
SOA	1							
CashD	-0.107 (0.003)**	1						
ROA	-0.034 (0.350)	0.393 (0.000)**	1					
INV	0.048 (0.180)	0.167 (0.000)**	0.030 (0.404)	1				
LEV	0.045 (0.216)	-0.122 (0.001)**	-0.213 (0.000)**	0.074 (0.040)*	1			
SIZE	-0.083 (0.021)*	0.824 (0.000)**	0.207 (0.000)**	0.149 (0.000)**	-0.008 (0.824)	1		
CF	-0.015 (0.681)	0.404 (0.000)**	0.422 (0.000)**	0.136 (0.000)**	-0.172 (0.000)**	0.248 (0.000)**	1	
AT	-0.195 (0.000)**	0.305 (0.000)**	0.061 (0.088)	-0.032 (0.369)	0.076 (0.036)*	0.420 (0.000)**	0.002 (0.967)	1

Note: P-values are presented in parentheses. * and ** indicate statistical significance at the 5% and 1% levels, respectively.

RESULTS AND DISCUSSION

Table 3 shows the pre- and post-crisis market response to dividend announcements using Eqs. (1)–(3). Pre-crisis CARs of MktAdj, MeanAdj, and MktM are 0.0057, 0.0067, and 0.0059, respectively, and post-crisis CARs are 0.0055, 0.0034, and 0.0040, respectively. Although each of the CAR models shows a positive market response for both pre- and post-crisis, the level of market response fell by 0.02%pt. in MktAdj, by 0.33%pt. in MeanAdj, and by 0.19%pt. in MktM, compared to pre-crisis. The results indicate that post-crisis, the market still reacts positively but less for dividend smoothing announcements. The results mean that market expectations for dividend smoothing have decreased, and support the hypothesis that the market response will be lowered than before the financial crisis.

CAR		MktAdj	MeanAdj	MktM
Pre-crisis	Avg	0.0057	0.0067	0.0059
	Stdev	0.0506	0.0566	0.0541
	Max	0.305	0.247	0.408
	Min	-0.152	-0.196	-0.197
	N	329	329	326
Post-crisis	Avg	0.0055	0.0034	0.0040
	Stdev	0.0469	0.0474	0.0490
	Max	0.443	0.331	0.309
	Min	-0.153	-0.177	-0.279
	N	444	444	443
t-stat		0.070	0.873	0.506

A market response comparative analysis for firms that increase or decrease SOA was conducted. The results are presented in Table 4. For firms that decrease the SOA, pre-crisis CARs of MktAdj, MeanAdj, and MktM are 0.0022, 0.0032, and 0.0002, respectively, and post-crisis CARs are 0.0070, 0.0043, and 0.0066, respectively. All three models show increased market response by 0.48%pt., 0.11%pt., and 0.64%pt., respectively, compared to the pre-crisis market response. On the other hand, for firms that increase the SOA, pre-crisis

CARs of MktAdj, MeanAdj, and MktM are 0.0081, 0.0091, and 0.0097, respectively, and post-crisis CARs are 0.0046, 0.0028, and 0.0025, respectively. All three models show decreased market response by 0.3%pt., 0.63%pt., and 0.72%pt., respectively, compared to the pre-crisis period. Contrary to the assertion of Larkin et al. (2016) that dividend smoothing has little effect on stock prices, the results indicate that the market prefers more smoothed dividends and penalizes firms with volatile dividends, supporting the hypotheses.

CAR		MktAdj	MeanAdj	MktM	
SOA Decrease	Pre-crisis	Avg	0.0022	0.0032	0.0002
		Stdev	0.0467	0.0543	0.0491
		Max	0.1441	0.1671	0.1197
		Min	-0.1279	-0.1701	-0.1579
		N	133	133	132
	Post-crisis	Avg	0.0070	0.0043	0.0066
		Stdev	0.0582	0.0552	0.0536
		Max	0.4428	0.3307	0.3085
		Min	-0.1526	-0.1769	-0.1569
		N	163	163	162
t-stat		-0.7882	-0.1735	-1.0656	
SOA Increase	Pre-crisis	Avg	0.0081	0.0091	0.0097
		Stdev	0.0531	0.0581	0.0570
		Max	0.3048	0.2468	0.4078
		Min	-0.1517	-0.1960	-0.1974
		N	196	196	194
	Post-crisis	Avg	0.0046	0.0028	0.0025
		Stdev	0.0390	0.0424	0.0461
		Max	0.1685	0.1782	0.1655
		Min	-0.1296	-0.1619	-0.2794
		N	281	281	281
t-stat		0.7916	1.2967	1.4781	

Table 5 presents the results of the effect of the SOA and firm characteristics on firm values using Eq. (4). In this regression, industry (IND) and year (YR) effects are controlled. Each regression explains 4.2% to 33.3% of the cross-sectional variations in corporate values. The first two columns represent the regression results of firms that decrease the SOA, and the last two columns represent the results of firms that increase the SOA. The specification in columns (1) and (3) include only the main variable to test the sensitivity of the firm value to the SOA. In other columns, variables for firm characteristics are included.

