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The Effect of Profitability on the Accrual Quality-Cash Holding Relationship of Indonesian Listed Firms

Dezie L. Warganegara [1], ***Yanthi Hutagaol-Martowidjojo*** [2*], ***Elin Noviyanti*** [3]

ABSTRACT

This study is to investigate the effect of profitability on the relationship between accruals' quality and cash holdings. The investigation is carried out on all Indonesian public listed companies, except for companies in the financial industry, from 2013 to 2017. It is found that there is a significant inverse relationship between firms' accruals' quality and level of cash. With regard to the effect of profitability on the relationship, it is found that accruals' quality plays a less important role in the determination of cash holdings in loss-making firms. The results support the argument that in an obscure environment with less-developed financial systems, weak investor protection and legal enforcement, issuing financial reports containing high earnings' quality can lead to an improvement in cash holdings' management. Although the role of accruals' quality in cash-holding reduction is diminished due to the low informativeness of loss-making firms' financial reports on the future of the firms, investors in Indonesia, an emerging market, still demand a high level of informativeness of financial reports, since it is difficult and costly to force a bankrupt firm into liquidation as a result of weak investor protection and legal enforcement.

Keywords: Accruals' quality, Cash holdings, Earnings' quality, Indonesia Stock Exchange, Profitable and loss-making firms.

1 Doctor of Research in Management Program, Binus Business School, Bina Nusantara University, Jakarta, Indonesia. dezie@binus.edu
2 Finance International Program, School of Accounting, Bina Nusantara University, Jakarta, Indonesia. yhutagaol@binus.edu
3 Magister of Accounting, Binus Graduate Program, Bina Nusantara University, Jakarta, Indonesia. elin.noviyanti@binus.edu

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تأثير الربحية على العلاقة بين جودة الاستحقاق والاحتفاظ بالنقد في الشركات المدرجة في إندونيسيا

ديزي ل. ورجانيجارا[1]، يانثي هوتاجول-مارثوودجوجو[2]، إلين نوفيانتي[3]

ملخص

تبحث هذه الدراسة في الكشف عن تأثير الربحية في العلاقة بين جودة الاستحقاق والاحتفاظ بالنقد. وقد أجريت الدراسة على جميع الشركات العامة المدرجة في سوق الأسهم في إندونيسيا، ما عدا الشركات المالية، في الفترة بين عامي 2013 و2017.

وقد بينت نتائج الدراسة أن هناك علاقة عكسية دالة إحصائياً بين جودة الاستحقاق والاحتفاظ بالنقد. وفيما يتعلق بأثر الربحية في هذه العلاقة، وجد أن جودة الاستحقاق تلعب دوراً أقل أهمية في تحديد مستوى الاحتفاظ بالنقد في الشركات الخاسرة.

وتدعم النتائج المقولة التي تنص على أن البيئات التي تتسم بأنظمة مالية أقل تقدماً وحماية أضعف للمستثمرين وتفعيل أضعف للتشريعات، يمكن فيها أن يؤدي إصدار التقارير المالية التي تشتمل على جودة استحقاق عالية إلى تحسين إدارة الاحتفاظ بالنقد. وعلى الرغم من ضعف دور جودة الاستحقاق في تقليل الاحتفاظ بالنقد بسبب قلة المعلومات التي توفرها التقارير المالية في الشركات الخاسرة فيما يتعلق بمستقبل الشركات، فإن المستثمرين في إندونيسيا، وهي سوق ناشئة، مازالوا يتطلبون مستوى عالياً من المعلوماتية في التقارير المالية؛ لأنه من الصعب والمكلف دفع شركة مفلسة إلى التصفية نتيجة لضعف حماية المستثمرين وضعف تفعيل التشريعات.

الكلمات الدالة: جودة الاستحقاق، الاحتفاظ بالنقد، جودة الإيرادات، سوق الأسهم الإندونيسية، الشركات الرابحة والشركات الخاسرة.

1 دكتور في برنامج أبحاث الإدارة، كلية بينوس للأعمال، جامعة بينا نوسانتارا، جاكارتا، إندونيسيا.

2 البرنامج الدولي للتمويل، كلية المحاسبة، جامعة بينا نوسانتارا، جاكارتا، إندونيسيا.

