What Are The Determinants Of Dividend Policy? The Case Of The Japanese Electrical Appliances Industry

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Abstract

This paper explores the determinants of the dividend policy of firms in the Japanese electrical appliances industry. First, our empirical investigations reveal that in this industry, corporate managers do not cater to investors' demands in both their dividend initiation and continuation decisions. Instead, in the Japanese electrical appliances industry, the determinants of firms' dividend policies are value-weighted dividend yields, value-weighted nonpayers' size, and value-weighted after-tax earnings-to-total-asset ratios. Moreover, cross-sectionally, this paper finds relations between corporate earnings and firm dividend payments in general. However, on an aggregate time-series basis, dividend payments tend to decrease company earnings in the Japanese electrical appliances industry, and this means rejection of the traditional signaling hypothesis.

Keywords: Catering theory of dividends; Dividend policy; Imperfect market; Inefficient market; Signaling hypothesis.

1. Introduction

Miller and Modigliani (MM) [1] proved that dividend policy is irrelevant to share value in perfect and efficient capital markets. After the proof was published, many researchers criticized it using different approaches.[1]

Recently, a new interesting theory called the "catering theory of dividends" was developed by Baker and Wurgler (BW) [2]. Relaxing the assumption of perfect markets and efficient markets[2] undertaken in MM [1], and considering psychological and institutional reasons, BW [2] suggested the following by constructing a simple theoretical model. First, some investors have an uninformed and perhaps time-varying demand for dividend-paying stocks. Second, arbitrage fails to prevent this demand from driving apart the prices of dividend payers and nonpayers. Third, managers *rationally cater to investor demand*—they pay dividends when investors put higher prices on payers, and they do not pay when investors prefer nonpayers.

As far as we know, this new theory has not been tested in Japan; thus, testing catering theory using Japanese data is an objective in this paper. More precisely, we test the catering theory of dividends in the Japanese electrical appliances industry, one of the most important industries in Japan. Furthermore, extending BW's [2] analysis, we also explore the determinants of the dividend payments of Japanese electrical appliances industry firms from cross-sectional and aggregate time-series viewpoints.

The results derived in this paper are as follows. First, with regard to dividend initiations and continuations for Japanese electrical appliances industry firms, the dividend premium is not a determinant. This means that these firms in Japan do not behave as suggested by catering theory.

In contrast to the US case, value-weighted dividend yields, value-weighted nonpayers' size, and value-weighted after-tax earnings-to-total-asset ratios are the determinants of one-year-ahead dividend initiations in Japanese electrical appliances industry firms.

Third, from a cross-sectional viewpoint, we find a relation between corporate earnings and firm dividend decisions; however, from an aggregate time-series viewpoint, we find that corporate earnings tend to decrease in the year following dividend initiations and

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[1] Important studies that follow MM [1] are Allen et al. [3], Allen and Michaely [4], Asquith and Mullins [5], Bagwell and Shoven [6], Baker et al. [7], Baker and Wurgler [2, 8], Benartzi et al. [9], Bhattacharya [10], Black [11], Black and Scholes [12], Brav et al. [13], Brav and Heaton [14], Dann [15], DeAngelo et al. [16], Eades et al. [17], Fama and Babiak [18], Fama and French [19], Feenberg and Coutts [20], Graham and Harvey [21], Graham and Kumar [22], Hakansson [23], Healy and Palepu [24], Hubbard and Michaely [25], John and Williams [26], Kothari and Shanken [27], La Porta et al. [28], Lintner [29], Liu et al. [30], Long [31], Marsh and Merton [32], Michaely et al. [33], Miller [34], Miller and Rock [35], Miller and Scholes [36], Peterson et al. [37], Poterba [38], Shefrin and Statman [39], and Watts [40], for example.

[2] Evidence of inefficient markets was recently presented in studies such as Shleifer [41] and Stein [42, 43].

continuations in the Japanese electrical appliances industry. This is important because the evidence is against the signaling hypothesis.

The rest of the paper is organized as follows. Section 2 summarizes BW's [2] catering theory of dividends and our research design, Section 3 explains the data, Sections 4 and 5 present the empirical results, and Section 6 concludes the paper.

2. Theory and Research Design

We test one theory and extend the research of BW [2]. First, the catering theory of dividends, which was developed by BW [2], suggested that real financial markets are imperfect and inefficient, and corporations make their dividend initiation and continuation decisions by catering for the investors' demand for dividends. Typically, as in BW [2], the investors' demands for dividends can be captured by the difference between payers' M/Bs and nonpayers' M/Bs, which corporate managers can observe through financial markets. Hence, catering theory predicts that when the payers' M/Bs are higher than the nonpayers' M/Bs, corporate managers make dividend initiations or dividend continuations by catering for the investors' dividend demands.

After testing catering theory, we extend BW's [2] analysis. More precisely, we explore the determinants of dividend initiations and continuations in the Japanese electrical appliances industry using both cross-sectional and aggregate time-series analysis.

3. Data

First, our dividend payment measures follow BW [2]. All data in this study are from QUICK Corp. Our full sample period is from 1986 to 2006, and our focus in this study is on the Japanese electrical appliances industry firms. The largest number of firms of this industry is included in the NIKKEI 500 Index as at the end of December 2009. In accordance with BW [2], we count a firm-year observation as a payer if it has positive dividends per share by the ex date; otherwise, it is a nonpayer. To aggregate this firm-level data into useful time series, we made two aggregate identities following BW [2]:

$$Payers_t = New\ Payers_t + Old\ Payers_t + List\ Payers_t, \qquad (1)$$

$$Old\ Payers_t = Payers_{t-1} - New\ Nonpayers_t - Delist\ Payers_t. \qquad (2)$$

The first identity defines the number of payers, and the second describes the evolution of the payers. Payers is the total number of payers, New Payers is the number of initiators among last year's nonpayers, Old Payers is the number of payers that also paid last year, List Payers is the number of payers this year that were not in the sample last year, New Nonpayers is the number of omitters among last year's payers, and Delist Payers is the number of last year's payers not in the sample this year. Note that lists and delists relate to the Tokyo Stock Exchange (TSE) First Section.

We then define three variables to capture dividend payment dynamics as in BW [2]:

$$Initiate_t = \frac{New\ Payers_t}{Nonpayers_{t-1} - Delist\ Nonpayers_t}, \qquad (3)$$

$$Continue_t = \frac{Old\ Payers_t}{Payers_{t-1} - Delist\ Payers_t}, \qquad (4)$$

$$Listpay_t = \frac{List\ Payers_t}{List\ Payers_t + List\ Nonpayers_t}. \qquad (5)$$

In words, the rate of initiation (*Initiate*) is the fraction of surviving nonpayers that become new payers. The rate at which firms continue paying (*Continue*) is the fraction of surviving payers that continue paying. The rate at which new lists in the sample pay (*Listpay*) is payers as a percentage of new lists at time *t*. These variables capture the decision whether to pay dividends, not how much to pay.

