Is information asymmetry the ground of investor sentiment in the Indonesian capital market?

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Abstract: 'Information asymmetry premium' is used to get an answer to what underlies the emergence of investor sentiment on dividends on the capital market. Previous research are only able to prove that 'dividend premium', which acted as investor sentiment on dividend, affected dividend policy. However, the conditions underlying the emergence of investor sentiment on dividends have not yet been answered. This research aims to prove that investors do put sentiment toward companies who pay dividend because dividend payers' information asymmetry is higher than dividend non-payers', and vice versa. This research uses binary logistic regression and panel least square on unbalanced data. The results can prove that dividend premium is a subset of information asymmetry premium in confirming investor sentiment on dividends toward the propensity to pay dividends. It is proven that the basis for dividend payment is driven by investor sentiment that was formed because of high information asymmetry.

Keywords: dividend premium; sentiment investor; information asymmetry premium; IAP.

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1 Introduction

Various dividend theories describe the reason why companies pay dividends because dividends are believed to play an important role in the formation of stock prices (Hussin et al., 2010; Batabyal and Robinson, 2017). Of those who have tested the notion, the perspective of dividend theory from the financial behaviour side emerged through investor sentiments on dividends, namely dividend catering theory (DCT) by Baker and Wurgler in 2004. DCT's rationale was that opportunistic managers serve the demand of investors who want paid or unpaid dividends to increase the market to book ratio, which will maximise the company's equity market value (Baker and Wurgler, 2004b; Li and Lie, 2006; Hoberg and Prabhala, 2009; Ming Kuo et al., 2013; Tangjitprom, 2013; Anouar and Aubert, 2017; Karpavicius and Yu, 2018).

Fama and French (FF) (2001) started by documenting the decrease in the propensity to pay dividends (PTP) due to the increasing number of companies that do not pay dividends (supported by DeAngelo et al., 2004). Therefore, Baker and Wurgler continued FF research by including investor sentiment on dividends. Baker and Wurgler's findings became a breakthrough because the company's basis for dividend distribution was proven not to be of fundamental value but was driven by the desire of investors who did not have complete information about the company. DCT was considered capable of providing a satisfactory explanation of the causes of the disappearance of dividends in the capital market compared to other dividend theories.

DCT involves disequilibrium market dynamics and the desire of investors who do not understand the actual condition of the company due to the limited company-specific information on the market. This indicates information inequality between managers and investors, where investors have limited information (inferior) about the company's internal while the managers have the superior. Information asymmetry encourages investors to try to interpret the company's performance based on the sentiment because it is difficult for investors to effectively control management's actions in paying dividends. On the other hand, the information conveyed by managers may not be the actual conditions of the company because managers tend to report something that maximises its utility. Information asymmetry forms the basis of the validity of investor sentiments on dividends, causing payers and non-payers stock prices to fluctuate over time (Aslan et al., 2011; Cerqueira and Pereira, 2015). The higher the information asymmetry, the stronger the investor sentiment on dividends, causing the company to enjoy premium price

incentives for its shares. Jiang (2005) proved that high information asymmetry encourages investors to overconfidence with their decisions based on sentiment.

Baker and Wurgler (2004a) stated that DCT is built on the assumption that investors do not have complete information about the company. Thus, it supports the idea that investor sentiment on dividends measured through dividend premium is formed by information asymmetry between managers and investors. Therefore, investor sentiment is a subset of information asymmetry, so dividend premium can be substituted by information asymmetry premium (IAP) in confirming DCT behaviour.

The purpose of this study was to confirm whether the DCT applies in a condition of high information asymmetry. It would be answered when it is discovered that the IAP can explain why companies cater to investor's sentiment on dividends, so the IAP becomes a complement of the DP because they are in line. Thus, this study aimed to obtain answers to what underlies investor sentiment on dividends in the capital market. So far, it has only been proven that the dividend premium affects dividend policy, but the conditions underlying the emergence of investor sentiment over the dividend have not been answered. In this case, the more informed managers behave opportunistically while investors behave irrationally in the less informed ones. Investors put a sentiment on payers because the payers' information asymmetry is higher than non-payers and vice versa.

The contribution of this study was to develop behavioural finance science by looking at how investors behave towards dividend payers and non-dividend payers' shares. More specifically, this study could bridge investor sentiment on dividends with the manager's decision to cater to the investor's desires in the situation of high information asymmetry. The second contribution was answering Baker and Wurgler (2004b) and Li and Lie (2006) input to explore investor sentiment towards dividends by including new issues (non-others catering issues) in addition to dividend premiums, in which researchers raised IAP as a new variable that influenced dividend decisions.

This study filled the gap from the previous research by Baker and Wurgler (2004a), which was carried out in the US capital market as a developing market. This research was conducted in the Indonesian capital market as an emerging market that had a unique characteristic, which was dominance by uninformed investors and high information asymmetry. This was very interesting considering the basis of investor sentiment was rooted in these conditions. The second gap was answering doubts from the empirical validity of DCT which was found that the premium dividend had no significant effect around dividend announcements (Baker and Wurgler, 2004b). The researcher included IAP as an answer that proved that DCT was valid under the assumption of high information asymmetry so that investor sentiment on dividends rose when IAP was high.