3 ماجستير محاسبة، برنامج بينوس للدراسات العليا، جامعة بينا نوسانتارا، جاكارتا، إندونيسيا.

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1. Introduction

Cash is the most liquid and vital asset for companies to pay for expenses as well as to fund future investments (Tran et al., 2018). The motivation of firms to hold cash is explained in prior studies based on the agency cost, trade-off, and pecking order theories (Opler et al., 1999; Farinha et al., 2018; Mansali et al., 2019). Regarding the agency cost theory, Easterbrook (1984) contended that managers are tempted to keep a high volume of cash within their firm for personal benefits by engaging in levels of debt, risk, or dividends that are unexpected by shareholders. This behavior leads to increasing agency cost. To have a desired cash-ratio level, the trade-off theory suggests that firms should balance the marginal benefits and cost of holding cash (Miller & Orr, 1966). Firms may not raise capital from the external market, because this is expensive. The high cost of external funding may be a trigger for companies to increase their cash holdings. Opler et al. (1999) found evidence to support the static trade-off theory stating that firms hold more cash to avoid higher external financing costs for future investments in high growth rate businesses.

In contrast, the pecking-order theory argues that the optimal level of cash does not exist. Based on information asymmetry between managers and investors, no optimal level of cash causes costly external financing, resulting in firms tending to use their internal funding sources as a precautionary motive. Furthermore, it forces firms to hold excess cash (Myers & Majluf, 1984). Another reason that a firm holds a large sum of cash is to avoid the potential of receiving a negative impression from their investors. More importantly, managers may have to rely more on internal financing when firms have lower quality of earnings, higher information asymmetries, and costly or unavailable external financing (Sun et al., 2012; Farinha et al., 2018).

Several studies have shown that information asymmetry can be reduced by issuing financial reports containing high earnings' quality that leads to an improvement in cash management, investment efficiency, and operating cash flow (Sun et al., 2012; Mokhtari et al., 2012; Hamad and Al-Momani, 2018). Meanwhile, Farinha et al. (2018) and Mansali et al. (2019) found evidence that high earnings' quality enables firms to lower their cash holdings' level. Francis et al. (2004) noted that earnings' quality can be attributed to several factors, such as accruals' quality, persistence, predictability, timeliness, and value relevance. Accruals' quality, however, is often used in assessing the overall quality of earnings in firms' financial statements (Sun et al., 2012).

Jiang and Stark (2013) noted that a losing firm suffers from value reduction. However, analysts have difficulty in valuing a firm due to the existence of the liquidation option. Hayn (1995) argued that losses are less informative, since shareholders would exercise their liquidation option when losses were found to be persistent across several periods. In an investigation of earning quality's correlation with cash holding in the London Stock Exchange's Alternative Investment Market (AIM) and the main market, Farinha et al. (2018) found evidence that losses suffered by companies cause accruals' quality to be less important in determining the amount of cash. They reported that negative relationships between earnings' quality and cash holding only occur in profitable firm sub-samples from both markets. In other words, losing firms relatively ignore the benefits of having higher quality financial reports in cash holding reduction. When firms experience losses, funds from external parties become costly, causing cash to be their primary source of funding and they are willing to trade-off between assuming a substantial opportunity cost of having idle cash balance and the benefits from the availability of funds for operating and investing activities (Farinha et al., 2018). Therefore, the relationship between accrual quality and cash holding in losing firms is not as strong as in profitable firms.

The AIM was established to enable smaller

companies to raise capital and have less costly listing requirements than the main market, noting that both markets are in the U.K., a developed country with a fully functioning financial system and an Anglo-Saxon legal system that strongly protects investors. Moreover, Uyar and Kuzey (2014) argued that firms in emerging markets face high information-asymmetry environment that leads to costly external financing.

In this study, we focus mainly on the effect of profitability on the relationship between accruals' quality-cash holdings of listed firms in an emerging market, Indonesia. According to Khanna and Palepu (2000), compared with developed countries, developing countries experience various market crashes and inefficiencies that could lead to more agency problems or higher default risks. Acharya et al. (2007) and Tran (2020) argued that firms in developing countries face more difficulties in accessing external funds and are, therefore, forced to rely on internal cash reserves for their operating and investing purposes. The difficulties are due to underdeveloped financial systems and weak investor protection in the environment where they operate (Love, 2003; La Porta et al., 1998).