Table 1 lists the aggregate totals and the dividend payment variables for the Japanese electrical appliances industry. The initiation rate starts out low in 1987, then increases in the beginning of the 1990s, and then drops. After that, it rebounds in the late 1990s, then decreases again in 2002, and then increases around the end of the sample. The rate at which firms continue paying varies less, as expected. Note that the rate at which lists pay is always high, in contrast to the case of BW [2], where *Listpay* varies significantly.

Next are the stock market dividend premium variables. Conceptually, it is important to measure the difference between the market prices of firms that have the same investment policy and different dividend policies, because in the frictionless and efficient markets of MM [1], this price difference should be zero. However, with limits to arbitrage, BW [2] suggested that the uninformed demand for dividend-paying shares causes a price difference, which may vary over time.

We construct the dividend premium variable following BW [2], which is denoted as P^{D-ND}. This is the difference in the logs of the average market-to-book ratios of payers and nonpayers. We define market-to-book ratios following Fama and French (FF) [44, 45]; the market-to-book ratio is book assets minus book equity plus market equity all divided by book assets.

More precisely, we take equal- and (book) value-weighted averages of the market-to-book ratios separately for payers and nonpayers in each year. Then we construct the final dividend premium series as the difference of the logs of these averages. These series are listed in Table 2.

Moreover, we construct other variables for the additional tests in Section 5, and the details of the data are described in Sections 5.1 and 5.2.

Table 1. Measures of Dividend Payment.

	Payers				Nonpayers				Payment Rates (%)		
Year	Total	New	Old	List	Total	New	Old	List	Initiate	Continue	Listpay
1987	91	0	86	5	12	5	7	0	0.00	95.56	100.00
1988	94	2	90	2	11	1	10	0	16.67	98.90	100.00
1989	98	3	93	2	9	1	8	0	27.27	98.94	100.00
1990	104	4	98	2	5	0	5	0	44.44	100.00	100.00
1991	108	1	103	4	5	1	4	0	20.00	99.04	100.00
1992	108	0	103	5	10	5	5	0	0.00	95.37	100.00
1993	99	0	98	1	20	10	10	0	0.00	90.74	100.00
1994	89	0	86	3	30	8	21	1	0.00	90.53	75.00
1995	93	2	89	2	28	0	28	0	6.67	100.00	100.00
1996	97	7	89	1	26	4	21	1	25.00	95.70	50.00
1997	106	4	96	6	23	1	22	0	15.38	98.97	100.00
1998	115	6	104	5	19	2	17	0	26.09	98.11	100.00
1999	110	2	104	4	28	11	17	0	10.53	90.43	100.00
2000	118	6	103	9	26	5	21	0	22.22	95.37	100.00
2001	133	8	112	13	20	3	17	0	33.33	96.55	100.00
2002	112	0	110	2	41	22	19	0	0.00	83.33	100.00
2003	114	10	100	4	36	8	28	0	26.32	92.59	100.00
2004	126	15	110	1	21	1	19	1	44.12	99.10	85.71
2005	146	8	129	9	16	1	13	2	38.10	99.23	81.82
2006	146	3	140	3	19	6	13	0	18.75	95.89	100.00

Notes: A firm is defined as a dividend payer at time *t* if it has positive dividends per share by the ex date. A firm is defined as a new dividend payer at time *t* if it has positive dividends per share by the ex date at time *t* and zero dividends per share by the ex date at time *t* – 1. A firm is defined as an old payer at time *t* if it has positive dividends per share by the ex date at time *t* and positive dividends per share by the ex date at time *t* – 1. A firm is defined as a new list payer if it has positive dividends per share by the ex date at time *t* and is not in the sample at time *t* – 1. A firm is defined as a nonpayer at time *t* if it does not have positive dividends per share by the ex date. New nonpayers are firms who were payers at time *t* –1 but not at *t*. Old nonpayers are firms who were nonpayers in both *t* – 1 and *t*. New list nonpayers are nonpayers at *t* who were not in the sample at *t* – 1. The initiation rate *Initiate* expresses payers as a percentage of surviving nonpayers from *t* – 1. The rate at which firms continue paying dividends *Continue* expresses payers as a percentage of surviving payers from *t* – 1. The rate at which lists pay *Listpay* expresses payers as a percentage of new lists at *t*.

Table 2. The Dividend Premium.

	Payers		Nonpayers		Dividend Premium (P^{D-ND})	
Year	EWM/B	VWM/B	EWM/B	VWM/B	EW	VW
1986	1.95	1.66	1.52	1.51	25.00	9.83
1987	1.81	1.64	1.50	1.42	18.45	14.33
1988	2.21	2.03	1.90	1.78	15.08	13.29
1989	2.11	1.98	2.20	2.13	−4.23	−7.03
1990	2.35	2.01	3.11	2.78	−28.08	−32.25
1991	1.91	1.64	1.51	1.38	23.37	17.41
1992	1.44	1.29	1.68	1.62	−15.32	−22.18
1993	1.44	1.29	1.45	1.26	−1.13	2.43
1994	1.75	1.47	1.55	1.44	11.94	2.63
1995	1.44	1.33	1.44	1.30	−0.30	2.49
1996	1.59	1.48	1.64	1.56	−2.70	−5.46
1997	1.50	1.49	1.38	1.28	7.77	15.38
1998	1.37	1.47	1.13	1.20	18.59	20.21
1999	1.48	1.57	1.11	1.15	28.81	30.70
2000	2.08	2.48	1.70	1.30	20.27	64.33
2001	1.52	1.76	1.65	1.14	−7.91	43.08
2002	1.49	1.70	1.66	1.24	−11.21	31.44
2003	1.21	1.34	1.81	1.00	−39.76	28.73
2004	1.54	1.56	1.70	1.34	−10.02	15.23
2005	1.53	1.49	1.39	1.32	9.57	11.96
2006	1.89	1.85	1.62	1.42	15.11	26.44

Notes: A firm is defined as a dividend payer at time *t* if it has positive dividends per share by the ex date. The market-to-book ratio is the ratio of the market value of the firm to its book value. The market-to-book ratio reported is an equal-weighed (EW) or value-weighted (VW) average, by book value across dividend payers and nonpayers. These ratios are calculated for the entire sample and for new lists. A firm is defined as a new list if it is not in the sample at time $t-1$. The dividend premium $P^{D\text{-}ND}$ is the difference between the logs of the dividend payers' and nonpayers' average market-to-book ratios.

4. Empirical Test for Catering Theory

First, we test whether catering theory holds in the Japanese electrical appliances industry. Namely, we first check the relation between dividend payments and the stock market measures of dividend demand. To examine this relationship formally, Table 3 regresses dividend payment measures on the lagged demand for dividend measures. More precisely, we estimate:

$$Initiate_t = \mu + \xi P_{t-1}^{D-ND} + \eta_t, \tag{6}$$

$$Continue_t = \mu + \xi P_{t-1}^{D-ND} + \eta_t, \tag{7}$$

where *Initiate* is the rate of initiation, *Continue* is the rate of continuation, and $P^{D\text{-}ND}$ is the market dividend premium (value-weighted or equally weighted). In the tables, all independent variables are standardized to have unit variance, and all standard errors are robust to heteroskedasticity and serial correlation using the procedure of Newey and West [46].

