


DIVIDEND PAYOUT POLICY AND GLOBAL FINANCIAL CRISIS: A STUDY ON ASIAN NON-FINANCIAL LISTED COMPANIES



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ABSTRACT

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This study assesses the dividend payout options of non-financial firms listed on the stock exchanges in four Asian countries: Malaysia, Thailand, Singapore and Hong Kong, from 2006–2016. Multinomial logistic regression was used to justify the determinants of four mutually exclusive payout choices (increase, cut, omit or maintain) in the context of catering, signaling and smoothing concerns. The study is split into pre-, during and post-crisis periods. Several dividend patterns were observed across the nations and sub-periods, and the empirical results reveal that firms shifted their dividend policy during the financial crisis. More specifically, firms adopted a conservative strategy and were more concerned about preserving funds rather than distributing dividends during the financial crisis. The consequence is broadly consistent with the view that the dividend payer's characteristics are the most relevant to explaining the dividend payout options, while cutting dividends was one of the methods used to maintain financial flexibility during the financial crisis period.

Contribution/Originality: This study investigates the impact of the global financial crisis on the dividend policies of non-financial index companies in four Asian countries: Malaysia, Thailand, Singapore and Hong Kong. These analyses reveal that large firms with high profitability and positive cash flow tend to pay dividends in times of crisis while cutting dividends is one of the methods used to maintain financial flexibility in that particular period. These results hold important implications for Asian non-financial firms, which are significantly afflicted by the global financial crisis in terms of limited financial flexibility.

1. INTRODUCTION

The global financial crisis of 2008 originated in the United States real estate bubble, and the resulting liquidity contraction not only affected the US, but it also affected other countries, eventually leading the world economy into a great depression. Companies changed their dividend policies in response to the financial crisis (Hauser, 2013). The conventional view posits that companies faced external financing constraints, thus causing the number of firms that omitted or decreased dividends to increase, followed by diminishing portfolio returns and market liquidity. According to Standard & Poor, dividend payouts in the United States decreased by \$58 billion, and more than 800 companies cut their dividends in 2009. However, this is inconsistent with recent studies, and the reasons are inconclusive. Some companies adopted a conservative dividend policy to deal with market-level changes (e.g., dividend cuts during the crisis), but some companies aggressively used dividends to

attract investors who prefer consistent returns on their investments (see (Consler & Lepak, 2016; Daniel, Denis, & Naveen, 2012; Nguyen & Tran, 2016)). Companies in the latter may have wished to demonstrate their healthy financial position to boost investor confidence, which is in line with the signaling theory. Moreover, Consler and Lepak (2016) also found that investors rewarded the dividend initiator for starting dividends, and all dividend-paying companies grew during the 2008 financial crisis.

A further review of the literature revealed that the dividend payout pattern may be dissimilar across regions (Nguyen & Tran, 2016; Smits, 2012) and various market conditions (He, Li, & Lu, 2012; Reddemann, Basse, & Schulenburg, 2010) based on firms' characteristics (Al-Najjar & Kilincarslan, 2016; Banyı & Kahle, 2014; Fama & French, 2001). It will be interesting for both policy makers and investors to justify whether changes in the firms' payout patterns are consistent with the need to maintain financial flexibility during the financial crisis. This creates an opportunity to compare and examine whether dividend payout policies in emerging economies (e.g., Malaysia and Thailand) and developed Asian economies (e.g., Singapore and Hong Kong) changed during the financial crisis compared to the pre- and post-financial crisis periods. Both Singapore and Hong Kong are the Asian financial centers that survived well during the Asia financial crisis 1997 but were financially disrupted by the global crisis in 2008 Malaysia and Thailand, on the other hand, were seriously struck by the currency attacks in 1997 but were not directly hit the by the 2008 crisis. The impacts of the global crisis spread to the real sectors in later years. Interestingly, based on the data collected from Datastream and Worldscope, approximately 90% of the sample firms (listed but non-financial) distributed dividends, and only 10% are non-payers (see Table 1). The statistics in Table 1 reveal that the overall proportions of dividend payers are consistent over the study period. At the early stage of the crisis in 2008, the proportion of payers in Malaysia and Thailand were maintained at 93.33% and 92%, respectively. Then, the payers in Thailand, Singapore and Hong Kong slightly dropped in 2009. Since 2010, the proportion of payers has steadily increased.

Table 1. Summary statistics of dividend payments of non-financial firms (2006–2016).

Years	Final No. of firms				Dividend-Paying Firms				Nominal Dividend Paid (US\$,000)			
	MSIA	THAI	SIN	HK	MSIA	THAI	SIN	HK	MSIA	THAI	SIN	HK
2006	45	25	32	49	42	22	31	42	1,651	1,601	2,667	7,219
2007	45	25	32	49	42	22	30	41	2,147	1,987	3,224	9,120
2008	45	25	32	49	42	23	29	42	3,685	1,912	4,044	11,984
2009	45	25	32	49	43	22	27	40	3,824	1,953	5,852	13,855
2010	45	25	32	49	43	23	27	43	3,325	2,007	4,740	14,130
2011	45	25	32	49	44	24	27	44	4,200	4,167	4,629	14,902
2012	45	25	32	49	43	24	28	43	4,204	3,208	5,231	19,312
2013	45	25	32	49	43	24	28	44	4,476	5,175	8,555	17,103
2014	45	25	32	49	42	24	30	46	4,705	4,054	6,442	17,829
2015	45	25	32	49	44	24	29	46	4,232	4,037	6,053	21,710
2016	45	25	32	49	45	25	30	46	3,985	4,036	6,039	21,776
Total	495	275	352	539	473	257	316	477	40,436	34,137	57,477	168,940

Note: HK = Hong Kong, SIN = Singapore, MSIA = Malaysia, THAI = Thailand.

This observation seems to be contrary to the American case, that dividends are reappearing among the crisis-affected Asians. This issue is therefore the motivation of this research to determine if Asian firms were driven by different business and financing strategies. Mainly, this study assesses the impact of the 2008 global financial crisis on dividend payout options for non-financial firms listed on Bursa Malaysia (BURSA), the Stock Exchange of Thailand (SET), the Stock Exchange of Hong Kong (SEHK), and the Singapore Stock Exchange (SGX).