In regressions (1) and (2), the coefficients of SOA are -0.573 and -0.273, respectively, and significant at the 1% and 10% levels, while in regressions (3) and (4), the coefficients of SOA are negative and insignificant. The results suggest that the speed of adjustment plays a critical factor in determining the value of firms that payout dividends in a more smooth manner while it is less critical for firms that less smoothing dividends. Thus the results support the hypothesis.

In regression (2), the coefficients on CashD, CF, and AT are positive and significant at the 1% levels and the coefficients on LEV and SIZE are negative and significant at the 10% and 5%, respectively, implying that cash dividend amount, cash flow, and asset tangibility are positively correlated with firm values while leverage and firm size are negatively correlated. In regression (4), CashD, ROA, and CF have positive and significant coefficients, and SIZE has a negative and significant coefficient, suggesting that cash dividend amount, profitability, and cash flow positively affect firm values, while firm size negatively affects firm values.

The main differences in the firm characteristics of the effect on firm valuation of more and less dividend smoothing firms are low leverage and high asset tangibility for more smoothing firms and high profitability for less smoothing firms.

Dep: Q	SOA Decrease		SOA Increase	
	(1)	(2)	(3)	(4)
Intercept	-48.30 (-2.507)	-61.058(-3.409)	-33.592(-3.874)	-53.056(-6.969)
SOA	-0.573(-3.609)***	-0.273(-1.844)*	-0.045(-0.596)	-0.098(-1.516)
CashD		0.181(3.969)***		0.087(5.343)***
ROA		-0.564(-1.019)		2.698(5.877)***
INV		0.175(0.769)		0.074(0.562)
LEV		-1.688(-1.930)*		0.346 (1.075)
SIZE		-0.126(-2.443)**		-0.045(-2.472)*
CF		1.808(2.746)***		0.524(2.055)**
AT		0.853(3.837)***		-0.048(-0.507)
Industry, Year	Y	Y	Y	Y
R_sq	0.125	0.333	0.042	0.327

Note: T-statistics are reported in parenthesis under the value. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Firstly, the post-crisis SOA is higher than before the crisis and the level of market response has fallen. Second, the coefficient of SOA on firm values for SOA decrease firms is negative and significant. The results suggest that conveying information through dividend smoothing has weakened since the financial crisis, and the market seems to have responded to it, and that dividend smoothing affects the value of firms with more dividend smoothing. Dividend payments of a company that follows dividend smoothing are carried out regardless of company performance. The financial crisis affected the company's performance and cash generation, and there must have been difficulties in smoothing dividends. Therefore, it would be difficult for the company to continue with the existing dividend smoothing policy, and it would prefer a dividend policy that pays according to the company's performance. The characteristics of firms that affect the firm values differed according to the degree of dividend smoothing. This would be an interesting extension of this study for future research.

CONCLUSIONS

This study incorporates two existing hypotheses on firms' dividend smoothing propensity and analyzes the impact on firm valuation. Consistent with the hypothesis, the post-crisis SOA is 0.600, which is 20.5% higher than the pre-crisis SOA of 0.498. The result suggests that, after the financial crisis, the degree of dividend smoothing decreased due to the financial market volatility.

In order to measure the market response to dividend announcements, the market adjusted model, the mean adjusted model, and the market model are used. Each CAR models show positive but decreased market responses compared to pre-crisis levels. In addition, when firms payout dividends in a more smooth manner, the market shows a positive response of 0.11%pt. to 0.64%pt. compared to the pre-crisis levels. This result suggests that the market still favors more smoothing dividends but to a lesser extent than it was before the crisis.

For SOA decrease firms, the coefficient signs of SOA, LEV, and SIZE are negative and significant, and those of CashD, CF, and AT are positive and significant. The results suggest that firm values with more smoothing dividend policy are affected by a more smooth payout manner, less leverage, small firm size, more cash dividends, high cash flow, and high

asset tangibility. For SOA increase firms, the coefficient signs of CashD, ROA, and CF are positive and significant, and that of SIZE is negative and significant. The results also suggest that firm values with less smoothed dividends are affected by more cash dividends, profitability, high cash flow, and small firm size. In sum, in Korea, the speed of adjustment, leverage, asset tangibility, and profitability affect firm value in different ways according to the degree of dividend smoothing, but cash dividend amount, firm size, and cash flow affect in the same way regardless of dividend smoothing.

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