Table 3. Dividend Payment and Demand for Dividends: Basic Relationships.

	Panel A: $Initiate_t$		Panel B: $Continue_t$	
$\text{VW}P^{D-ND}_{t-1}$	2.80		−1.13	
	[0.34]		[0.24]	
$\text{EW}P^{D-ND}_{t-1}$		−4.61		0.001
		[0.17]		[1.00]
N	20	20	20	20
$Adj.\ R^2$	−0.02	0.05	0.01	−0.06

Notes: Regressions of dividend initiation and continuation rates on measures of the dividend premium. For example, the initiation rate is modeled in Panel A as: $Initiate_t=\mu+\xi P^{D-ND}_{t-1}+\eta_t$.
The initiation rate *Initiate* expresses payers as a percentage of surviving nonpayers from t−1. The continuation rate *Continue* expresses payers as a percentage of surviving payers from t −1. The dividend premium $P^{D\text{-}ND}$ is the difference between the logs of the equal-

weighted (EW) and value-weighted (VW) market-to-book ratios for dividend payers and nonpayers. The independent variables are standardized to have unit variance. *p*-values in [ ] are robust to heteroskedasticity and serial correlation by using the method of Newey and West [46]. *N* is the number of sample and *Adj.* R^2 is the adjusted *R*-squared value.

Panel A of Table 3 reports that neither an increase in the value-weighted market dividend premium nor an increase in the equally weighted market dividend premium is associated with an increase in the dividend initiation rate in the following year. Similarly, neither an increase in the value-weighted market dividend premium nor an increase in the equally weighted market dividend premium is associated with an increase in the dividend continuation rate in the following year. To sum up, in contrast to the US case in BW [2], as far as we judge by the dividend premium measure, the dividend policy of Japanese electrical appliances industry firms does not cater for investor dividend demand.

5. Additional Explorations

5.1 Cross-sectional Tests

This section also tests the determinants of the dividend payment cross-sectional basis. To do so, we first apply BW [2] and FF [19]-type logit models. Namely, our first cross-sectional contemporaneous logit models in this paper are as follows:

$$y_{i,t} = \alpha + \vartheta_1 TSEP_{i,t} + \vartheta_2 \left(\frac{M}{B}\right)_{i,t} + \vartheta_3 \left(\frac{dA}{A}\right)_{i,t} + \vartheta_4 \left(\frac{E}{A}\right)_{i,t} + \tau_{i,t}, \tag{8}$$

where $y_{i,t} = 1$ if the company is a payer and zero otherwise. In addition, *TSEP* means TSE First Section market capitalization percentile (that is, the percentage of firms on the TSE First Section having smaller capitalization than firm *i* in that year), *M/B* denotes the market-to-book ratio, *dA/A* is the total asset growth ratio, and *E/A* denotes the after-tax earnings-to-total-asset ratio.

To examine the one-year intertemporal relationships further, we also estimate the following intertemporal models:

$$y_{i,t} = \alpha + \vartheta_1 TSEP_{i,t-1} + \vartheta_2 \left(\frac{M}{B}\right)_{i,t-1} + \vartheta_3 \left(\frac{dA}{A}\right)_{i,t-1} + \vartheta_4 \left(\frac{E}{A}\right)_{i,t-1} + \tau_{i,t-1}, \tag{9}$$

$$y_{i,t} = \alpha + \vartheta_1 TSEP_{i,t+1} + \vartheta_2 \left(\frac{M}{B}\right)_{i,t+1} + \vartheta_3 \left(\frac{dA}{A}\right)_{i,t+1} + \vartheta_4 \left(\frac{E}{A}\right)_{i,t+1} + \tau_{i,t+1}, \tag{10}$$

where again $y_{i,t} = 1$ if the company is a payer and zero otherwise.

The results are shown in Tables 4 to 6. Table 4 displays the results of logit models such as (9), and it indicates that the after-tax earnings-to-total-asset ratio is statistically significant and positive excluding the period after the stock market crash of 1989 in Japan. Hence, payers' earnings are high in the year prior to paying dividends.

Next, Table 5 presents the results of logit models such as (8) and indicates that the after-tax earnings-to-total-asset ratio is statistically significant and strongly positive in general. Hence, this table indicates that the relation between earnings and dividend payments are also strong in the year they pay dividends.

Finally, Table 6 shows the results of logit models such as (10) and indicates that the after-tax earnings-to-total-asset ratio is again statistically significant and positive in general; however, the significance seems to be lower than in Tables 4 and 5. Therefore, payers' earnings are also high in the year after they pay dividends; however, their financial conditions might be weaker than in the previous two years.

In order to check the earnings situations in more detail, we consider the *p*-values of the coefficients of the *E/A*s in models (8) to (10) in Figure 1, which plots the average *p*-values from three kinds of logit models in each year. As smaller *p*-values are more favorable, earnings conditions are best in the year before they pay dividends, second best in the year they are payers, and worst in the year after they pay dividends in these three cases. From these results, on a cross-sectional basis, we find that the relation between earnings and dividend payments observed in the Japanese electrical appliances industry weakens in the year after payment of dividends.

Table 4. Cross-sectional Determinants on One-year-ahead Dividend Payments.