This study deploys a novel approach to justify the implications of dividend smoothing, signaling theory and catering theory as well as the effects of cash flow size and the level of financial leverage. First, we observe the possible changing patterns of dividends in three distinct sub-periods between 2006 and 2016, namely the pre-,

during, and post-crisis eras. Second, we examine the determinants of four dividend payout options (cut, increase, maintain, or omit) rather than only focusing on decisions “to pay” or “not to pay”, as per previous studies. It is important to check these different payment options because the current dividend changes are more frequent than decisions to initiate or omit. Thus, multinomial logistic regression was applied on a sample of 151 non-financial listed firms. Utilities firms, firms with a negative book value, and financial firms were excluded because of the different accounting categories and rules governing these firms. This strategy complies with Fama and French (2001); Al-Najjar and Kilincarslan (2017) and He, Ng, Zaiats, and Zhang (2017). The possible structural reforms of investment strategies and financing options due to the internal and external effects will be captured in the analysis, thus providing evidence that is more relevant to the Asia region.

The subsequent sections of the paper are organized as follows: Section 2 contains a brief discussion of the literature; Section 3 explains the data and methods used; Section 4 reports the empirical results; and the conclusions are given in Section 5.

2. LITERATURE REVIEW

2.1. Dividend Policy and Theories

Lintner (1956) presented the dividend smoothing hypothesis that firms prefer to maintain a stable level of dividends, thus, past dividends are a key determinant for a firm in dividend payout options (Andres & Hofbauer, 2017; Chahyadi & Salas, 2012; Leary & Michaely, 2011). In this case, companies with past dividend payment records will prefer to pay dividends through increasing, maintaining, or reducing their dividend levels, rather than completely omitting dividends. However, during the financial crisis, some dividend payers may not have been able to maintain stable dividends due to financial constraints. As a result, scholars predict that past dividends may have had no effect on dividend payout options during the crisis period.

The signaling theory was initiated by Akerlof (1970), which constitutes the basis for the subsequent development of the dividend theory. Different signaling models have been developed to explain the dividend policy based on asymmetric information. As stated by Miller and Rock (1985), the information obtained by company managers and external investors is asymmetric. The authors further mentioned that firms' managers used cash dividend payments to convey the information regarding expected profits and future performance to outside investors. Hence, this theory concludes that profitability has a significant positive influence on dividend payouts. The result is broadly consistent with those reported by Yarram and Dollery (2015); Yusof and Ismail (2016) and Yensu and Adusei (2016).

Baker and Wurgler (2004a) advocated the catering theory of dividends that constructed a time-varying dividend premium as a proxy to measure investors' demand for dividends. The theory can then be used to explain how investor preferences affect a company's dividend policy; it can also assess the tendency to pay dividends after controlling for the changes in firm' characteristics that were proposed by Fama and French (2001). When the value of the dividend premium is higher, managers are more inclined to pay higher dividends. This principle is supported by several studies in different studies areas, for example, Pakistani non-financial companies by Rafique and Javaid (2017), listed companies in Thailand by Tangjitprom (2013), United States firms by Kumar, Lei, and Zhang (2017), and non-financial listed firms in China by Lu, Xi, and Lu (2014).

The literature provides some empirical evidence that distinguishes the characteristics of firms that do and do not pay dividends. The most widely cited study in dividend payer characteristics was conducted by Fama and French (2001). The authors found that firms with higher profitability, larger size, and fewer investment opportunities are more likely to pay dividends. They further pointed out that changing a firm's characteristics will affect their propensity to pay dividends. This result is further supported by Grullon, Michaely, and Swaminathan (2002); Bradford, Chen, and Zhu (2005); Banyl and Kahle (2014); Al-Najjar and Kilincarslan (2016).

Another determinant used in the literature to explain dividend policy is cash flow. The free cash flow hypothesis was proposed by Jensen (1986) to explain why companies pay dividends. Firms with a low cash flow level tend to pay lower dividends due to their poor liquidity (Manneh & Naser, 2015; Mui & Mustapha, 2016), while high cash flow levels may enable companies to set high dividends or be used by management to fund all projects with positive net present values (NPVs). However, other studies suggest that the availability of high cash flow levels might encourage management to participate in wasteful behavior or negative NPV projects, which may escalate conflict between managers and shareholders (Fairchild, Guney, & Thanatawee, 2014; Jensen, 1986; Kulathunga & Azeez, 2016). Thus, companies with large cash flows should pay more dividends to reduce agency costs (Rafique & Javaid, 2017). Consistent with this, numerous studies have found a significant positive association between cash flow and dividends (He et al., 2017; Khan & Shamim, 2017; Kisman, 2016).

It is also argued that financial leverage (hereafter referred to as LEV) can be an important indicator of dividend payout (Cheng, Cullinan, & Zhang, 2014; Subramaniam, Mohammed, & Susela, 2014). Rozeff (1982) pointed out that companies with high LEV tend to maintain low levels of dividend payments to reduce transaction costs associated with external financing. This was proved by Brockman and Unlu (2009), who claimed that creditors have a significant influence in determining global dividend policies. Afterward, Al-Malkawi (2007) discovered that LEV is negatively related to dividend policy. This finding was confirmed by Yusof and Ismail (2016) with evidence indicating that Malaysian listed companies with higher debt levels tend to pay lower dividends due to their need for more cash to pay off debt.

2.2. Dividend Payout and Financial Crisis

Despite its disastrous effects on the business world, a financial crisis offers a good opportunity to justify the importance of dividend policy. Nguyen and Tran (2016); Consler and Lepak (2016); Abdulkadir, Abdullah, and Wong (2015); Kuo, Philip, and Zhang (2013); He et al. (2012); Smits (2012); Mollah (2011); and Reddemann et al. (2010), among others, explored the impact of financial distress on firms' ability and willingness to pay dividends.