Indonesian capital market was selected because most of the investors are categorised as uninformed. It would be interesting since the basis of investor sentiment was this condition. Setiawan and Hartono (2003) proved that investors in the Indonesian capital market were still naive because they were unable to distinguish information which had economic value or not. Royaei and Mohammadi (2011) and Kaluge and Puspita (2015) also proved that information asymmetry in the Indonesian capital market was high because uninformed investors were dominant. Morck et al. (2000) found information asymmetry was higher in emerging markets than in developed markets because there was no company-specific information available (Jin and Myers, 2006; Fernandes and Ferreira, 2009; Chen et al., 2016). The ranking results for aspects of disclosure and transparency of information by the Asean Corporate Governance Scorecard (ACGS) in 11 ASEAN

countries 2017 showed that Indonesia was still below Malaysia, Thailand, Vietnam and Singapore. Although there were improvements in 2015, it remained insignificant in the aspect of information transparency. Therefore, this research is challenging, and it is expected to contribute significantly considering the uniqueness of its environmental conditions.

2 Literature review

2.1 The PTP

Fama and French (2001) concluded that there had been a decline in PTP as proven by the percentage of payers that decreased from 67% (1978) to 21% (1999), whereas the number of payers was still fluctuating prior to 1978. Fama and French (2001) formulated PTP by subtracting the actual proportion to the proportion of expectations of companies that pay dividends. Positive PTP occurs when the company's actual proportion is more than expected, and vice versa for negative PTP.

This decline was indicated by the increasing number of companies that did not pay dividends (Hsieh and Wang, 2006; Neves et al., 2006). However, the reason why the company did not pay dividends remained uncovered. Baker and Wurgler came up with the DCT in 2004, which provided satisfactory answers. Baker and Wurgler found that investor sentiments measured through dividend premium were the cause of the disappearing dividend. The results of his research proved that dividend premium has a positive effect on the PTP, that investor demand for payers vary from time to time which causes the price of payers' stock to fluctuate.

The ground for DCT to emerge as a form of rebuttal to the dividend irrelevance theory from Miller and Modigliani (1961). This opposition was proven by Baker and Wurgler (2004a), where managers serve the desires of investors by paying dividends if investors put sentiment towards payers (positive dividend premium) or managers will not share dividends if investors prefer the company not to pay dividends (negative dividend premium). Based on the investor sentiment on dividends, the market gives a reward in the form of premium prices. This means that when the dividend premium is positive, the MB ratio payers > MB ratio non-payers, and vice versa. This finding proves that dividends are relevant to the value of the firm. Supports for DCT continue to surface with the emergence of development in this field, such as Li and Lie (2006), DeAngelo and DeAngelo (2006), Savov and Weber (2006), Ferris et al. (2009), Hoberg and Prabhala (2009), Hui and Tzu (2014), Lee (2011), Kuo et al. (2013), Tangjitprom (2013), Chen et al. (2016) and Karpavicius and Yu (2018).

2.2 Information asymmetry premium

Information asymmetry causes investors to be constrained by "a hidden firm characteristic problem and hidden action". As a result, investors behave irrationally in making investment decisions on payers and non-payers' stocks (Ming Kuo et al., 2013). This is consistent with Bhattacharya et al. (2013), Cerqueira and Pereira (2015), Ntow-Gyamfi et al. (2015) and Safdar and Yan (2016) who proved that information in the market is increasingly biased because investors perceive the condition of the company

based on personal feelings based on sentiment since there is little fundamental information that can be accessed.

On the other hand, from the company side, managers have superior information. Hirshleifer et al. (2011) and Bhattacharya et al. (2013) support Easley and O'Hara (2004) proved that information asymmetry has implications of informational advantages for those who have more complete and better-quality information. Managers can create strategies to get incentives for uninformed investors because managers really understand the conditions of the company's fundamentals. Thus, rational managers, in making decisions to pay or not distribute dividends, will prioritise corporate value maximisation (Jiang, 2005; Cohen et al., 2012; Boehmer et al., 2013).

Based on differences in information about the content of dividends containing future earnings and company risks between managers and investors, it raises IAP (Ali and Abdelfettah, 2016). If IAP is positive, indicating higher payers' information asymmetry, the opposite applies. For the sake of robustness test for the research model, IAP was measured through three proxies, namely the deviation standard of daily stock returns (DSR) (Liu and Shan, 2007), high to low spread (HLS) (Corwin and Schultz, 2012) and bid-ask spread (BAS) (Ball et al., 2012).

2.3 Other factors affecting the dividend policy

2.3.1 Dividend yield

Generally, investors would want a large dividend yield because the increase in dividend yield shows that dividends per share are getting higher. According to Li and Lie (2006), when companies want their share prices to rise, companies must increase dividend yield by giving higher dividends to attract investors, meaning that dividend yield has a positive effect on increasing dividends.

2.3.2 Firm size

Li and Lie (2006), Denis and Osobov (2008), Tangjitprom (2013) stated that big size company has a higher possibility to increase dividends. Aivazian et al. (2003), Al-Malkawi (2008), Hossain et al. (2014) supported the idea and found a positive relation between firm size and dividend policy. The bigger the company, the higher the dividend payout ratio.

2.3.3 Debt

Jensen et al. (1992), Chen et al. (1999) stated that debt policy affects the dividend policy negatively. Increased debts reduce the agency conflict so that the owner does not demand too high dividend payments. Li and Lie (2006) proved that the increase of dividends is lower when the debt ratio is high, which means that the higher the long-term debt to total assets, the lower the company's ability to pay higher dividends. Arko et al. (2014), Bae and Elhusseiny (2017) proved that the higher the debt ratio, the less the dividends paid by the company.