	$TSEP_{t-1}$	M/B_{t-1}	dA/A_{t-1}	E/A_{t-1}	N	McFadden R-squared
1987	0.056**[0.009]			0.279*[0.048]	97	0.384
		2.136[0.090]		0.404*[0.014]	97	0.291
			0.021[0.588]	0.441**[0.009]	97	0.245
1988	0.031[0.231]			1.462**[0.004]	103	0.703
		−0.820[0.596]		1.612**[0.002]	103	0.681
			0.035[0.504]	1.480**[0.004]	103	0.685
1989	0.031[0.215]			1.717**[0.007]	105	0.544
		−1.199[0.339]		2.045**[0.001]	105	0.528
			0.016[0.753]	1.930**[0.004]	105	0.516
1990	0.026[0.242]			0.275[0.307]	107	0.244
		−0.139[0.890]		0.378[0.166]	107	0.205
			−0.016[0.731]	0.388[0.149]	107	0.208
1991	−0.015[0.723]			4.702[0.063]	109	0.712
		−3.781[0.292]		7.646[0.170]	109	0.752
			0.257[0.331]	5.045[0.125]	109	0.766
1992	0.064**[0.010]			0.529[0.056]	113	0.335
		0.041[0.971]		0.823**[0.008]	113	0.181
			−0.009[0.322]	0.786**[0.005]	113	0.209
1993	0.015[0.201]			0.472**[0.000]	118	0.329
		−1.252[0.187]		0.572**[0.000]	118	0.328
			0.044[0.333]	0.464**[0.002]	118	0.323
1994	0.027*[0.019]			0.396**[0.000]	115	0.410
		0.332[0.763]		0.441**[0.000]	115	0.363
			−0.028[0.530]	0.491**[0.000]	115	0.318
1995	0.027*[0.031]			0.648**[0.000]	119	0.442
		−0.691[0.313]		0.807**[0.000]	119	0.411
			−0.032[0.329]	0.830**[0.000]	119	0.410
1996	0.033**[0.004]			0.451**[0.003]	121	0.314
		−2.138[0.053]		0.739**[0.000]	121	0.288
			−0.029[0.343]	0.596**[0.000]	121	0.243
1997	0.049**[0.001]			0.718**[0.000]	123	0.432
		−0.254[0.750]		0.618**[0.000]	123	0.295
			0.022[0.569]	0.594**[0.001]	123	0.297
1998	0.069**[0.000]			0.360**[0.004]	129	0.408
		−0.639[0.384]		0.459**[0.000]	129	0.201
			0.031[0.397]	0.428**[0.000]	129	0.201
1999	0.024*[0.022]			0.802**[0.000]	134	0.390
		−0.172[0.876]		0.888**[0.000]	134	0.346
			−0.012[0.793]	0.890**[0.000]	134	0.347
2000	0.018[0.100]			0.360**[0.000]	135	0.398
		0.596[0.536]		0.363**[0.000]	135	0.380
			0.151**[0.005]	0.320**[0.000]	135	0.448
2001	0.055**[0.000]			0.190**[0.002]	140	0.372
		1.756*[0.031]		0.175**[0.005]	140	0.266
			0.189**[0.001]	0.165*[0.032]	140	0.337
2002	0.007[0.347]			0.184**[0.001]	151	0.169
		0.834[0.113]		0.161**[0.004]	151	0.182
			0.015[0.389]	0.192**[0.000]	151	0.168
2003	0.030**[0.000]			−0.002[0.543]	146	0.110
		0.527[0.119]		−0.020[0.075]	146	0.027
			0.063**[0.008]	0.001[0.846]	146	0.056
2004	0.037**[0.002]			0.173**[0.002]	145	0.286
		0.847*[0.030]		0.201**[0.000]	145	0.199
			0.088*[0.038]	0.163**[0.006]	145	0.224
2005	0.037**[0.004]			0.105*[0.011]	151	0.184
		−0.241[0.210]		0.114*[0.028]	151	0.085
			−0.003[0.085]	0.114*[0.024]	151	0.105
2006	0.013[0.163]			0.170*[0.026]	162	0.134
		−0.091[0.856]		0.169*[0.029]	162	0.117
			−0.012[0.163]	0.164*[0.023]	162	.0152

Notes: Cross-sectional logit models are estimated. For example, the estimated logit model is as follows:

$y_{i,t}=\alpha+\vartheta_1 TSEP_{i,t-1}+\vartheta_2 (M/B)_{i,t-1}+\vartheta_3(dA/A)_{i,t-1}+\vartheta_4(E/A)_{i,t-1}+\tau_{i,t-1}$,

where $y_{i,t}$ =1 if the company is a payer and zero otherwise. In addition, *TSEP* means Tokyo Stock Exchange (TSE) First Section market capitalization percentile, that is, the percentage of firms on the TSE First Section having smaller capitalization than firm *i* in that year, *M*/*B* denotes the market-to-book ratio, *dA*/*A* is the total asset growth ratio, and *E*/*A* denotes the after-tax earnings-to-total-asset ratio. ** denotes the statistical significant of the coefficients at the 1% level, and * denotes the statistical significance of the coefficients at the 5% level, respectively.

Table 5. Cross-sectional Determinants on Dividend Payments: The Contemporaneous Relations.

	$TSEP_t$	M/B_t	dA/A_t	E/A_t	*N*	McFadden R-squared
1986	0.066*[0.037]			0.227[0.054]	97	0.379
		2.155[0.187]		0.301*[0.019]	97	0.272
			0.010*[0.013]	0.327*[0.013]	97	0.228
1987	0.071*[0.016]			0.551**[0.007]	103	0.559
		1.711[0.286]		0.616**[0.004]	103	0.433
			0.026[0.501]	0.616**[0.005]	103	0.421
1988	0.027[0.271]			2.325**[0.004]	105	0.616
		−0.363[0.796]		2.680**[0.001]	105	0.596
			0.231[0.081]	2.457**[0.004]	105	0.684
1989	0.034[0.078]			0.545*[0.025]	107	0.306
		−0.644[0.314]		0.761**[0.008]	107	0.256
			0.014[0.718]	0.674*[0.013]	107	0.245
1990	−0.0001[0.995]			0.704*[0.044]	109	0.353
		−1.537[0.092]		0.885[0.093]	109	0.424
			0.008[0.851]	0.730*[0.038]	109	0.353
1991	0.057[0.054]			0.206[0.509]	113	0.210
		2.109[0.235]		0.302[0.401]	113	0.113
			−0.013[0.199]	0.391[0.239]	113	0.172
1992	0.033[0.069]			0.250*[0.011]	118	0.324
		−2.879*[0.014]		0.428**[0.000]	118	0.362
			0.017[0.772]	0.292*[0.014]	118	0.266
1993	0.021[0.110]			0.362**[0.000]	119	0.432
		−1.54[0.167]		0.461**[0.000]	119	0.423
			0.002[0.977]	0.405**[0.000]	119	0.407
1994	0.023[0.057]			0.745**[0.000]	119	0.466
		−0.436[0.546]		0.891**[0.000]	119	0.440
			0.003[0.929]	0.868**[0.000]	119	0.437
1995	0.029**[0.005]			0.339**[0.010]	121	0.247
		−1.342[0.091]		0.552**[0.000]	121	0.205
			−0.036[0.187]	0.497**[0.000]	121	0.189
1996	0.042**[0.001]			0.638**[0.000]	123	0.383
		−0.622[0.479]		0.594**[0.000]	123	0.270
			−0.042[0.136]	0.690**[0.000]	123	0.282
1997	0.046**[0.001]			0.330**[0.004]	129	0.317
		−0.192[0.754]		0.434**[0.000]	129	0.177
			0.055[0.145]	0.410**[0.000]	129	0.198
1998	0.066**[0.000]			0.110[0.317]	134	0.328
		−0.088[0.919]		0.345**[0.004]	134	0.131
			0.006[0.899]	0.334**[0.002]	134	0.131
1999	0.031**[0.007]			0.299**[0.000]	138	0.380
		0.201[0.773]		0.327**[0.000]	138	0.318
			0.084[0.060]	0.288**[0.000]	138	0.344
2000	0.028**[0.003]			0.092[0.052]	144	0.196
		1.021[0.052]		0.083[0.062]	144	0.174
			0.144**[0.002]	0.046[0.429]	144	0.228
2001	0.042**[0.007]			0.201**[0.001]	153	0.437
		1.068[0.295]		0.238**[0.000]	153	0.371
			0.077*[0.026]	0.240**[0.001]	153	0.405
2002	0.026**[0.000]			−0.0002[0.933]	153	0.083
		−0.065[0.717]		0.001[0.888]	153	0.001
			0.056**[0.004]	0.002[0.569]	153	0.054
2003	0.023**[0.005]			0.269**[0.000]	150	0.252
		0.854[0.192]		0.279**[0.000]	150	0.213
			0.068*[0.036]	0.262**[0.000]	150	0.230
2004	0.033**[0.005]			0.332**[0.002]	151	0.318
		−0.253[0.199]		0.403**[0.000]	151	0.250
			−0.003[0.120]	0.385**[0.001]	151	0.262
2005	0.031*[0.013]			0.383**[0.002]	162	0.297
		−0.413[0.446]		0.362**[0.002]	162	0.231
			−0.016[0.197]	0.352**[0.004]	162	0.277
2006	0.016[0.133]			0.308**[0.000]	165	0.317
		−0.462[0.182]		0.333**[0.000]	165	0.310
			0.023[0.500]	0.286**[0.000]	165	0.301