He et al. (2012), for instance, discovered that companies' ability to pay during the market crash declined. This was supported by the common fact that the global financial crisis caused the stock market to collapse, which led companies to face external financing restrictions. As a result, the ability to meet dividend payments may have been limited further, so companies changed their dividend policies to cope with these external shocks. Although many previous studies claim that cutting dividends will send a negative signal to investors, an empirical study by Reddemann et al. (2010) on the European insurance industry suggests that cutting dividends is an appropriate payout option to ensure financial stability during an economic crisis. This result is in line with that of Daniel et al. (2012), which indicates that firms with lower cash flows are more willing to cut dividends. Therefore, financial flexibility became a priority during the crisis, and in the case of limited external capital, reducing dividends is a company's best source of funding.

However, Abdulkadir et al. (2015) found that some companies increased their dividends during the financial crisis. This is consistent with the findings of Kuo et al. (2013), who argue that the global financial crisis had a positive impact on UK companies' dividend payouts, as companies hoped to boost investor confidence by demonstrating a healthy financial condition. Nguyen and Tran (2016) came to the same conclusion, that companies in Thailand, Singapore, and the US increased their dividends in the post-crisis period to gain a good reputation, thus supporting the signaling theory. Moreover, Consler and Lepak (2016) also found that investors rewarded the dividend initiator for starting dividends, and all dividend companies grew during the 2008 financial crisis.

In addition, Mollah (2011) stated that the crisis did not affect the dividend payout ratio or dividends, because dividend-paying companies on the Dhaka Stock Exchange did not significantly change their dividend

policies before, during, or after the 1997 Asian financial crisis. Similarly, Smits (2012), using a North American sample, made similar conclusions and showed that the 2008 credit crisis did not affect the payout ratios or dividends of American and Canadian firms. Furthermore, Nguyen and Tran (2016) found that under the impact of the global financial crisis, Malaysian, Philippine, Indonesian, and US firms followed the dividend smoothing model and tried to maintain their dividends in the post-crisis period. Inconsistent results in the literature, in general, and by Nguyen and Tran (2016) in particular, raised concerns among incongruous financial management across different nations due to global uncertainties.

3. DATA AND METHODOLOGY

According to Dungey, Hermsillo, Martin, and Tang (2008), the US sub-prime mortgage crisis started in July 26, 2008. Therefore, this study divides the study period into three phases, namely the pre-crisis period (January 1, 2006, to December 31, 2007), the crisis period (January 1, 2008, to December 31, 2009), and the post-crisis period (January 1, 2010, to December 31, 2016). The results from these different periods help to capture the impact of corporate restructuring and financing strategies on dividend policies before and after the financial crisis. All secondary data were obtained from Datastream and Worldscope as of December 31, 2016. The sampling framework in this study comprises all companies falling under heading of non-financial listed companies on Malaysia's Kuala Lumpur Composite Index (KLIC), Hong Kong's Hang Seng Index (HSI), Thailand's SET Index (SET), and Singapore's Straits Times Index (STI), which were using focused sampling. However, the sample does not include utility companies, companies with a negative book value, or financial companies because they use different accounting categories and have different rules to non-financial companies (Fama & French, 2001; He et al., 2017). The total number of non-financial index constituents listed on these four selected Asian economies is 226. However, the final sample after deleting missing values and outliers was 151 companies, totaling 1,661 firm-year observations.

This study follows Fama and French (2001) by estimating a logit model to explain the probability that a firm pays dividends. Multivariate or multinomial logistic regression (MLOGIT) is an extension of logistic regression to predict the probability of class position within a variable based on multiple independent variables. Therefore, we use MLOGIT to solve a research problem that has four possible outcomes regarding dividends (cut, increase, maintain, or omit). PREM is employed as proxy for catering theory as given by Baker and Wurgler (2004a; 2004b). Then, we follow the method used by Kajola, Adewumi, & Oworu (2015) in which return on assets (ROA) is used as a proxy for signaling theory to explain a firm's decision to pay dividends.

$$\ln \frac{pr(DIV=j)}{pr(DIV=k)} = \alpha_0 + \beta_1 PREM_{it} + \beta_2 ROA_{it} + \beta_3 PDIV_{it} + \beta_4 SIZE_{it} + \beta_5 CF_{it} + \beta_6 INV_{it-1} + \beta_7 LEV_{it-1} + \epsilon_{it} \quad (1)$$

$j = 1,2,3$

Where:

- 1) DIV_{it} is the dividend payout option for company i in period t (1 = cut dividends; 2 = increase dividends; 3 = maintain dividends; 4 = omit dividends).
- 2) $PREM_{it}$ is the dividend premium for company i in period t (average market-to-book ratio for dividend-paying and non-dividend-paying companies).
- 3) ROA_{it} is the profitability for company i in period t (net earnings / total assets).
- 4) $SIZE_{it}$ is the size of company i in period t (natural log of the firm's total assets).
- 5) CF_{it} is the cash flow of company i in period t (net cash flow from operating activities).
- 6) INV_{it} is investment opportunities for company i in period t (market-to-book ratio).

- 7) $PDIV_{it-1}$ is the previous year's dividends for company i in period t (lagged dividend payout).
- 8) LEV_{it} is the debt for company i in period t (total debt / total assets).
- 9) ϵ_{it} is the error term.
- 10) J is the different outcome levels (1, 3, and 4).
- 11) K is the base outcome (outcome level 2).

The dependent variable in the model is the firm's dividend payout choices, which is divided into four outcome levels: $PAYOPT = 1$ if dividends are cut, $PAYOPT = 2$ if dividends are increased, $PAYOPT = 3$ if dividends are maintained, and $PAYOPT = 4$ if dividends are omitted. Since the dependent variable has more than two categorical outcomes, multinomial logistic regression was employed to identify variables that can explain payout policies in the markets in Hong Kong, Singapore, Malaysia, and Thailand. Macroeconomic effect variables, such as interest rate (INT) and stock market performance (SMP), were also included in the regression. The significance of the coefficient associated with the dividend payout choices was then examined.