2.3.4 Cash

Liu and Shan (2007), Lee (2011), Fuller and Goldstein (2011), Tangjitprom (2013) found evidence which was consistent with agency theory, which is cash disbursements in the form of dividends may mitigate potential cash-induced agency problems between managers and shareholders. In particular, cash is positively related to dividend policy. Li and Lie (2006) and Tangjitprom (2013) used cash ratios, namely the ratio of cash (cash equivalent) to total assets. The higher cash ratio indicates that the company is liquid and, therefore able to pay higher dividends.

2.4 Investment opportunity set

Jensen (1986) and Gugler (2003) explained that companies with low investment opportunities have more free cash flow and pay higher dividends to reduce agency costs associated with higher free cash flow. Companies pay higher dividends when payers have more cash and have lower investment returns, so investment opportunity set (IOS) has a negative effect on dividend payout ratio (Naeem and Nasr, 2007; Ahmed and Javid, 2009; Abor and Bokpin, 2010; Arko et al., 2014). The relationship between investment policies and dividends can be identified through the company's cash flow. The greater the amount of investment, the smaller the dividend. It means that the lower the IOS, the greater the dividend received by investors. Li and Lie (2006), Tangjitprom (2013) and Karpavicius and Yu (2018) used the market to book value of assets as a measure of IOS.

2.5 Profitability

Li and Lie (2006) and Arko et al. (2014) proved that companies increase dividend payments when profitability is high. Baker and Wurgler (2006) used profitability as a bundle of salient firm characteristics that are compatible with dividend policy. The higher the profitability, the better news will be responded to (good news) so that dividends are paid higher. Lee (2011) and Tangjitprom (2013) proved that the greater the ROA, the more dividend will be paid.

3 Hypotheses development

3.1 Dividend premium and PTP

Baker and Wurgler (2004a) and Shapiro and Zhuang (2015) used a dividend premium to measure the sentiments of investors' desires over payers or non-payers by putting high bid prices. The dividend premium is positive when investors put sentiment towards payers, so the market rewards payers share with a higher market to book. On the other hand, when investors are sentiment towards non-payers, the dividend premium is negative because the market rewards the non-payers with higher MB.

Baker and Wurgler (2004a, 2004b) initiated the DCT as a new dividend theory that combines with the findings of Fama and French (2001) to prove dividend premium has a positive effect on the PTP from 1962–2000 in the USA. The dividend premium increase is the likelihood of the PTP so that the DCT is proven. Likewise, Tangjitprom (2013) examined the effect of dividend premium on the PTP resulting in the positive significant

coefficients, meaning that there was an influence found between lagged dividend premium and PTP. Baker and Wurgler (2004a) stated that investor demand for dividend payers varies from time to time, causing prices of dividend payer and non-payer shares to fluctuate. Based on the investment sentiment theory, opportunist managers carry out dividend policies by serving the demands of irrational investors to increase stock prices (Baker and Kolb, 2009). DCT involves market dynamics of disequilibrium market and uninformed investors' demands for dividend payers.

Baker and Wurgler initiated market aggregate levels in dividend premium measurements and was supported by Li and Lie (2006), Baker et al. (2012), Hoberg and Prabhala (2009), Ferris et al. (2009), Hribar and McInnis (2012), Mian and Sankaraguruswamy (2012), Fatemi and Bildik (2012), Kuo et al. (2013), McLean and Zhao (2014). The dividend premium reflects investor sentiment on dividends as a whole on the market, namely the difference in dividend payer logarithm of market-to-book ratio with non-payer. The next development was conducted by Karpavicius and Yu (2018).

H1: Dividend premium is positively associated with the PTP.

3.2 IAP and PTP

DCT applies in conditions of information inequality between managers and investors so that the sentiment towards payers/non-payers drives investors' demands because investors do not understand the company's fundamentals given the limited company-specific information on the market. Information asymmetry has become the foundation for the enactment of investor sentiments, which causes payers and non-payers stock prices to fluctuate (Aslan et al., 2011; Cerqueira and Pereira, 2015). Therefore, investor sentiment on dividends is a subset of information asymmetry. When information asymmetry is high, investor sentiment strengthens so that IAP can be used to substitute DP in confirming DCT behaviour.

The positive IAP indicates that the decision to distribute dividends is made in the hope that investors are interested in buying payers shares to get a return in the form of dividends so that the company's value increases. The high information asymmetry of payers strengthens investor sentiment towards payers, meaning that investors are increasingly overconfidence with payers, so they are looking for companies with safe characteristics, such as companies that pay dividends (Baker and Wurgler, 2007; Li and Lie, 2006; Hribar and McInnis, 2012; Mian and Sankaraguruswamy, 2012). Thus, the decision of opportunist managers to pay dividends is for the sake of increasing market to book payers (positive DP). Therefore, when the IAP is positive, the DP is also positive, whereas investor sentiment towards payers strengthens when the information asymmetry is high.