Notes: Cross-sectional logit models are estimated. For example, the estimated logit model is as follows:

$$y_{i,t}=\alpha+\vartheta_1 TSEP_{i,t}+\vartheta_2 (M/B)_{i,t}+\vartheta_3(dA/A)_{i,t}+\vartheta_4(E/A)_{i,t}+\tau_{i,t},$$

where $y_{i,t}$ =1 if the company is a payer and zero otherwise. In addition, *TSEP* means Tokyo Stock Exchange (TSE) First Section market capitalization percentile, that is, the percentage of firms on the TSE First Section having smaller capitalization than firm *i* in that year, *M/B* denotes the market-to-book ratio, *dA/A* is the total asset growth ratio, and *E/A* denotes the after-tax earnings-to-total-asset ratio. ** denotes the statistical significant of the coefficients at the 1% level, and * denotes the statistical significance of the coefficients at the 5% level, respectively.

Table 6. Cross-sectional Characteristics of One-year-after Dividend Payments.

	$TSEP_{t+1}$	M/B_{t+1}	dA/A_{t+1}	E/A_{t+1}	N	McFadden R-squared
1986	0.068*[0.035]			0.218*[0.044]	103	0.422
		2.912[0.137]		0.272*[0.011]	103	0.322
			−0.046[0.173]	0.346**[0.004]	103	0.299
1987	0.063*[0.024]			1.395**[0.004]	105	0.564
		0.742[0.547]		1.799**[0.001]	105	0.462
			0.117[0.114]	1.535**[0.003]	105	0.507
1988	0.039*[0.028]			0.436*[0.039]	105	0.279
		−0.141[0.843]		0.590*[0.012]	105	0.188
			0.036[0.346]	0.529*[0.021]	105	0.201
1989	0.021[0.202]			0.365*[0.046]	107	0.197
		−1.235*[0.045]		0.586[0.052]	107	0.241
			0.007[0.803]	0.465*[0.023]	107	0.169
1990	0.043[0.062]			−0.052[0.859]	109	0.126
		1.557[0.330]		0.031[0.926]	109	0.041
			−0.019[0.363]	0.044[0.884]	109	0.155
1991	0.032[0.147]			0.044[0.399]	113	0.232
		−1.569[0.142]		0.143[0.224]	113	0.187
			0.032[0.684]	0.062[0.689]	113	0.176
1992	0.053*[0.015]			0.092[0.138]	118	0.320
		−1.756[0.090]		0.177**[0.002]	118	0.222
			−0.047[0.392]	0.186**[0.009]	118	0.195
1993	0.026*[0.022]			0.252**[0.006]	118	0.231
		−0.711[0.210]		0.370**[0.000]	118	.0.191
			−0.016[0.612]	0.356**[0.001]	118	0.180
1994	0.028**[0.005]			0.417**[0.003]	119	0.267
		−1.217[0.125]		0.620**[0.000]	119	0.225
			−0.024[0.399]	0.554**[0.000]	119	0.207
1995	0.030**[0.001]			0.118[0.083]	122	0.153
		−0.395[0.418]		0.163*[0.011]	122	0.064
			−0.003[0.901]	0.161*[0.019]	122	0.059
1996	0.037**[0.001]			0.214*[0.028]	123	0.226
		−0.156[0.771]		0.317**[0.001]	123	0.108
			−0.018[0.341]	0.325**[0.001]	123	0.114
1997	0.039**[0.002]			0.175[0.110]	129	0.241
		−0.031[0.970]		0.349**[0.003]	129	0.133
			−0.027[0.516]	0.372**[0.001]	129	0.137
1998	0.053**[0.001]			0.092[0.076]	134	0.304
		−0.132[0.792]		0.176**[0.001]	134	0.151
			0.061[0.172]	0.131*[0.017]	134	0.168
1999	0.036**[0.000]			0.048[0.253]	136	0.215
		0.771[0.072]		0.056[0.088]	136	0.139
			0.096*[0.013]	0.028[0.559]	136	0.155
2000	0.023*[0.025]			0.097*[0.022]	140	0.211
		0.984[0.142]		0.116**[0.003]	140	0.188
			0.039[0.151]	0.112*[0.012]	140	0.187
2001	0.069**[0.000]			−0.001[0.618]	151	0.293
		−0.324[0.101]		0.006[0.313]	151	0.029
			0.071**[0.004]	0.001[0.824]	151	0.089
2002	0.016*[0.030]			0.077[0.083]	146	0.082
		0.418[0.064]		0.105**[0.005]	146	0.064
			0.032[0.245]	0.082[0.073]	146	0.060
2003	0.020*[0.011]			0.126*[0.020]	145	0.114
		−0.078[0.671]		0.153**[0.008]	145	0.071
			−0.003[0.339]	0.153**[0.007]	145	0.084
2004	0.032**[0.002]			0.130[0.085]	151	0.188
		−0.201[0.653]		0.146*[0.040]	151	0.095
			−0.007[0.226]	0.136*[0.030]	151	0.107
2005	0.024*[0.019]			0.126*[0.016]	162	0.128
		−0.210[0.596]		0.142**[0.007]	162	0.070
			0.041[0.241]	0.098[0.077]	162	0.083

Notes: Cross-sectional logit models are estimated. For example, the estimated logit model is as follows:

$$y_{i,t}=\alpha+\vartheta_1 TSEP_{i,t+1}+\vartheta_2 (M/B)_{i,t+1}+\vartheta_3(dA/A)_{i,t+1}+\vartheta_4(E/A)_{i,\,t+1}+\tau_{i,t+1},$$

where $y_{i,t}$ =1 if the company is a payer and zero otherwise. In addition, *TSEP* means Tokyo Stock Exchange (TSE) First Section market capitalization percentile, that is, the percentage of firms on the TSE First Section having smaller capitalization than firm *i* in that year, *M*/*B* denotes the market-to-book ratio, *dA*/*A* is the total asset growth ratio, and *E*/*A* denotes the after-tax earnings-to-total-asset ratio. ** denotes the statistical significant of the coefficients at the 1% level, and * denotes the statistical significance of the coefficients at the 5% level, respectively.