4. ANALYSIS OF RESULTS

4.1. Descriptive Statistics

Table 2a shows that the dividends paid in these four Asian economies have shown a significant upward trend since 2006; in particular, the dividends paid in HK have increased by 200%, from USD 7.2 million in 2006 to USD 21.77 million in 2016. A significant increase in the number of dividends paid was recorded in all sample economies (except THAI) during the financial crisis period. The increasing trend of dividend payouts in the post-crisis period is evident for MSIA, SIN, and HK, showing some early support for the signaling theory. However, the number of dividend payers decreased slightly in 2011 for all sample countries in the study, i.e., from 0.62 to 0.36 in MSIA; from 0.51 to 0.39 in HK; from 0.68 to 0.60 in THAI, and from 0.50 to 0.34 in SIN. Since 2012, a continuously increasing trend has occurred as an initial signal of global economic recovery after the crisis. This indicates that dividend payments were not greatly impacted by crisis. In addition, the percentage of firms that cut dividends reached a peak during the crisis period and rose sustainably until 2015 (except in 2010 when there was a sharp decline). About 28.5% of firms maintained their dividends in 2009 despite the crisis indicating that firms tended to smooth their dividend payouts during the crisis period. This percentage then increased between 2010 and 2016 (except in 2012 and 2014), which further proves that firms tended to maintain stable dividends during the pre-crisis and post-crisis periods. This preliminary statistic is consistent with prior studies that supported the smoothing hypothesis in different countries (Abdulkadir et al., 2015; Nguyen & Tran, 2016; Wang, Ke, Lin, & Huang, 2016).

Table 2b presents the results of the descriptive statistics of variables in the regression model for the different study periods. The statistics recorded 302 firm-year observations for pre-crisis and another 302 firm-year observations during crisis periods after the deletion of missing values and outliers, and 1,057 firm-year observations for the post-crisis period. The average dividend premium (PREM) values for MSIA, SIN and THAI continued to rise in all three periods, demonstrating that investors' demand for dividends increased significantly during the crisis. However, HK experienced the opposite PREM trend, which fell during the crisis and rebounded after the crisis. This proves that investors' value to dividend-paying companies in the post-crisis period is higher than before and during the crisis, and dividend preferences are higher after the economy recovers from the recession.

Table 2a. Dividend statistics (%), 2006–2016.

Years	MALAYSIA				HONG KONG				THAILAND				SINGAPORE			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
2006	0.00	0.42	0.31	0.27	0.53	0.31	0.00	0.16	0.28	0.40	0.16	0.16	0.06	0.56	0.22	0.16
2007	0.11	0.47	0.24	0.18	0.61	0.10	0.00	0.29	0.20	0.36	0.28	0.16	0.16	0.50	0.28	0.06
2008	0.18	0.31	0.31	0.20	0.06	0.49	0.14	0.31	0.16	0.52	0.20	0.12	0.06	0.44	0.34	0.16
2009	0.29	0.18	0.31	0.22	0.24	0.18	0.31	0.27	0.32	0.36	0.20	0.12	0.19	0.34	0.28	0.19
2010	0.02	0.62	0.22	0.13	0.04	0.51	0.22	0.22	0.08	0.68	0.16	0.08	0.03	0.50	0.22	0.25
2011	0.27	0.36	0.29	0.09	0.04	0.39	0.35	0.22	0.16	0.60	0.16	0.08	0.06	0.34	0.38	0.22
2012	0.20	0.27	0.40	0.13	0.14	0.43	0.20	0.22	0.24	0.56	0.12	0.08	0.09	0.47	0.22	0.22
2013	0.27	0.20	0.36	0.18	0.20	0.45	0.20	0.14	0.20	0.72	0.04	0.04	0.13	0.19	0.47	0.22
2014	0.27	0.36	0.27	0.11	0.14	0.49	0.24	0.12	0.24	0.48	0.24	0.04	0.22	0.25	0.31	0.22
2015	0.47	0.16	0.31	0.07	0.08	0.45	0.33	0.14	0.12	0.56	0.28	0.04	0.25	0.22	0.31	0.22
2016	0.20	0.27	0.44	0.09	0.16	0.33	0.35	0.16	0.12	0.72	0.16	0.00	0.19	0.25	0.31	0.25
MEAN	0.21	0.33	0.32	0.15	0.21	0.37	0.21	0.21	0.19	0.54	0.18	0.08	0.13	0.37	0.30	0.20

Note: 1 = cut the dividends, 2 = increase the dividends, 3 = maintain the dividends, 4 = omit the dividends.

Table 2b. Descriptive statistics of independent variables, 2006–2016.

Variables	Hong Kong			Singapore			Malaysia			Thailand		
	N	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.	N	Mean	S.D.
Pre-Crisis (2006–2007)												
PREM	98	0.33	0.14	64	0.91	0.85	90	0.09	0.24	50	-1.95	1.66
ROA	98	0.59	0.58	64	0.45	0.66	90	0.87	0.67	50	1.09	0.68
CF	98	0.85	2.97	64	0.41	0.77	90	0.27	0.49	50	0.21	0.29
SIZE	98	14.68	1.6	64	13.97	1.83	90	13.74	1.57	50	13.71	1.33
INV	98	4.1	7.95	64	4.36	6.75	90	3.24	4.87	50	-0.03	0.41
PDIV	98	0.05	0.08	64	0.08	0.11	90	0.05	0.13	50	0.53	0.9
LEV	98	0.22	0.7	64	0.31	0.22	90	0.3	0.22	50	0.38	0.21
Crisis (2008–2009)												
PREM	98	-0.21	0.13	64	1.56	0.42	90	0.44	0.08	50	-0.09	0.27
ROA	98	0.61	0.57	64	0.82	0.71	90	0.92	0.78	50	1.18	0.95
CF	98	1.16	4.33	64	0.52	0.95	90	0.24	0.35	50	0.24	0.29
SIZE	98	14.97	1.86	64	14.23	1.74	90	13.88	1.55	50	13.87	1.24
INV	98	2.35	3.13	64	3.04	5.37	90	2.77	4.8	50	0.02	0.01
PDIV	98	0.05	0.09	64	0.1	0.16	90	0.07	0.13	50	0.61	1.05
LEV	98	0.3	0.19	64	0.32	0.25	90	0.3	0.22	50	0.35	0.23
Post-Crisis (2010–2016)												
PREM	343	0.05	0.19	224	1.58	0.7	315	1.47	0.49	175	0.39	1.01
ROA	343	0.58	0.57	224	0.75	0.72	315	0.86	0.74	175	0.97	0.7
CF	343	1.46	7.18	224	0.6	1.09	315	0.31	0.47	175	0.38	0.41
SIZE	343	15.8	1.45	224	14.82	1.63	315	14.27	1.5	175	14.56	1.07
INV	343	2.37	2.24	224	5.26	19.61	315	5.29	12.48	175	0.05	0.04
PDIV	343	0.07	0.11	224	0.14	0.27	315	0.08	0.15	175	1.07	1.48
LEV	343	0.31	0.18	224	0.29	0.23	315	0.31	0.21	175	0.41	0.2