The data for this study was collected from non-financial firms listed in the Indonesia Stock Exchange from 2013 to 2017. Besides analyzing the relationship between profitable and losing firm sub-samples, this study also investigates the relationship for all the samples. This study includes control variables, such as cash flow, growth opportunities, liquidity, leverage, and dividend to ensure that the investigations can isolate the effects of accruals' quality and profitability of firms on cash holdings.

This study offers three distinctive contributions to the research area of cash holdings' policy determinants. Firstly, studies of cash holding determinants in emerging markets, especially in Indonesia, have been relatively scarce and limited in scope (e.g. Cheryta et al., 2018; Sari et al., 2019). This study is more important in Indonesia with the high cost of external financing. Secondly, we extend Farinha et al. (2018) by analyzing the effects of earnings' quality on cash holding policy in Indonesia, a country where the financial system is less developed and investor protection is relatively weak. Hutagaol-Martowidjojo and Valentincic (2016) described Indonesia as a country with a low protection environment and a highly concentrated ownership that results in low accruals' quality. Furthermore, Hutagaol-Martowidjojo et al. (2019) found evidence that accruals' quality in Indonesia has declined over time, and the financial reporting process is seen as increasingly incomplete for the purposes of capital market valuation. Finally, we directly compare the effects of profitable and loss-making firms in the same model to have clearer implications of the roles of profitability in the relationship between earnings' quality and cash holding in an emerging country.

The study finds a significant inverse relationship between firms' accrual quality and their cash holding level. Such an inverse relationship still exists, and it is stronger in losing firms as predicted. Controlling variables, such as cash flow, growth, and dividend, have a positive effect on cash holdings, while liquidity and leverage negatively affect cash holdings.

The rest of this paper proceeds as follows. Section 2 reviews the prior literature and develops the research hypotheses. Section 3 describes the sample and the methodology used in this study. Section 4 presents the empirical results. Finally, Section 5 concludes the study.

2. Literature Review and Development of Hypotheses

Cash Holdings and Information Asymmetry

As the firm's most liquid asset, cash holdings can provide some advantages and disadvantages to firms. Trade-off theory suggests that firms could balance the cost and benefits of cash holding to reach an optimal level of cash holdings (Myers, 1977). Cash holdings can minimize transaction costs, avoid underinvestment

problems, efficiently support a firm's daily activities, facilitate future investment, and protect it from the adverse impacts of recession periods by lowering the probability of financial distress (Le et al., 2018). The cost of cash holdings includes the opportunity cost when firms prefer to hold too much cash with lower return than other investments (Akhtar et al., 2018; Le et al., 2018). In the presence of information asymmetries, external funding may become much more costly or even unavailable (Sun et al., 2012). Consequently, managers tend to depend more on internal financing or even be forced to keep an excess cash balance to ensure the fulfilment of a firm's financial obligations, and fund future business expansions.

On the other hand, pecking-order theory argues that there is no optimal cash level, and that firms favor holding a certain level of cash as part of their primary funding sources (Myers & Majluf, 1984). Relying on internal funding through cash holding is caused by information asymmetry between managers and shareholders, and this asymmetry makes external funding more expensive; therefore, it is less preferable. This notion is supported by Shubita (2020). Furthermore, Mansali et al. (2019) stated that the presence of information asymmetry forces firms to hold more cash as a safety strategy to prevent higher external-financing costs and underinvestment.

Jensen and Meckling (1976) argued that the existence of agency problems in a firm causes underinvestment and asset substitution. Easterbrook (1984) further contended that managers may keep a high volume of cash within their firms for reasons detrimental to shareholders' wealth maximation objective by sacrificing optimal debt, risk, or dividends. The presence of information asymmetry exacerbates agency problems in a firm. Monitoring the behavior of managers is much more difficult when the environment is opaque such that managers are relatively free to hold large cash reserves and use them for the objectives other than those desired by their shareholders. Therefore, in a highly asymmetric environment, firms keep smaller quantities of cash to prevent managers from misusing them (Chung et al., 2015).