Negative IAP indicates that the decision not to distribute dividends is made so that investors want to invest their funds by buying non-payers shares because investors prefer future earnings (capital gains) compared to dividends (current income). If non-payers have higher information asymmetry, the real reason why companies do not pay dividends is only known to the insider very well. It is likely that opportunist managers deliberately hide potential information. The high non-payers information asymmetry causes investors to become overconfidence with non-payers, so they like companies with maximum capital appreciation potential characteristics (Baker and Wurgler, 2004a; Li and Lie, 2006; Walther and Willis, 2013). Investors behave over-optimistically about

opportunities for investment growth because companies are perceived to have the potential ability to appreciate future investments so that future earnings may increase (Birjani, 2014; Shapiro and Zhuang, 2015). Investors want capital gains, which are estimated to be more profitable than current dividends, so investors are willing to invest dividends for the accumulation of company capital (Lie, 2005a; Chay and Suh, 2009). Thus, the decision not to share dividends aims to increase the value of the company so that MB non-payers are higher. As a result, when the IAP is negative, then the DP is also negative, where investor sentiment towards non-payers strengthens when high non-payers information asymmetry or investor sentiment towards payers weakens when payers' information asymmetry is low. Therefore, the higher the IAP, the higher the PTP since high DP also increase PTP (Baker and Wurgler, 2004b). Thus, high IAPs and DPs cause the proportion of actual payers to be higher than expected (Baker and Wurgler, 2004b; Hoberg and Prabhala, 2009; Ming Kuo et al., 2013).

In this research, the IAP was measured using three proxies; namely, the standard deviation of DSR, HLS, and BAS. The use of three proxies to measure IAP aimed to prove which IAP size was robust in relation to the PTP. These three proxies have been used by previous researchers to measure the level of information asymmetry that occurs in the capital market, namely DSR was used by Liu and Shan (2007), HLS was applied by Corwin and Schultz (2012), and BAS was built by Bhattacharya et al. (2012). DSR measures information asymmetry by looking at variations in changes in stock returns daily. The greater the dispersion, the higher the information asymmetry. HLS measures information asymmetry based on the difference between the daily closing price for the highest stock price and the lowest price. The wider the spread, the higher the information asymmetry. BAS is also an indicator of information asymmetry by subtracting the highest daily stock offering price with the lowest asking price. The wider the spread, the higher the information asymmetry.

H2: IAP is positively associated with the PTP.

4 Data and methodology

This study used a quantitative approach and explanatory research that is causal with the positivism paradigm. The definitions of the operational variables of the study are:

1 *PTP* (as a dependent variable) was the dividend payers' actual proportion difference with the expected proportion of dividend payers whose shares were actively traded on the IDX for the period 2010–2017. The actual proportions of dividend payers were categorised as dummy variables, namely payers (= 1) and non-payers (= 0), whereas dividend payers were determined from the decision to distribute dividends at the General Meeting of Shareholders.

2 Dividend premium (DP_{t-1}) as an independent variable, was defined as the difference between the logarithm average market to book ratio of dividend payers and non-payers dividends on the IDX for the period 2010–2017, using the market aggregate base

3 Information asymmetry premium (IAP_{t-1}) as an independent variable, was defined as the difference between the logarithm of dividend payers and dividend non-payers book-value weighted average of

1 standard deviation of DSR (DSR_{t-1})

2 HLS (HLS_{t-1})

3 BAS (BAS_{t-1}) on the IDX for the period 2010–2017, using the market aggregate base

4 control variables consist of dividend yield, market capitalisation, long-term debt to total assets, cash ratio, market-to-book assets and return to total assets.

Data processing method was done using two kinds of regression, namely, first, binary logistic regression model to predict the expected proportion of payers' expectations (pr (Payeri = 1) following the Fama-Macbeth model was measured based on firm characteristics, namely firm size, profitability, asset growth rate and market-to-book ratio, the second was unbalance panel data regression for PTP, meeting the classical assumption test requirements and model selection was determined through Chow test and Hausman test. The hypothesis testing method was done by Chi^2 test, F test and t-test with a level of significance of 5%

The data used in this study was secondary data in the form of unbalanced panel data 2010—2017. The source of the data was:

1 the financial report of a public company obtained from the Indonesian Stock Exchange, downloaded from the official site of IDX, www.idx.co.id and the company's website of 2010–2017

2 Osiris database

3 stock market data from the official site of TICMI, www.ticmi.co.id.

The number of companies listed on the Indonesia Stock Exchange was 3,936 observations. This number was deducted by 351 shares which were not actively traded, 45 companies did not issue financial statements (delisting, mergers and acquisitions and change new names), and 21 of which did not meet the panel data requirements. Thus, 3,519 observations qualified as research samples, of which 1,589 were companies that paid dividends and as many as 1,930 companies that did not pay dividends.

Analysis model

Panel A: Partial model (robustness check)

Model 1
$$PTP_{i,t} = \beta_0 + \beta_1 DP_{t-1} + \beta_2 DY_{i,t} + \beta_3 MCap_{i,t} + \beta_4 LTDA_{i,t} + \beta_5 CR_{i,t} + \beta_6 MBA_{i,t} + \beta_7 ROA_{i,t} + \varepsilon_{i,t}$$

Model 2
$$PTP_{i,t} = \beta_0 + \beta_1 DSR_{t-1} + \beta_2 DY_{i,t} + \beta_3 MCap_{i,t} + \beta_4 LTDA_{i,t} + \beta_5 CR_{i,t} + \beta_6 MBA_{i,t} + \beta_7 ROA_{i,t} + \varepsilon_{i,t}$$

Model 3
$$PTP_{i,t} = \beta_0 + \beta_1 HLS_{t-1} + \beta_2 DY_{i,t} + \beta_3 MCap_{i,t} + \beta_4 LTDA_{i,t} + \beta_5 CR_{i,t} + \beta_6 MBA_{i,t} + \beta_7 ROA_{i,t} + \varepsilon_{i,t}$$