Notes: PREM is the firm's dividend premium; ROA is the measure of the firm's profitability; SIZE is the size of the firm; CF is the cash flow of the firm; INV is the firm's investment opportunities; PDIV is the previous year's dividends of the firm; and LEV is the debt of the firm.

The mean ROA values in HK, SIN, MSIA and THAI increased significantly during the crisis compared to pre-crisis but declined during the post-crisis period. This implies that firms suffered low ROA after the financial crisis period. In addition, Table 2b indicates that the average of SIZE increased over the different sub-periods, suggesting that companies listed in the four economies were more inclined to expand over the years.

A slight decline in the mean value of cash flow (CF) was reported in MSIA during the crisis period, which suggests that firms faced cash flow restrictions in the crisis period, and the effect of the crisis possibly extended to firm investment opportunities (INV). Inversely, the data shows that the CF levels in HK, SIN and THAI have been growing steadily throughout the study period. On the other hand, the mean values of investment opportunities in the sample economies (excluding THAI) faced a decline during the financial crisis, but then these values in all samples increased after the crisis period, thus higher mean values for INV and CF were

reported in the post-crisis period. This agrees with the findings of Ferreira and Vilela (2004) that firms with better INV will keep higher levels of cash to avoid financial distress.

The leverage ratio is a financial measurement used to assess the ability of a company to meet its financial obligations. The figure shows that the LEV levels for HK and MSIA increased from the pre-crisis to post-crisis periods, indicating that non-financial companies listed on the HKSE and Bursa Malaysia have to use more debt to finance their total assets on account of the crisis. However, the mean values of past dividends in these four economies increased over the sub-periods, demonstrating an increase in the dividends paid by firms in the HK, SIN, MSIA and THAI markets.

4.2. Multinomial Logistic Regression Results

A multinomial logistic regression model was used to examine how the predictors of payout choice changed across the different sub-periods. The variance inflation factor (VIF) was used to test for the existence of possible multicollinearity (Freund, Littell, & Creighton, 2003). The mean values for each of the variables in all samples are less than 10 (HK is 1.40, SIN is 1.61, MSIA is 2.65, and THAI 1.43), which is consistent with Belsley, Kuh, and Welsch (1980), who stated that the VIF values for each variable should not exceed 10. Therefore, it can be concluded that there is no multicollinearity problem in this model.

Table 3 reports the estimated multinomial logistic regression coefficients from Equation 1 for HK, SIN, MSIA, and THAI by comparing the likelihood of different payout options to the base level outcome (increasing dividends). The likelihood ratios for the four selected Asian economies' models are statistically significant at the 1% level for all sub-periods (except for THAI during the pre-crisis period), indicating overall significance for all models. The X^2 value of the estimating equation varies between 32.34% and 90.52%, confirming an acceptable level of goodness of fit.

Table 3. Multinomial logit model for dividend payout options during the pre-crisis period.

Economies	MALAYSIA			THAILAND			SINGAPORE			HONG KONG		
	Pre Crisis (2006–2007)			Pre Crisis (2006–2007)			Pre Crisis (2006–2007)			Pre Crisis (2006–2007)		
	(1) Cut	(3) Maint	(4) Omit	(1) Cut	(3) Maint	(4) Omit	(1) Cut	(3) Maint	(4) Omit	(1) Cut	(3) Maint	(4) Omit
Constant	-12.83	-0.55	28.45***	1.41	0.05	3.48	8.95	2.30	-7.80	2.94	-	7.24
PREM	33.55	-0.85	-0.96	-0.02	0.22	0.18	1.06	1.20*	0.62	5.30**	-	8.69***
ROA	0.14	0.17	-2.40**	1.12	0.41	0.77	0.11	-2.13	-10.30	-0.49	-	-0.34
CF	-1.36	-0.04	2.46**	0.10	-0.83	-0.27	2.44**	-0.22	-6.15	0.14	-	-0.73
SIZE	0.07	-0.02	-2.15***	-0.12	0.01	-0.30	-0.81	-0.21	1.01	-0.19	-	-0.71*
INV	0.09	0.07	-0.13	-0.60	-0.24	-	-0.62	0.02	-1.81	-0.08	-	-0.03
PDIV	-9.00	1.49	14.05**	-1.14	0.05	0.31	-31.64	-7.15	-13.40	-4.01	-	2.36
Leverage	-1.62	0.20	3.32*	0.52	0.03	0.84	4.99	0.25	-	0.86	-	3.17*
						0.63**			12.45*			
CRI	0 (omitted)			0 (omitted)			0 (omitted)			0 (omitted)		
SMP	0 (omitted)			0 (omitted)			0 (omitted)			0 (omitted)		
INT	0 (omitted)			0 (omitted)			0 (omitted)			0 (omitted)		
Log-likelihood χ^2	43.17***			22.13			58.64***			32.34***		
Number of Observations	90	90	90	50	50	50	64	64	64	98	0	98

Note: Significant at * $p < 0.10$; ** $p < 0.05$; *** $p < 0.01$.