Accruals' Quality and Cash Holdings

Conceptually, accruals' quality is defined as the accuracy of how reported earnings signal the future cashflow as expected by external stakeholders, investors and creditors (Shin et al., 2017). A high quality of accruals enhances the trust of a firms' stakeholders and decreases the information asymmetry effect (Francis et al., 2005). In contrast, low accruals' quality signals an ambiguous financial condition of a firm and may raise questions of earnings' management practices in place (Sun et al., 2012). Firms with low accruals' quality will face high external financing costs and, therefore, are motivated to increase their cash holding level as a source of internal financing regardless of the increase in marginal cost of cash holdings. Furthermore, Garcia-Teruel et al. (2009) provided evidence that firms with poorer accruals' quality hold higher cash levels and lower unproductive liquid assets (Mokhtari et al., 2012). If accruals' quality is one of the determinants of information asymmetry, then there is an inverse relationship between a firm's cash holdings and accruals' quality such that high quality of accurals leads to low cash holdings (Sun et al. 2012).

One of the reasons for a firm's cash holding is to avoid costly external financing, which results from information asymmetry between managers and investors. Indonesia has adopted the IFRS since 2012. Chu and Wu (2009) noted that IFRS are generally viewed as high quality accounting standards. However, Hutagaol-Martowidjojo et al. (2019) found no evidence that accruals' quality in Indonesia has improved since the adoption of IFRS. Ahmed et al. (2013) noted that numerous studies on the effect of IFRS adoption on earnings' quality have failed to conclusively document quality improvement. Studying earnings opacity in 34 countries, Riahi-Belkaoui and AlNajjar (2006) reported that the level of disclosure and the adoption of the IFRS do not reduce earnings'

opacity internationally. Indeed, Wysocki (2011) argued that earnings' quality is influenced mainly by the institutional and cultural factors in a country.

Indonesia, as an emerging market country with low financial development and a weak legal system, provides inadequate outside investor rights and legal enforcement (Love, 2003; La Porta et. al., 1998; Hutagaol-Martowidjojo & Valentincic, 2016). As a result, this may create a pressing, but unfulfilled, demand for financial reporting quality by investors to safeguard their investment in firms. Shin et al. (2017) argued that companies with high-level information asymmetry are faced with higher external funding costs; thus, they rely more on internal funding sources in the form of collecting cash to cover their business expenses and expansion. Improving financial reporting quality is expected to offer a solution to reduce information asymmetry and result in lowering the external funding cost (Garcia-Teruel et al., 2009).

In Indonesia, where the demand for financial reporting quality is high due to inadequate outside investor rights and legal enforcement, there seems to be a strong negative relationship between the level of accruals' quality and cash holdings. High information asymmetry, as reflected by low accruals' quality, coupled with low outside investor rights and legal enforcement, can cause costly external financing, so that a firm would rather withhold a large sum of cash as a safeguard toward a lack of capital. A large sum of cash may also be used by firms to increase investor confidence and to reduce the cost of capital due to the presence of lower accrual quality and a lack of enforcement on legal protection for external investors (Farinha et al., 2018). Therefore, the first hypothesis is:

H_1: A firm's accruals' quality is inversely related to its level of cash holdings.

Accrual Quality, Profitability, and Cash Holding

There are several problems that arise from loss-making firms. Jiang and Stark (2013) stated that a valuation of a loss-making firm is more difficult than that of a profiting firm, since negative earnings complicate the estimation of growth rates. Hayn (1995) stated that over time, the negative earnings of firms do not extend and become a less reliable source of information due to the probability of liquidation options for shareholders. Darrough and Ye (2007) pointed out that less informative accruals' quality of losing firms is due to a weak relationship between current and future abnormal earnings.

Moreover, due to funding shortages, losing firms may suffer financial distress that leads to a much higher opportunity cost of cash holdings. Consequently, accruals' quality may have a less important role in the relationship with cash holdings in negative earning firms. Although Farinha et al. (2018) found evidence that accruals' quality negatively affects cash holdings in profitable firms of the UK markets, they found no evidence that accruals' quality affects the cash holdings of firms that suffer losses. Those losing firms in the markets pay relatively less attention to the benefits of having higher quality financial reports in cash holding reduction.