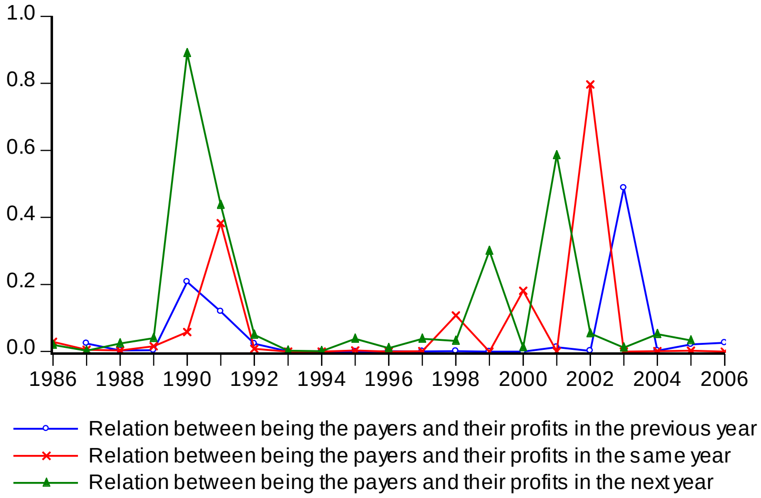

Figure 1. Statistical Significance of the Earnings-to-Asset Ratios for the Dividend Payments.

Average *p*-values of the coefficients of *E*/*A* from three kinds of logit models are plotted from 1986 to 2006. For example, for deriving *p*-values as to the contemporaneous relations between corporate dividend payments and the after-tax earnings-to-total-asset ratios, the three estimated models are as follows: (1) $y_{i,t}=\alpha+\vartheta_1 TSEP_{i,t}+\vartheta_2(E/A)_{i,t}+\tau_{i,t}$, (2) $y_{i,t}=\alpha+\vartheta_1(M/B)_{i,t}+\vartheta_2(E/A)_{i,t}+\tau_{i,t}$, and (3) $y_{i,t}=\alpha+\vartheta_1(dA/A)_{i,t}+\vartheta_2(E/A)_{i,t}+\tau_{i,t}$.

5.2 Aggregate Time-series Tests

In this section, we additionally examine the dividend policy of the Japanese electrical appliances industry on an aggregate time-series basis. More precisely, we perform alternative intertemporal tests using the following kinds of models; namely, for example, for *Initiate*:

$$\begin{aligned} Initiate_t &= \alpha + \vartheta_1 VWP_{t-1}^{D-ND} + \vartheta_2 VWNonpayerM/B_{t-1} + \vartheta_3 VWD/P_{t-1} + \vartheta_4 VWSIZE_{t-1} \\ &+ \vartheta_5 VWNonpayerSIZE_{t-1} + \vartheta_6 VWE/A_{t-1} + \vartheta_7 VWNonpayerE/A_{t-1} + \vartheta_8 Tax_{t-1} + \vartheta_9 Year_{t-1} + \tau_{t-1}, \end{aligned} \tag{11}$$

$$\begin{aligned} Initiate_t &= \alpha + \vartheta_1 VWP_{t}^{D-ND} + \vartheta_2 VWNonpayerM/B_{t} + \vartheta_3 VWD/P_{t} + \vartheta_4 VWSIZE_{t} \\ &+ \vartheta_5 VWNonpayerSIZE_{t} + \vartheta_6 VWE/A_{t} + \vartheta_7 VWNonpayerE/A_{t} + \vartheta_8 Tax_{t} + \vartheta_9 Year_{t} + \tau_{t}, \end{aligned} \tag{12}$$

$$\begin{aligned} Initiate_t &= \alpha + \vartheta_1 VWP_{t+1}^{D-ND} + \vartheta_2 VWNonpayerM/B_{t+1} + \vartheta_3 VWD/P_{t+1} + \vartheta_4 VWSIZE_{t+1} \\ &+ \vartheta_5 VWNonpayerSIZE_{t+1} + \vartheta_6 VWE/A_{t+1} + \vartheta_7 VWNonpayerE/A_{t+1} + \vartheta_8 Tax_{t+1} + \vartheta_9 Year_{t+1} + \tau_{t+1}, \end{aligned} \tag{13}$$

and, for *Continue*:

$$\begin{aligned} Continue_t &= \alpha + \vartheta_1 VWP_{t-1}^{D-ND} + \vartheta_2 VWPayerM/B_{t-1} + \vartheta_3 VWD/P_{t-1} + \vartheta_4 VWSIZE_{t-1} \\ &+ \vartheta_5 VWPayerSIZE_{t-1} + \vartheta_6 VWE/A_{t-1} + \vartheta_7 VWPayerE/A_{t-1} + \vartheta_8 Tax_{t-1} + \vartheta_9 Year_{t-1} + \tau_{t-1}, \end{aligned} \tag{14}$$

$$\begin{aligned} Continue_t &= \alpha + \vartheta_1 VWP_{t}^{D-ND} + \vartheta_2 VWPayerM/B_{t} + \vartheta_3 VWD/P_{t} + \vartheta_4 VWSIZE_{t} \\ &+ \vartheta_5 VWPayerSIZE_{t} + \vartheta_6 VWE/A_{t} + \vartheta_7 VWPayerE/A_{t} + \vartheta_8 Tax_{t} + \vartheta_9 Year_{t} + \tau_{t}, \end{aligned} \tag{15}$$

$$\begin{aligned} Continue_t &= \alpha + \vartheta_1 VWP_{t+1}^{D-ND} + \vartheta_2 VWPayerM/B_{t+1} + \vartheta_3 VWD/P_{t+1} + \vartheta_4 VWSIZE_{t+1} \\ &+ \vartheta_5 VWPayerSIZE_{t+1} + \vartheta_6 VWE/A_{t+1} + \vartheta_7 VWPayerE/A_{t+1} + \vartheta_8 Tax_{t+1} + \vartheta_9 Year_{t+1} + \tau_{t+1}, \end{aligned} \tag{16}$$

where VWP^{D-ND} is the book value-weighted dividend premium, *VWNonpayerM/B* (*VWPayerM/B*) is the book value-weighted nonpayers' (payers') market-to-book ratios, *VWD/P* denotes the book value-weighted dividend yields, *VWSIZE* is the book value-weighted market capitalization, *VWNonpayerSIZE* (*VWPayerSIZE*) is the book value-weighted nonpayers' (payers') market capitalizations, *VWE/A* is the book value-weighted after-tax earnings-to-total-asset ratios, *VWNonpayerE/A* (*VWPayerE/A*) is the book value-weighted nonpayers' (payers') after-tax earnings-to-total-asset ratios, *Year* is the time trend variable, and *Tax* denotes the ratio of after-tax income from dividends relative to after-tax income from capital gains. Hence, the variable *Tax* measures the favorability of dividends in comparison with capital gains from the viewpoint of the Japanese tax system.

Tables 7 to 9 display the results of various regressions. Table 7 shows the relations between dividend payments and the previous year's corporate results, Table 8 indicates the contemporaneous relations between dividend payments and corporate results, and Table 9 shows the relations between dividend payments and the following year's corporate results.