4.3. Dividend Payout Decisions before the Crisis

The results in Table 3 report that the macroeconomic variables (CRI, SMP, and INT) were found to be statistically insignificant before and during the crisis. This indicates that these three variables had no significant impact on the dividend payout options (cut, maintain, omit) relative to the base outcome (increase dividends) before and during the crisis.

Findings indicate that PREM, ROA, SIZE and INV are negative and statistically significant (except PREM and INV in MSIA during the pre-crisis period). In addition, CF, PDIV and LEV were found to be positively significant in the MSIA market before the 2008 financial crisis happened, revealing that Malaysian firms with lower ROA, smaller firm SIZE, and higher LEV preferred to omit dividends than to increase their dividend payouts before the crisis. These results imply that some firms maintained low LEV in order to achieve financial flexibility, and then chose to omit dividends. Also, firms with a lower ROA may be less willing to rise external financing to meet the cost of dividend payments and thus are more likely to omit dividends than increase dividend payouts. This is in agreement with the dividend payers' characteristics indicated by Fama and French (2001). Given that the PDIV is positive in omitting dividends, the likelihood of firms to omit dividends is higher than the likelihood of firms increasing dividends in the pre-crisis period. This demonstrates that MSIA failed to support the dividend smoothing hypothesis proposed by Lintner (1956).

During the first sample period (2006–2007), only INV was found to be statistically significant in the THAI market. A negative coefficient for INV represents firms with a higher INV who prefer to omit rather than increase dividends as they want to retain funds for reinvesting and stimulating their growth rate. Other noteworthy variables in the model include PREM, ROA, CF, SIZE, PDIV and LEV, which were found to be insignificant in THAI during the pre-crisis period. There is a lack of evidence to support the catering theory, smoothing hypothesis theory, and signaling theory to explain the shift of dividend payout options (cut, maintain, omit) relative to increasing dividends over the particular study period.

PREM was reported as positive and statistically significant at the 10% level in SIN before the crisis period. This is consistent with the catering theory because Singaporean firms prefer to maintain rather than increase dividends (cutting and omitting are much less likely) when investors show a higher demand for dividends measured by a positive PREM. Table 3 reports that CF and LEV in SIN were significant during the pre-crisis period, illustrating that highly levered firms are more likely to omit rather than increase dividends. This suggests that companies with high debt will need more cash to settle debt obligations, leading to lower payment of dividends. Conversely, the findings suggest that SIN companies with higher CF are more willing to reduce their dividends rather than increase them. This preference allows these firms to retain more CF and, therefore, supports the free CF hypothesis that firms prefer to use the increased cash flow to make profitable investments rather than distribute dividends.

Table 3 shows that the coefficient of PREM in HK is statistically and significantly positive in the first sample period, indicating that investors in HK are preferred to receive dividend. However, findings demonstrate that the non-financial firms listed in HK preferred to cut or omit rather than increase dividends before the crisis. This suggests that the catering theory does not explain a firm's dividend paying behavior as managers do not consider investors' demands before making dividend policy decisions. The estimate coefficient of SIZE is significantly negative; in contrast, LEV is significantly positive in HK before the crisis period. This shows that smaller-sized HK firms with a high debt level preferred to omit rather than increase dividends during the pre-crisis period. These results support the characteristics of dividend payers stated by Fama and French (2001).

4.4. Payout Choices During the Crisis

The findings in Table 4 illustrate that only three explanatory variables (ROA, SIZE, and LEV) remained negatively significant in MSIA during the second sample period. The results suggest that sample firms with a smaller size and lower profitability tended to omit rather than increase dividends during the crisis. Similarly, LEV was reported to be negative in MSIA, indicating that highly levered firms preferred to maintain rather than increase dividends. This means that firms were more likely to emphasize their financial flexibility and debt level during the crisis period in order to reduce transaction costs arising from external financing. Moreover, CF

and PDIV in MSIA became insignificant during the financial crisis, indicating that PDIV is not a reference point for sample firms' dividend decisions, thus contradicting the signaling theory of Baker and Wurgler (2011).

Furthermore, Table 4 demonstrates that CF is the only positive and statistically significant variable in THAI over the crisis period. The result illustrates that firms with a higher CF are more likely to maintain than increase their dividends during a financial crisis. This is in line with the dividend smoothing hypothesis because THAI firms sought to maintain their dividends despite the crisis. The other variables (except INV, which was found to be significant before the crisis period) remained insignificant both before and during the crisis. This indicates that the dividend payout options (cut, maintain, omit or increase) are not driven by these variables.

PREM in SIN became negative, indicating that investors in SIN had a lower preference for dividends during the crisis period; therefore, SIN firms are more likely to cut than increase dividends. This evidence supports the prediction of the catering theory proposed by Baker and Wurgler (2004a) in SIN. Similarly, SIZE and LEV in SIN were found to be negatively significant over the second sample period. Findings show that SIN firms with a smaller SIZE had a higher likelihood of maintaining or omitting than increasing dividends during the crisis period, while firms with higher leverage preferred to cut, maintain or omit dividends rather than increase them. This reveals that firms showed more prudent financial management during the financial crisis. The coefficient of CF during the crisis was found to be positively significant in SIN, which implies that firms tended to maintain rather than increase their dividends in order to signal their better financial performance and, in turn, boost investors' confidence. This supports the signaling theory in SIN during the financial crisis.