Model 4
$$PTP_{i,t} = \beta_0 + \beta_1 BAS_{t-1} + \beta_2 DY_{i,t} + \beta_3 MCap_{i,t} + \beta_4 LTDA_{i,t} + \beta_5 CR_{i,t} + \beta_6 MBA_{i,t} + \beta_7 ROA_{i,t} + \varepsilon_{i,t}$$

Panel B: Simultaneously (full model)

Model 5
$$PTP_{i,t} = \beta_0 + \beta_1 DP_{t-1} + \beta_2 DSR_{t-1} + \beta_3 DY_{i,t} + \beta_4 MCap_{i,t} + \beta_5 LTDA_{i,t} + \beta_6 CR_{i,t} + \beta_7 MBA_{i,t} + \beta_8 ROA_{i,t} + \varepsilon_{i,t}$$

Model 6
$$PTP_{i,t} = \beta_0 + \beta_1 DP_{t-1} + \beta_2 HLS_{t-1} + \beta_3 DY_{i,t} + \beta_4 MCap_{i,t} + \beta_5 LTDA_{i,t} + \beta_6 CR_{i,t} + \beta_7 MBA_{i,t} + \beta_8 ROA_{i,t} + \varepsilon_{i,t}$$

Model 7
$$PTP_{i,t} = \beta_0 + \beta_1 DP_{t-1} + \beta_2 BAS_{t-1} + \beta_3 DY_{i,t} + \beta_4 MCap_{i,t} + \beta_5 LTDA_{i,t} + \beta_6 CR_{i,t} + \beta_7 MBA_{i,t} + \beta_8 ROA_{i,t} + \varepsilon_{i,t}$$

Description of variables

DP_{t-1}	dividend premium, market aggregate year $t-1$
DSR_{t-1}	standard deviation of daily stock return, market aggregate year $t-1$
HLS_{t-1}	high to low spreads, market aggregate year $t-1$
BAS_{t-1}	bid ask spreads, market aggregate year $t-1$
$DY_{i,t-1}$	dividend yield of company i year $t-1$
$MCap_{i,t-1}$	market capitalisation of company i year $t-1$
$LTDA_{i,t-1}$	long-term debt to total asset of company i year $t-1$
$CR_{i,t-1}$	cash ratio of company i year $t-1$
$ROA_{i,t-1}$	return to total asset of company i year $t-1$

5 Results and discussion

PTP for companies listed on the IDX 2010–2017 has an average value of 0.3274 with a median value of 0.3200, which indicates the difference between companies that pay dividends and companies that are expected to pay dividends are still below 50%. The maximum value of PTP is 1, which means that the companies expected to pay dividends turns out not to pay dividends so that the difference between actual payers and expected payers is maximum. Likewise, the minimum value of PTP is 0.000 meaning that companies that are expected not to pay dividends pay dividends, so that the PTP becomes 0.000.

In order to get the value of IAP, the calculation of DSR_{t-1}, HLS_{t-1} and BAS_{t-1}, the data on 544 companies' daily active stock transactions (3,585 observations) in the Indonesia Stock Exchange in the period of 2010–2017 was inputted. The maximum value of IAP measured by DSR occurred in 2016, HLS in 2014 and BAS in 2013. The DP maximum value was equal to the DSR that occurred in 2016. For minimum consecutive IAP measured from DSR, HLS and BAS occurred in 2013, 2011 and 2010. The minimum DP value that occurred in 2013 was equal to the minimum value of DSR that occurred in 2013 as well. Thus, the maximum and the minimum DP value was the same as the DSR which was in 2016 (max) and in 2013 (min). For standard deviations that show the distribution of data, the lowest standard deviations in a row were DP, HLS, DSR and BAS.

Table 2 Descriptive statistics

Variable	*Mean*	*Median*	*Maximum*	*Minimum*	*Std. dev.*
PTP	0.3274	0.3200	1.0000	0.0000	0.2208
DP_{t-1}	–0.0043	–0.0041	–0.0029	–0.0059	0.0010
DSR_{t-1}	–0.2802	–0.2699	–0.1589	–0.3998	0.0771
HLS_{t-1}	–0.0078	–0.0080	–0.0039	–0.0107	0.0022
BAS_{t-1}	–0.3427	–0.3333	–0.1333	–0.5930	0.1213
DY_{t-1}	0.0132	0.0000	0.5099	0.0000	0.0277
$MCAP_{t-1}$	0.0023	0.0003	0.0917	0.0000	0.0078
$LDTA_{t-1}$	0.1654	0.1038	1.8188	0.0000	0.1751
CR_{t-1}	0.0899	0.0477	0.9913	0.0000	0.1112
MBA_{t-1}	1.6747	1.0811	109.1093	0.1228	2.8523
ROA_{t-1}	0.0637	0.0527	1.2014	–1.5897	0.1290

The correlation value between independent variables was lower than 0.70, so it passed the multicollinearity test. The model also passed the heteroskedasticity test after being treated with the white test. We also performed Chow test and Hausman test (the results were not tabulated). Based on the Chow test, the result of the 1–7 model shows probability cross-section chi^2- = 0.000, so the best regression model was the fixed-effect model. The next step was to perform the Hausman test, which result shows that all models of probability cross-section random < 5%, which means that the best model was still the fixed effect model.