As an emerging market, Indonesia is a country with less developed financial and legal systems, as well as a highly concentrated firm ownership that provides inadequate outside investor rights and legal enforcement, resulting in low-quality financial reports in general (Hutagaol-Martowidjojo & Valentincic, 2016). La Porta et al. (2000) argued that in a low investor protection environment, there are more occurrences of expropriation by the controlling shareholders to the detriment of minority shareholders and creditors. Outside investors are exposed to expropriation and, therefore, demand their voting, reorganization, and liquidation rights to be extensive and well enforced by governments or courts; otherwise, they are unwilling to finance firms.

Claessens et al. (2000) found that most companies in Indonesia are controlled by a few families and that a

concentrated control structure of the whole corporate sector in the economy may cause a severe agency problem between insiders (managers and internal shareholders) and outsiders (external shareholders and creditors). Johnson et al. (2000) argued that during normal times, expropriation is negligible, because there is still plenty of wealth to go around. In a financial crisis, however, firms in a low investor protection environment experience larger downside in asset prices due to more expropriation of cash and tangible assets by managers. In addition, creditors and minority shareholders in that environment may find it difficult and costly to force a bankrupt firm into liquidation. Even when they succeed in forcing the firm into liquidation, they may find it an empty shell.

From the discussion above, it can be summarized that some investors in losing firms in weak external investor rights and legal enforcement environments may find that liquidation is not an entirely economically viable option. Investors in an emerging market may be forced to partially assume that losing firms remain a going concern for a longer period than in a country with strong external investor rights and legal enforcement. Thus, investors in emerging markets still demand the informativeness of financial reports to assess the default or bankruptcy risk of losing firms. From the point of view of managers, losses may both cause an increase in the relative cost and the unavailability of external funding. Given that investors in losing firms in emerging countries with weak external investor rights and legal enforcement may hold their investments for a longer period of time, higher quality financial reports are still beneficial to send a credible signal to investors and lessen agency problems between insiders and outsiders. This would encourage investors to further finance firms at an opportunity cost relatively lower than otherwise. Therefore, accrual quality negatively affects the cash holding of businesses; yet, due to the lack of informativeness of financial reports on the firms' future, its role in reducing cash holding is weakened in losing firms. Hence, the following is the second hypothesis:

H_2: In losing firms, the accruals' quality affects the level of cash holdings negatively to a lesser degree.

3. Data and Research Method

Sample Selection

Our research sample consists of non-financial firms listed in the Indonesia Stock Exchange. Five-year panel data between 2013 and 2017 is used in this study. Sample firms are selected using unbalanced sample techniques and we excluded firms if their financial statements are either incomplete for estimating the research variables or expressed in a foreign currency. The total number of non-financial firms in the initial sample is 2,087 firm-years, and after implementing the sample criteria, we obtained 1,632 firm-years as the final sample.

Table 1

Total sample

Item	2013	2014	2015	2016	2017	Total
Agriculture	16	20	21	21	21	99
Mining	38	38	40	41	41	198
Basic Industry & Chemicals	59	61	65	65	67	317
Miscellaneous	38	40	40	41	41	200
Consumer Goods	36	37	37	37	37	184
Property	52	54	54	59	61	280
Infrastructure	44	47	51	53	56	251

Trade Service	98	108	113	117	122	558
Sub-total	381	405	421	434	446	2,087
Firms with Foreign Currency	79	85	87	86	87	424
Firms with Incomplete Financial Statement	4	3	6	8	10	31
Total	298	317	328	340	349	1,632

The process of getting the final sample that started with the initial sample and followed by the enforcement of further criteria can be seen in Table 1. The sample firms in Table 1 are presented based on their respective industries; namely, agriculture, mining, basic industry, miscellaneous, consumer goods, property, infrastructure, and trade services. It can be seen in the table that the final sample in this study consists of 355 unique firms to constitute 1,632 firm-year observations.

Research Model

As mentioned earlier, the main objective of this study is to investigate the effects of a firm's profitability on the relationship between accruals' quality and cash holdings. To do so, the two regression models below are employed to test the two research hypotheses.