Table 4. Multinomial logit model for dividend payout options during the crisis period

Economies	MALAYSIA			THAILAND			SINGAPORE			HONG KONG		
Explanatory Variables	Crisis (2008–2009)			Crisis (2008–2009)			Crisis (2008–2009)			Crisis (2008–2009)		
	(1) Cut	(3) Maint	(4) Omit	(1) Cut	(3) Maint	(4) Omit	(1) Cut	(3) Maint	(4) Omit	(1) Cut	(3) Maint	(4) Omit
Constant	4.01	-6.87	25.08**	0.34	7.37	614.81	16.19*	35.13***	38.08***	6.62	13.79***	13.95**
PREM	6.37	3.17	5.14	1.94	0.08	33.18	-2.21*	-0.44	-1.64	11.40***	7.85***	4.54*
ROA	-0.79	1.00	-1.63*	0.23	0.40	-227.84	0.46	-0.57	0.06	-0.93	-1.87**	3.42***
CF	1.03	0.61	2.53	1.21	3.12*	-218.00	-2.07	1.82**	-6.52	-0.20	-0.02	-0.39
SIZE	-0.49	0.41	-2.02***	-0.13	-0.68	-26.49	-0.87	-2.20***	-2.32***	-0.22	-0.81**	-0.79**
INV	0.06	0.15	0.12	0.01	0.29	-10.77	0.18	0.04	-0.63	-0.20	0.09	0.05
PDIV	-0.08	-9.97	0.88	0.28	-0.97	-26.96	3.43	-11.92	2.68	-4.65	4.99	-2.64
Leverage	0.98	-2.96*	1.71	0.77	-0.72	-264.69	-6.08*	-8.20**	-6.72*	-1.11	1.48	3.25
CRI	0 (omitted)			0 (omitted)			0 (omitted)			0 (omitted)		
SMP	0 (omitted)			0 (omitted)			0 (omitted)			0 (omitted)		
INT	0 (omitted)			0 (omitted)			0 (omitted)			0 (omitted)		
Log-likelihood χ^2	45.08***			48.57***			68.93***			57.63***		
Number of Observations	90	90	90	50	50	50	64	64	64	98	98	98

Note: Significant at * p < 0.10; ** p < 0.05; *** p < 0.01.

During the crisis period, the estimated coefficient of PREM in HK is statistically positive, which reflects that investors prefer dividends. Finding indicate that firms in HK prefer to cut, maintain or even omit rather than increase dividends during a crisis. This contradicts the catering theory of dividends (Baker & Wurgler, 2004a) and shows that HK firms failed to respond to investors' demands for dividends during the crisis period. This signifies a lack of evidence to support the catering theory during this period. Table 4 shows that ROA and SIZE in HK remained negatively significant during the crisis. Small-sized companies with low profitability may not have sufficient internal funds and are less willing to use external financing to meet the cost of distributing dividends. Hence, the results suggest that the sample firms with a smaller size and lower ROA tend to omit rather than increase dividends during a crisis.

4.5. Payout Choices after the Crisis

Table 5 reports that a negative and significant PREM was first found in MSIA after the financial crisis period. Findings indicate that non-financial firms in MSIA prefer to maintain rather than increase dividends. This indicates that MSIA firms strived to maintain stable dividends during the post-crisis period, thus supporting the dividend smoothing hypothesis proposed by Lintner (1956). Moreover, ROA, SIZE and INV were found to be negative and significant, while PDIV, LEV and INT were found to be positively significant in MSIA during the post-crisis period. These findings show that firms with lower ROA, lower INV, smaller SIZE, and higher debt levels preferred to omit rather than increase dividends in third sample period. Evidence that firms with limited access to external capital during the post-crisis period prefer to omit dividends as a source of funding, which is in line with the characteristics of a dividend payer, indicated by Fama and French (2001).

Findings indicate that PDIV is significant, implying that non-financial firms in MSIA were more likely to omit rather than increase dividends in the post-crisis period, thus failing to support the dividend smoothing hypothesis. Furthermore, INT became significant after the crisis period, demonstrating that MSIA firms tended to cut rather than increase dividends. The consequence of MSIA firms' ability to pay dividends may be further constrained in periods after the financial crisis. The results obtained for ROA, CF, SIZE and INV are statistically significant in THAI during the post-crisis period. The negative ROA and CF coefficients indicate that lower ROA and lower CF companies prefer to omit rather than increase dividend payouts. This indicates that firms with lower financial flexibility have a weaker ability to increase dividends after a crisis. In contrast, findings show that firms with a larger size are more likely to cut dividends. Similarly, firms with higher INV prefer to omit than increase dividends, which implies that firms with high investment potential pursue a very low dividend payout policy in order to retain funds to finance their investments.

The coefficient of PREM is negative and statistically significant in SIN during the post-crisis period. The result proposes that firms in SIN preferred to cut or maintain instead of increase dividends during the third sample period, indicating that the catering incentive drops along with the payout ability after a financial crisis. The coefficients of CF, SIZE, INV and SMP are negative and significant in SIN during the post-crisis period. Thus, SIN firms with lower CF, smaller SIZE and lower INV are more likely to omit than increase dividends. These results suggest that companies adjusted their dividend policy through omitting dividends to improve their financial strength and preserve their capital base. In addition, Table 5 also demonstrates that SIN firms chose to maintain rather than increase dividends after the crisis as the stock market was not performing well. This was due to the dividend companies' desire to show a healthy financial position (no dividend cutting or omitting) to increase investor confidence and gain a good reputation in the post-crisis period. This confirms that firms in SIN followed the dividend smoothing hypothesis in the post-crisis period.

The PREM in HK shifted to insignificant in the post-crisis period, indicating that the catering theory became irrelevant. The result implies that investors' preference for dividends failed to affect firms' dividend policies. ROA and SIZE remained negatively significant in HK after the financial crisis, which shows that lower ROA and smaller-sized companies are more likely to omit than increase dividends. These consequences indicate that HK firms face external financing constraints as a result of a crisis, thus lowering their ability to pay dividends in a post-crisis period. Moreover, the findings also show that firms with a lower CF and a smaller SIZE have a higher likelihood of maintaining than increasing dividends in a post-crisis period. This illustrates that even though these firms are small and have a low CF, they prefer a sustained dividend flow, which is reflected in the higher valuation of the company in the market in order to bolster investors' confidence. Additionally, Table 5 shows that sample firms in HK tend to maintain rather than increase dividends when INT is higher. In particular, firms' preference to maintain dividends in the post-crisis period is in agreement with the dividend smoothing hypothesis.

Table 5. Multinomial logit model for dividend payout options during the post-crisis period.