The tests in Tables 7 to 9 are extensions of BW [2] and explore comprehensively the determinants of dividend payments. First, panel A of Table 7 indicates that dividend yields, nonpayers' size and earnings in the previous year are statistically significant determinants of the dividend initiations. Furthermore, panel B of Table 7 shows that the dividend yield in the previous year is a statistically significant determinant of dividend continuations.

Second, panel A of Table 8 indicates that nonpayers' M/B, average size of all companies, and nonpayers' earnings in the current year are statistically significant determinants of dividend initiations. Furthermore, panel B of Table 8 shows that all companies' and payers' earnings in the current year are statistically significant determinants of dividend continuations. Hence, Table 8 demonstrates that corporate earnings and dividend payments are most strongly related in the same period.

Third, panel A of Table 9 indicates that no aggregate variables in the following period are statistically significant determinants of dividend initiations. We should note that this evidence that the earnings ratios in the next year are not related to dividend initiation behavior means a rejection of the signaling hypothesis in the Japanese electrical appliances industry. Furthermore, panel B of Table 9 shows that no aggregate variables in the following year are statistically significant determinants of dividend continuations.

The above results mean that for aggregate time series, dividend premiums are not determinants of dividend payments if we take into account the intertemporal relations. Hence, in the Japanese electrical appliances industry, catering behavior among financial managers towards investors' demands for dividends is not evident. From an aggregate time-series viewpoint, in the year following dividend initiations and continuations, corporate earnings are not significant; thus, the signaling hypothesis cannot be supported on an aggregate time-series basis for the Japanese electrical appliances industry.

6. Conclusion

This paper explored the determinants of dividend initiations and continuations from the perspectives of catering theory and the signaling hypothesis in the Japanese electrical appliances industry. We found interesting new evidence as follows.

(1) First, with regard to the dividend initiations and continuations of Japanese electrical appliances industry firms, the dividend premium is not a determinant. This means that firms in the electrical appliances industry in Japan do not behave as predicted by catering theory.

(2) Instead, in contrast to the US case, regarding dividend initiations, value-weighted dividend yields, value-weighted nonpayers' size, and value-weighted after-tax earnings-to-total-asset ratios are the determinants of one-year-ahead dividend initiations in Japanese electrical appliances industry firms. These are new results obtained by extending the study of BW [2].

(3) From the cross-sectional viewpoint, we generally support the relationship between corporate earnings and dividend payments; however, from the aggregate time-series viewpoint, we find that corporate earnings tend to decrease in the year following dividend payments by Japanese electrical appliances industry firms; this means a rejection of the signaling hypothesis.

As above, the new evidence derived in this paper contributes to the important issue of dividend policy in corporate finance. Future related academic studies using large Japanese datasets will be valuable. These studies may lead to stronger and more comprehensive conclusions, and this is our future task.

7. Competing Interests

The author declares that he has no competing interests.

Table 7. One-year-ahead Time-series Determinants on Dividend Payments.

				Panel A: *Initiate*$_t$				
VWP $_{t-1}^{D-ND}$	4.96							
	[0.22]							
VW *Nonpayer M/B*$_{t-1}$		5.18						
		[0.11]						
VW *D/P*$_{t-1}$			−8.66**					−7.37**
			[0.00]					[0.01]
VW *SIZE*$_{t-1}$				4.59				
				[0.10]				
VW *Nonpayer SIZE*$_{t-1}$					4.02**			2.17
					[0.01]			[0.23]
VW *E/A*$_{t-1}$						−3.34		
						[0.44]		
VW *Nonpayer E/A* $_{t-1}$							4.38*	2.26
							[0.02]	[0.41]
Tax $_{t-1}$	9.10	1.81	8.24	6.65	5.53	6.79	3.55	7.65
	[0.16]	[0.77]	[0.12]	[0.14]	[0.31]	[0.36]	[0.36]	[0.12]
Year $_{t-1}$	−0.71	1.10	−0.41	−0.20	−0.13	−0.30	0.43	−0.44
	[0.62]	[0.33]	[0.62]	[0.83]	[0.90]	[0.85]	[0.60]	[0.59]
N	20	20	20	20	20	20	20	20
Adj.R^2	0.04	0.07	0.38	0.08	0.05	0.02	0.09	0.32
				Panel B: *Continue*$_t$				
VWP $_{t-1}^{D-ND}$	0.69							
	[0.50]							
VW *Payer M/B*$_{t-1}$		1.26						1.97
		[0.08]						[0.41]
VW *D/P*$_{t-1}$			−1.93*					−3.01*
			[0.02]					[0.02]
VW *SIZE*$_{t-1}$				4.59				−3.77*
				[0.10]				[0.04]
VW *Payer SIZE*$_{t-1}$					0.71			
					[0.27]			
VW *E/A*$_{t-1}$						−3.34		
						[0.44]		
VW *Payer E/A*$_{t-1}$							−0.66	
							[0.66]	
Tax $_{t-1}$	3.20	3.15*	3.38	6.65	2.91	6.79	3.03	3.06
	[0.06]	[0.05]	[0.09]	[0.14]	[0.07]	[0.36]	[0.22]	[0.08]
Year $_{t-1}$	−0.60	−0.50	−0.61	−0.20	−0.54*	−0.30	−0.58	−0.37
	[0.06]	[0.07]	[0.06]	[0.83]	[0.02]	[0.85]	[0.25]	[0.25]
N	20	20	20	20	20	20	20	20
Adj.R^2	0.06	0.14	0.27	0.08	0.07	0.02	0.06	0.35

Notes: Several regressions of dividend payment rates on measures of the dividend premium and other nominated variables are performed. For example, the initiation rate is modeled in Panel A as:

$$Initiate_t=\alpha+\vartheta_1 VWP^{D-ND}_{t-1}+\vartheta_2 VWNonpayerM/B_{t-1}+\vartheta_3 VWD/P_{t-1}+\vartheta_4 VWSIZE_{t-1}$$
$$+\vartheta_5 VWNonpayerSIZE_{t-1}+\vartheta_6 VWE/A_{t-1}+\vartheta_7 VWNonpayerE/A_{t-1}+\vartheta_8 Tax_{t-1}+\vartheta_9 Year_{t-1}+\tau_{t-1}.$$

The initiation rate *Initiate* expresses payers as a percentage of surviving nonpayers from $t-1$. The continuation rate *Continue* expresses payers as a percentage of surviving payers from $t-1$. All independent variables but *Year* are standardized to unit variance. *p*-values are derived by the method of Newey and West [46], thus they are robust to heteroskedasticity and serial correlation. ** denotes the statistical significant of the coefficients at the 1% level, and * denotes the statistical significance of the coefficients at the 5% level, respectively. *N* is the number of sample and *Adj.* R^2 is the adjusted *R*-squared value.

Table 8. Contemporaneous Time-series Determinants on Dividend Payments.