$$Cash_{i,t} = \alpha + \beta_1 EQ_{i,t} + \beta_3 \mathrm{CF}_{i,t} + \beta_4 \mathrm{Growth}_{i,t} + \beta_5 \mathrm{Liq}_{i,t} + \beta_6 \mathrm{Lev}_{i,t} + \beta_7 \mathrm{Div}_{i,t} + \sum_{i=1}^{8} \beta_8 Industry_{i,t} + \sum_{i=1}^{5} \beta_9 Year_{i,t} + \varepsilon_{i,t} \quad (1)$$

$$Cash_{i,t} = \alpha + \beta_1 EQ_{i,t} + \beta_2 EQ_{i,t} \times \mathrm{P/L}_{i,t} + \beta_3 \mathrm{CF}_{i,t} + \beta_4 \mathrm{Growth}_{i,t} + \beta_5 \mathrm{Liq}_{i,t} + \beta_6 \mathrm{Lev}_{i,t} + \beta_7 \mathrm{Div}_{i,t} + \sum_{i=1}^{8} \beta_8 Industry_{i,t} + \sum_{i=}^{5} \beta_9 Year_{i,t} + \varepsilon_{i,t} \quad (2)$$

where $\mathrm{Cash}_{i,t}$ represents the cash holdings of firm *i* at time *t*; $\mathrm{EQ}_{i,t}$ is the accruals' quality of firm *i* at time *t*;

$\mathrm{P/L}_{i,t}$ is a dummy variable for losing firm *i* at time *t*; $\mathrm{CF}_{i,t}$ is the cash flow from operations of firm *i* at time *t*; $\mathrm{Growth}_{i,t}$ is the growth opportunity of firm *i* at time *t*; $\mathrm{Liq}_{i,t}$ is the liquidity of firm *i* at time *t*; $\mathrm{Lev}_{i,t}$ is the leverage of firm *i* at time *t*; $\mathrm{Div}_{i,t}$ is a dummy variable for dividend-paying firm *i* at time *t*; $\mathrm{Industry}_{i,t}$ is a dummy variable representing industry sector *i* at time t, the basic industry sector being the base sector; $\mathrm{Year}_{i,t}$ is a dummy variable, where 2013 is the base year. Furthermore, the top and bottom 1% of all continuous variables in this study are winsorized.

The existence of heteroskedasticity and the use of panel data may lead to inefficient least-square estimations. To deal with the heteroskedasticity problem, this study applies a procedure of the standard error of the estimated coefficients correction as suggested by White (1980). In addition, the observations from the panel data may be independent across firms; however, they are not independent within firms. To deal with the within-company dependence problem, this study employs the clustering of standard errors at the firm level as suggested by Petersen (2009). The fixed-effect panel data regression analysis is applied after the Hausman test result, which is not reported here, shows that random-effect panel data regression analysis is unfavorable.

Research Variables

Firm's cash holding is the dependent variable in this study. To proxy for cash holdings, this study uses the cash ratio, which is the ratio of cash and cash equivalents to total assets as suggested by Ozkan and Ozkan (2004), Le et al. (2018), and Farinha et al. (2018). Accruals' quality is the main independent variable in our study. This study employs the modified Jones model to estimate discretionary accruals (Dechow et al., 1995). The model has been widely used

in prior studies to proxy earnings' management as an inverse measure of accruals' quality (Baxter & Corter, 2009). Schipper and Vincent (2003) pointed out that managers intentionally intervene in the financial reporting process for personal purposes known as earnings' management. The higher earnings' management is estimated by the lower accruals' quality (negative impact of earnings' management). In addition, the modified Jones model is found to be the best proxy for earnings' management (e.g. Dechow et al., 1995; Peasnell et al., 2000).

To estimate the discretionary accruals' model, first, we run the regression of total accruals for each industry combination to calculate the error term for firm *i* in year *t*.

$$\frac{TACC_{i,t}}{A_{i,t-1}} = \alpha_1 \frac{1}{A_{i,t-1}} + \alpha_2 \frac{\left(\Delta REV_{i,t} - \Delta AR_{i,t}\right)}{A_{i,t-1}} + \alpha_3 \frac{GPPE_{i,t}}{A_{i,t}} + \varepsilon_{i,t} \quad (3)$$