Economies Explanatory Variables	MALAYSIA			THAILAND			SINGAPORE			HONG KONG		
	Post Crisis (2010–2016)			Post Crisis (2010–2016)			Post Crisis (2010–2016)			Post Crisis (2010–2016)		
	(1) Cut	(3) Maint	(4) Omit	(1) Cut	(3) Maint	(4) Omit	(1) Cut	(3) Maint	(4) Omit	(1) Cut	(3) Maint	(4) Omit
Constant	15.62* *	-3.19	5.21	-9.23**	0.57	8.98	0.39	3.45	11.05***	0.67	3.30*	8.44***
PREM	-0.47	-0.98***	-0.23	-0.11	0.35	0.11	-1.20*	-0.97**	-0.80	0.42	-0.63	0.87
ROA	0.22	-0.17	-1.40**	-0.10	0.13	-4.75**	-0.05	-0.15	-0.01	0.02	0.10	-1.77***
CF	-0.08	0.18	0.38	-0.54	0.64	-14.58***	-0.38	-0.21	-1.20**	0.06	-0.04*	-0.02
SIZE	0.29	0.15	0.92***	0.42*	-0.24	-0.53	0.05	-0.04	-0.63***	0.14	-0.27***	0.57***
INV	0.02	0.02	-0.22**	0.05	-0.01	0.16*	-0.03	0.01	-0.32***	0.01	0.01	-0.07
PDIV	-0.97	-0.29	8.09**	0.17	-0.32	-0.20	-1.04	-1.16	0.04	1.60	1.35	0.02
Leverage	0.64	0.13	2.39**	1.22	-0.29	-1.55	1.53	-1.42	1.09	0.29	0.41	1.31
CRI	0 (omitted)			0 (omitted)			0 (omitted)			0 (omitted)		
SMP	0.60	2.86	5.87	0.36	-0.74	1.61	-4.54	5.73***	-3.11	1.51	-0.91	0.13
INT	3.74**	0.73	2.35	0.49	-0.29	0.75	-0.08	-1.55	-0.37	1.02	1.56**	1.02
Log likelihood x ²	75.49***			42.03**			90.51***			58.30***		
Number of Observation	315	315	315	175	175	175	224	224	224	343	343	343

Note: Significant at * p < 0.10; ** p < 0.05; *** p < 0.01.

5. CONCLUSION

This paper examines firms' dividend payout choices using 1,661 firm-year observations for 151 non-financial firms listed in MSIA, THAI, SIN and HK from 2006 to 2016. The three distinct sub-samples used are the periods before, during and after the crisis in order to investigate whether firms' payout patterns changed. We first investigated the pattern in dividend payments and their trend over time. The findings show a small variation in the proportion of dividend payers at the global level, showing a common trend in the higher tendency to pay dividends (regardless of cutting, increasing or maintaining dividend payments) across these four markets. Specifically, over the eleven years covered by this study, the proportion of dividend payers is higher than 80% in all markets. Importantly, this ascension is persistent and consistent over the sub-periods across all four countries studied. The empirical evidence shows that the probability of dividends increasing rises significantly after the onset of the financial crisis, and the probability of dividends being cut fell to the lowest in the same year. However, dividend increase was the primary choice for most dividend payers over the study period, indicating that dividend policy persists, even during a financial crisis.

A multinomial logistic model was employed to further predict the ability of firms to pay dividends. The regression results demonstrate that the dividend policy changed slightly due to the financial crisis and was captured by significant explanatory variables. Our evidence indicates that a firm's dividend payout options during a financial crisis depends not only on smooth and/or increased dividends to signal sound financial health, but also on the financial flexibility of the company. Therefore, these analyses reveal that profitability, size and cash flow significantly affect the likelihood of firms to omit dividends relative to increasing dividends. A firm with lower profitability, high investment opportunities, smaller size, and a higher debt level exhibits a higher likelihood to omit dividends in order to ensure their financial flexibility during a crisis. Importantly, after the crisis, low cash ratios remained negatively related to the probability of omitted dividends relative to increased dividends. This implies that the financial crisis did not have much impact on dividend policy.

We also identified a number of cross-sectional determinants of dividend payout options. Our findings demonstrate that non-financial firms with a smaller size, less profitability, more investment opportunities, and

higher leverage are more likely to omit dividends during a financial crisis as their ability to pay dividends may be constrained in periods of financial crisis. This result is consistent with Fama and French (2001), who discovered that larger firms, firms with higher profitability, and firms with lower growth opportunities have a greater propensity to pay dividends. Furthermore, the study result also reveals that firms with a higher cash flow (THAI and SIN), smaller firm size (SIN and HK), lower profitability (HK), and higher leverage (MSIA and SIN) are more likely to maintain dividends, implying that these firms follow the smoothing hypothesis theory of Lintner (1956). Notably, profitability and size become key determinants in the decision to omit dividends relative to increasing dividends, and less profitable and smaller firms will adjust their dividend policy through omitting dividends to improve their financial strength and preserve their capital base. In addition, past dividends lost relevance in all sample economies during the crisis, meaning that current dividend decisions are not influenced by previously paid dividends. Our evidence is interpreted as broadly consistent with the view that, during a financial crisis, a dividend payer's characteristics are the most relevant to explaining dividend payout options, while cutting dividends is one of the methods used to maintain financial flexibility in that particular period.

As dividend payment is a form of reward or return for shareholders, the predictors of alternative payout choices before, during and after a financial crisis may provide insights for existing and potential shareholders in making investment decisions. This enhances knowledge for shareholders who want to invest during a crisis period. The findings of this study will also be useful to researchers conducting similar research. However, this study is not without its limitations. First, this study only focuses on non-financial firms with large market capitalization in Malaysia, Thailand, Singapore and Hong Kong. For greater generalizability of the findings and to better reflect dividend determinants of non-financial listed companies, future research may want to include more listed companies in the sample of study. Second, the present study was based on secondary data. The use of questionnaires or qualitative studies, such as interviews, may provide richer data regarding factors that affect the dividend policy of companies. Alternatively, a combination of quantitative and qualitative methods may produce more comprehensive results. Despite its limitations, this study contributes to the existing literature regarding the important issue of factors affecting dividend policies of companies in Malaysia, Thailand, Singapore and Hong Kong.

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