Table 3 Binary logistic regression: expected payers

Variable independent	*Coefficient*	*Odds ratio*
Constanta	–0.7793(–13.06)***	0.4587(0.000)***
CAP	354.7497(11.08)***	1.200(0.000)***
EA	11.8903(18.74)***	145.845,5(0.000)***
DAA	–5.6595(–15.37)***	0.0035(0.000)***
MB	–0.1716(–8.94)***	0.8423(0.000)***
Prob > chi2	0.0000	
Correctly classified (R^2)	76.61%	
Observations	3.519	

For model 1, the dividend premium can explain the variations in PTP changes by 37%, and the rest is explained by other factors. Baker and Wurgler (2004b) used R^2 to show that dividend premium can explain the variation in the changes of PTP by 33% and in the Nixon adjustment period to fall to 14% because there was a policy of limiting dividend payments. IAP measured by DSR (model 2), HLS (model 3) and BAS (model 4) can explain variations in PTP changes by 37%, the remaining 63% explained by other factors. The dividend premium and IAP had the power to explain the same to PTP at 37%. Goodness of fit with the F-test (Table 3), which proves that models 1–7 significance at the 1% levels.

Table 4 Testing of panel least square: PTP

Variable	*Panel A*				*Panel B*		
	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*	*Model 6*	*Model 7*
C	0.3942 (25.681)***	0.3870 (27.622)***	0.3776 (26.886)***	0.3248 (25.758) ***	0.3922 (24,549)***	0.3964 (25,288)***	0.3727 (21,308)***
DP_{t-1}	11.1764 (3.946) ***	-	-	-	6.5402 (0.679)	9.2963 (2.551)**	11.1730 (3.947)***
DSR_{t-1}	-	0.1455 (3.860)***	-	-	0.0639 (0.499)**	-	-
HLS_{t-1}	-	-	3.9461 (3.192)***	-	-	1.2978 (0.817)**	-
BAS_{t-1}	-	-	-	–0.0619 (–2.570)***	-	-	–0.0618 (-2.576)***
$DY_{i,\,t-1}$	0.3336 (2.381)**	0.3362 (2.384)**	0.3425 (2.450)**	0.3199 (2.283)**	0.3349 (2.382)**	0.3380 (2.412)**	0.3293 (2.354)**
$MCap_{i,\,t-1}$	–6.4407 (–4.151)***	–6.4097 (–4,137)***	–6.5006 (–4,153)***	–6.7224 (–4,273)***	–6.4234 (–4.147)***	–6.4359 (–4,145)***	–6.5701 (–4,237)***
$LTDA_{i,\,t-1}$	–0,0900 (–2.517)**	–0,0898 (–2.508)**	–0,0872 (–2,439)**	–0.0785 (–2,211)**	–0,0901 (–2,518)**	–0,0905 (–2,528)**	–0,0871 (–2,440)**
$CR_{i,\,t-1}$	–0.0935 (–1.789)*	–0,0947 (–1.809)*	–0,0968 (–1,865)*	–0,0980 (–1,895)*	–0,0939 (–1,798)*	–0,0937 (–1,795)*	–0,0927 (–1,780)*
$MBA_{i,\,t-1}$	–0.0016 (–0.693)	–0,0016 (–0.710)	–0.0016 (–0,692)	–0,0015 (–0,652)	–0,0016 (–0,701)	–0,0016 (–0,699)	–0,0016 (–0,693)
$ROA_{i,\,t-1}$	0.2725 (4.430)***	0,2736 (4.442)***	0,2635 (4,311)***	0,2637 (4,327)***	0,2732 (4,435)***	0,2712 (4,395)***	0,2740 (4,473)***
R^2	0,4648	0,4647	0,4639	0,4635	0,4648	0,4649	0,4659
Adjusted R^2	0,3700	0.3700	0,3690	0,3685	0,3699	0,3700	0,3711
F-statistic	4,9061	4,9054	4,8886	4,8806	4,8961	4,8971	4,9174
Prob (F-stat.)	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000

Notes: ***,**, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Hypothesis 1 and hypothesis 2 testing were carried out using the simultaneous model or full model (Panel B), namely models 5, 6 and 7. The test results proved that hypothesis 1 was accepted for models 6 and 7, while model 5 was rejected (not robust). Furthermore, the test results also proved that hypothesis 2 was accepted for models 5 and 6, while model 7 was rejected (not robust).

The results for model 5 in hypothesis 1 were rejected because the premium dividend was found to be insignificant, meaning that the IAP was stronger than the DP so that the DSR could substitute or replace the DP. Therefore, in model 5, the DCT was declared invalid, and that PTP was only influenced by variations in changes in daily returns (DSR) and not because of investor sentiment (DP) in the market. This finding proved the existence of competing theory, which is a substitution. This result was supported by Liu and Shan (2007) who proved that DSR is a robust measure of information asymmetry. The non-functioning of DCT was consistent with the findings of Tsuji (2011) which proved that dividend policy in Japan was not carried out with the catering theory motive.

The results of model 7 in hypothesis 2 were rejected because it was found that the premium asymmetry information measured by BAS was not significant. Thus, the dividend premium was stronger than BAS that was not robust. This shows that the dividend premium could not be replaced by BAS, so the dividend policy conducted by the company (PTP) was driven by investor sentiment in the market and was not caused by the difference between the bidding and asking price that occurred in the market. In this case, competition occurred between the DP and the BAS, where the BAS was declared invalid. The finding of the invalid asymmetry of information represented by BAS was supported by Cerqueira and Pereira (2015) proved that BAS was inaccurate. Another reason is that BAS can provide significant results when using a market microstructure approach with high-frequency data such as intraday data.