				Panel A: *Initiate*$_t$				
VWP $_t^{D-ND}$	0.35							
	[0.93]							
VW *Nonpayer M/B*$_t$		9.48**						7.81**
		[0.00]						[0.00]
VW *D/P*$_t$			−6.66					
			[0.06]					
VW *SIZE*$_t$				7.58*				
				[0.04]				
VW *Nonpayer SIZE*$_t$					−6.65**			
					[0.00]			
VW *E/A*$_t$						11.12**		9.66**
						[0.00]		[0.00]
VW *Nonpayer E/A*$_t$							6.27**	
							[0.00]	
Tax $_t$	8.05*	2.60	11.07**	11.27**	6.53	−0.84	6.58	−3.95
	[0.03]	[0.61]	[0.01]	[0.01]	[0.16]	[0.85]	[0.10]	[0.37]
Year $_t$	−0.18	1.42	−0.56	−0.85	0.59	1.63	0.16	2.66**
	[0.80]	[0.13]	[0.39]	[0.17]	[0.61]	[0.11]	[0.83]	[0.01]
N	20	20	20	20	20	20	20	20
Adj.R^2	0.07	0.37	0.28	0.32	0.26	0.45	0.29	0.62
				Panel B: *Continue*$_t$				
VWP $_t^{D-ND}$	0.36							
	[0.72]							
VW *Payer M/B*$_t$		1.07						
		[0.14]						
VW *D/P*$_t$			0.003					
			[0.10]					
VW *SIZE*$_t$				1.44				
				[0.07]				
VW *Payer SIZE*$_t$					1.18			
					[0.11]			
VW *E/A*$_t$						4.69**		
						[0.00]		
VW *Payer E/A*$_t$							4.54**	
							[0.00]	
Tax $_t$	2.68	2.80*	2.36*	3.04*	2.95*	−1.25*	−1.53*	
	[0.11]	[0.04]	[0.04]	[0.05]	[0.05]	[0.02]	[0.03]	
Year $_t$	−0.51	−0.47*	−0.44*	−0.58*	−0.57*	0.29*	0.27	
	[0.15]	[0.04]	[0.04]	[0.03]	[0.04]	[0.02]	[0.08]	
N	20	20	20	20	20	20	20	
Adj.R^2	0.02	0.09	0.02	0.08	0.09	0.80	0.72	

Notes: Several regressions of dividend payment rates on measures of the dividend premium and other nominated variables are performed. For example, the initiation rate is modeled in Panel A as:

$$Initiate_t=\alpha+\vartheta_1 VWP^{D-ND}{}_t+\vartheta_2 VWNonpayerM/B\,_t+\vartheta_3 VWD/P\,_t+\vartheta_4 VWSIZE\,_t$$
$$+\vartheta_5 VWNonpayerSIZE\,_t+\vartheta_6 VWE/A\,_t+\vartheta_7 VWNonpayerE/A\,_t+\vartheta_8 Tax\,_t+\vartheta_9 Year\,_t+\tau_t.$$

The initiation rate *Initiate* expresses payers as a percentage of surviving nonpayers from *t* −1. The continuation rate *Continue* expresses payers as a percentage of surviving payers from *t* −1. All independent variables but *Year* are standardized to unit variance. *p*-values are derived by the method of Newey and West [46], thus they are robust to heteroskedasticity and serial correlation. ** denotes the statistical significant of the coefficients at the 1% level, and * denotes the statistical significance of the coefficients at the 5% level, respectively. *N* is the number of sample and *Adj.* R^2 is the adjusted *R*-squared value.

Table 9. One-year-after Time-series Determinants on Dividend Payments.

				Panel A: *Initiate*$_t$			
VWP_{t+1}^{D-ND}	−1.70						
	[0.80]						
VW *Nonpayer M/B*$_{t+1}$		5.95					
		[0.27]					
VW *D/P*$_{t+1}$			−3.70				
			[0.12]				
VW *SIZE*$_{t+1}$				4.27			
				[0.39]			
VW *Nonpayer SIZE*$_{t+1}$					0.50		
					[0.84]		
VW *E/A*$_{t+1}$						4.55	
						[0.37]	
VW *Nonpayer E/A*$_{t+1}$							0.17
							[0.94]
Tax$_{t+1}$	2.08	0.70	5.59	5.99	3.59	−0.05	3.48
	[0.85]	[0.93]	[0.37]	[0.37]	[0.59]	[0.99]	[0.60]
Year$_{t+1}$	0.91	1.55	0.33	0.18	0.52	1.28	0.58
	[0.68]	[0.37]	[0.71]	[0.86]	[0.62]	[0.21]	[0.54]
N	19	19	19	19	19	19	19
$Adj.R^2$	−0.02	0.09	0.04	0.05	−0.03	0.04	−0.03
				Panel B: *Continue*$_t$			
VWP_{t+1}^{D-ND}	−2.72						
	[0.14]						
VW *Payer M/B*$_{t+1}$		0.17					
		[0.89]					
VW *D/P*$_{t+1}$			0.06				
			[0.95]				
VW *SIZE*$_{t+1}$				0.50			
				[0.76]			
VW *Payer SIZE*$_{t+1}$					0.21		
					[0.90]		
VW *E/A*$_{t+1}$						2.07	
						[0.12]	
VW *Payer E/A*$_{t+1}$							2.16
							[0.12]
Tax$_{t+1}$	−2.81	−0.47	−0.57	−0.25	−0.42	−2.16	−2.43
	[0.33]	[0.82]	[0.78]	[0.90]	[0.84]	[0.34]	[0.29]
Year$_{t+1}$	0.41	−0.14	−0.13	−0.18	−0.16	−0.19	0.20
	[0.43]	[0.48]	[0.55]	[0.35]	[0.48]	[0.54]	[0.52]
N	19	19	19	19	19	19	19
$Adj.R^2$	0.07	−0.12	−0.13	−0.11	−0.12	0.03	0.04

Notes: Several regressions of dividend payment rates on measures of the dividend premium and other nominated variables are performed. For example, the initiation rate is modeled in Panel A as:

$$Initiate_t = \alpha + \vartheta_1 VWP^{D-ND}_{t+1} + \vartheta_2 VWNonpayerM/B_{t+1} + \vartheta_3 VWD/P_{t+1} + \vartheta_4 VWSIZE_{t+1} + \vartheta_5 VWNonpayerSIZE_{t+1} + \vartheta_6 VWE/A_{t+1} + \vartheta_7 VWNonpayerE/A_{t+1} + \vartheta_8 Tax_{t+1} + \vartheta_9 Year_{t+1} + \tau_{t+1}.$$

The initiation rate *Initiate* expresses payers as a percentage of surviving nonpayers from $t-1$. The continuation rate *Continue* expresses payers as a percentage of surviving payers from $t-1$. All independent variables but *Year* are standardized to unit variance. *p*-values are derived by the method of Newey and West [46], thus they are robust to heteroskedasticity and serial correlation. ** denotes the statistical significant of the coefficients at the 1% level, and * denotes the statistical significance of the coefficients at the 5% level, respectively. *N* is the number of sample and *Adj.* R^2 is the adjusted *R*-squared value.

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