This partial test (Panel A) was a sufficient condition to get into the second test, which was to prove whether IAP can substitute dividend premium or merely a compliment. Thus, models 1, 2, and 3 were declared to have met the requirements to proceed to the second testing phase (Panel B).

The second stage of the test was conducted by combining variables from IAP and DP simultaneously (Panel B), which could be found in models 5, 6 and 7. DP and IAP had a positive effect on the PTP. This process was critical to proving whether the effect of IAP was stronger or as strong as the DP. If the influence of IAP was stronger, IAP was significant and the DP was not significant. It was then proven that IAP substituted DP, which means that DCT does not apply because the company's tendency in paying a dividend is not affected by investor sentiment, but it is affected by high information asymmetry. The results proved that DSR could substitute for DP (model 5). Model 6 proved that HLS and DP were mutual complements so that the two variables provided complementary information. Hence, DCT applies in a high information asymmetry because the tendency of the company is paying a dividend is affected by the investor sentiment who does not understand the real condition of the company because of the high information asymmetry between the manager and the investors. Whereas in model 7, the influence of DP was stronger than BAS so that IAP could not substitute dividend premium, which means that PTP can only be affected by investor sentiment and not information asymmetry as measured by BAS.

Liu and Shan (2007) proved that standard deviation of DSR was significant, which showed that there was an asymmetry of information in the stock market because of the different information quality (supported by Bhagat and Frost, 1986; Dierkens, 1991; Fee

and Thomas, 1999). Corwin and Schultz (2012) found that HLS was accurate as a measurement for information asymmetry by proving that the estimator could be applied to daily and intraday data. Bhattacharya et al. (2013) found that BAS was significant as a measurement for information asymmetry when using intraday trade information for the bid-ask price. However, Cerqueira and Pereira (2015) proved that BAS was inaccurate when using the highest and lowest BAS in one year. Thus, the accuracy of BAS as the measurement for information asymmetry is reliable when using high-frequency data intraday. Meanwhile, intraday data in the emerging stock market are usually unavailable. Another consideration is that the bid-ask price is not a real transaction price because it is still an offering and demand price which is the highest and the lowest.

6 Conclusions

Based on the hypothesis test, it is found that investor sentiment on dividend (dividend premium) was proven to have a positive effect on the PTP, so DCT was proven. These findings proved that dividend premium was a subset of IAP, which means that IAP could replace dividend premium using the standard deviation of DSR. This proved that the effect of DSR was stronger than DP. Therefore, it was proven that information asymmetry could be the basis for the investor sentiment on dividend considering that the information asymmetry level in the Indonesian stock market was very high.

Other than that, it is also proven that dividend premium and IAP had the same influence using HLS. In this case, DP and HLS were both significant towards the PTP, so both could complement each other.

In relation with the IAP test on PTP, it is found that DSR proxy and HLS were significant while BAS was insignificant because this study used a daily data while Bhattacharya et al. (2013) proved that BAS proxy is significant when using intraday data because BAS is the IAP measurement that requires high-frequency data based on the microstructure market approach.

This research has some limitations that can be improved with future research. The period observed was from 2010 to 2017, which could be improved by increasing the year of the period observed. By doing so, the number of the sample will be increased, considering that this study uses market aggregate values for dividend premium and IAP. Another limitation is related to how non-robust BAS proxy as information asymmetry measurement tool. BAS measurements become more accurate using high-frequency data (market microstructure), so it is advisable that further research uses intraday data instead of daily data.

7 Implications

Theoretical implication found that IAP and DP act as competing for IAP with the standard deviation of DSR proxy and act as a complement for HLS proxy. Thus, the DCT is proven to apply in situations of high information asymmetry. When DCT is competing, the DP and IAP compete with each other to explain PTP so that substitution can be made between the DP and IAP, so that the results' proof improves the DCT that has been examined by Baker and Wurgler (2004a, 2004b). Moreover, when DCT is

complementary, it answers Baker and Wurgler's challenge to find non-catering issues that can be used as bonding to complete the DP, namely IAP.

The practical implication found that investor sentiment on dividends is formed due to market information asymmetry, so the manager is obliged to reduce information asymmetry. The high information asymmetry causes investors to make investment decisions do not understand the actual fundamental conditions of the company, so it behaves irrationally. In these conditions, it is difficult for investors to distinguish between good and bad quality companies, which have the potential to be detrimental to those who have limited information.

The Financial Services Authority must create reasonable and efficient capital markets informationally by enforcing rules and imposing sanctions on public companies that do not meet the principles of openness and transparency for the sake of implementing fair rules for all market participants, including the protection of investors. Therefore, investors are expected to be more rational in making investment decisions.

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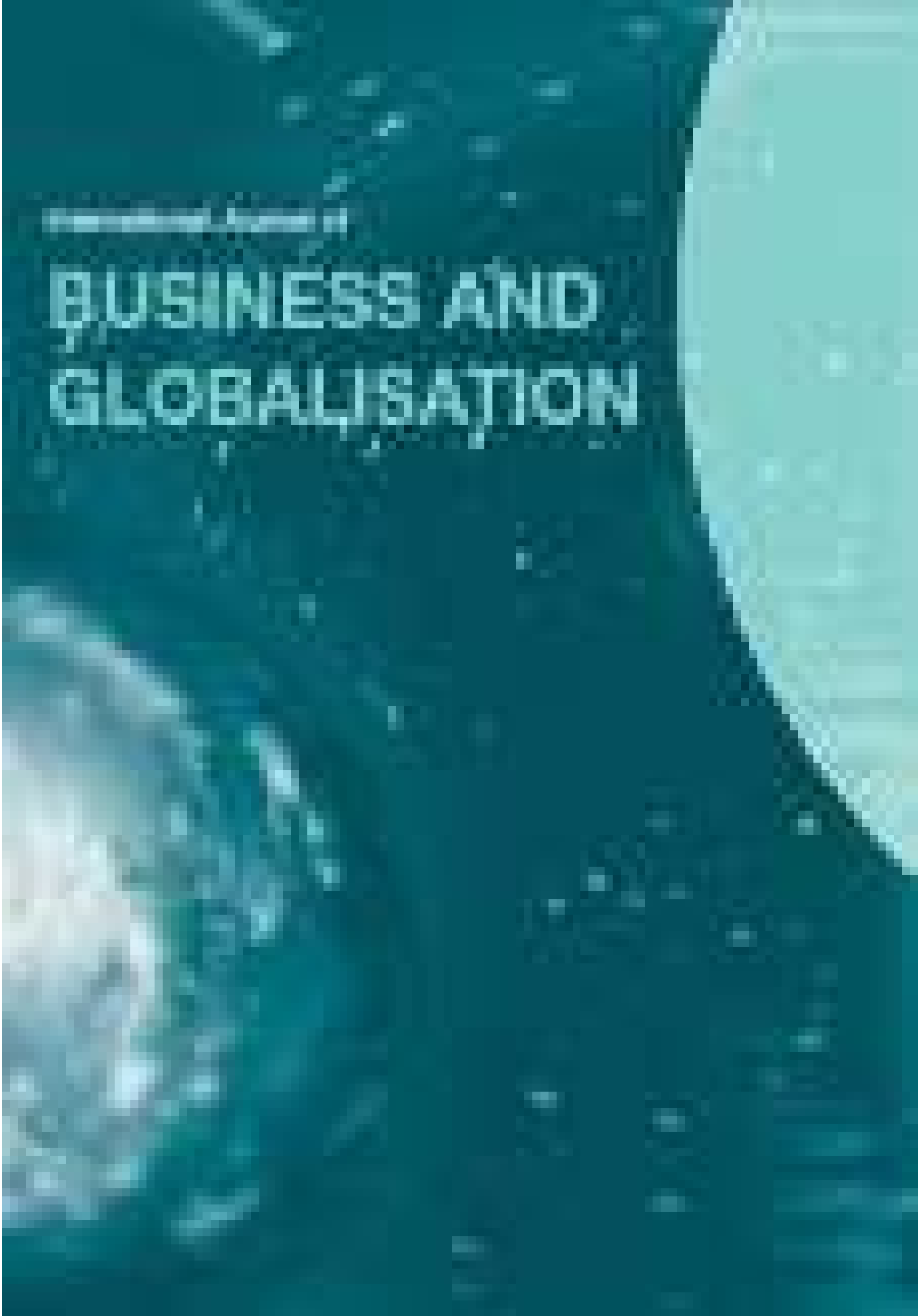
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In debt to fashion

6 June, 2023

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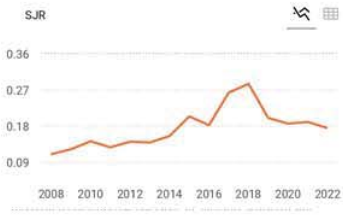

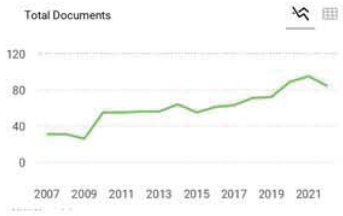

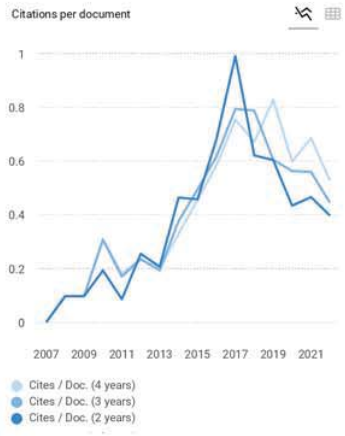

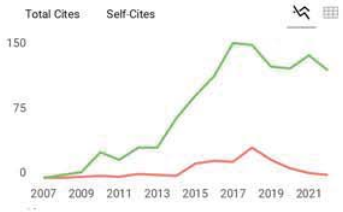

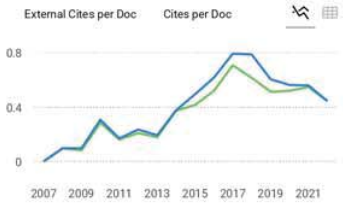

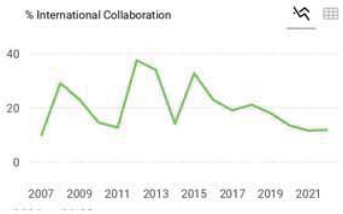

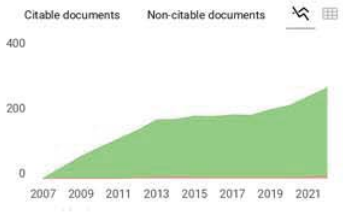

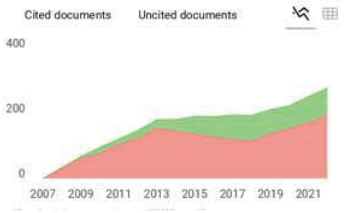

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