We use the coefficients to estimate the non-discretionary accrual (the error term ($\varepsilon_{i,t}$) in equation (3), in the following equation:

$$EQ_{i,t} = \frac{TACC_{i,t}}{A_{i,t-1}} - \alpha_1 \frac{1}{A_{i,t-1}} + \alpha_2 \frac{\left(\Delta REV_{i,t} - \Delta AR_{i,t}\right)}{A_{i,t-1}} + \alpha_3 \frac{GPPE_{i,t}}{A_{i,t}} \quad (4)$$

where $TACC_{i,t}$ is total accrual for firm *i* in year *t*, calculated as net income minus cash flow from operations. $A_{i,t-1}$ is total assets for firm *i* in year *t-1*. $\Delta REV_{i,t}$ is change of revenue from year *t* to year *t-1* for firm *i*. $\Delta REC_{i,t}$ is change of receivables from year *t* to year *t-1* for firm i. $GPPE_{i,t}$ is gross property, plant and equipment for firm *i* in year *t*. $DACC_{i,t}$ is the discretionary accrual for firm *i* in year *t*, which is the difference between total accrual and non-discretionary accrual. Discretionary accruals describe the existence of abnormal accruals which cannot be justified by the firm's operations.

The difference between total and non-discretionary accruals can be positive or negative. Since we are more interested in the magnitude of discretionary accruals, we employ the absolute value of the discretionary accruals. Considering the relationship between accruals' quality and discretionary accruals, it should also be noted that the higher the discretionary accrual, the lower the accrual quality. To better depict this relationship, following Dechow et al. (2010), the absolute value of the discretionary accruals is multiplied by -1.

Jiang and Stark (2013) and Hayn (1995) noted that it is more difficult to value a losing firm, and its earnings become less informative than those of a profit-making firm. Profit/loss is measured by using a dummy variable that is assigned a value of 1 for a losing firm and 0 otherwise. To investigate the effect of accruals' quality on the losing firms' cash holdings, we test the interaction between accruals' quality and the dummy variable. By doing so, we treat profit/loss as a moderating variable for the relationship between cash holdings and accruals' quality. Darrough and Ye (2007) and Farinha et al. (2018) argued that losing firms may exhibit less informative accruals' quality due to a weak relationship between current and future abnormal earnings and suffer financial distress that leads to a much higher opportunity cost of cash holdings. However, a higher quality of financial reports of losing firms in Indonesia—an emerging market with low outside investor rights and legal enforcement—may still be beneficial to send a credible signal to investors on lessening agency problems between insiders and outsiders and encourage investors to further finance firms at an opportunity cost relatively lower than otherwise.

We control the model with several variables. Firstly, cash flow is proxied by cash flow from operating activities to total assets. Farinha et al. (2018) noted that cash flow is usually used to measure the financial health of a firm. Firms with large cash flows

are more able to cope with illiquidity problems. Pecking order theory assumes that cash flow is related to the cost of financing and investment opportunities (Myers & Majluf, 1984). Firms may face the high cost of financing due to asymmetric information. In response, firms prefer internal resources, such as accumulating more cash (Oppler et al., 1999; Sun et al., 2012). Based on this theory, the relationship between cash flow and cash holding is expected to be positive. However, Ferreira and Vilela (2004) and Kim and Sorensen (1986) argued that firms may substitute cash flow for cash balance. In that case, firms with higher cash flows do not rely on cash on hand to fulfil their financial obligations, so there is an inverse relationship between cash flow and cash holdings. Since there are two opposite arguments regarding the relationship between cash flow and cash holdings, the hypothesis for the relationship is stated to be unidirectional.

The second control variable is growth opportunity that is proxied by ratio of market-to-book. Since the ratio uses a value of debt as well as market value of equity, it may be open to the probability of increasing conflict of interests between shareholders and debtholders (Farinha et al., 2018). The conflict may lead to higher agency costs of debt that could impede the firm's ability to exploit its growth opportunities. In response, a firm with greater growth opportunities will have larger cash to grab the growth opportunities and to overcome the higher cost of external financing. Therefore, we expect the relationship between growth opportunities and cash holdings to be positive.

Next is liquidity that is proxied as current assets minus cash and cash equivalent minus accounts payable to total assets. Previous studies, such as Ozkan and Ozkan (2014) and Farinha et al. (2018), found evidence of a negative relationship between liquidity and cash holding. Because liquid assets have a substitution effect on cash holdings, firms with large liquid assets will have low cash holdings (Ozkan & Ozkan, 2004). Based on these arguments, we hypothesize that there is an inverse relationship between liquidity and cash holding.

Leverage is employed as a control variable in this study. Ferreira and Vilela (2004) stated that low leverage can be used by firms to signal their ability to issue new debt in the market. This ability leads to a reduction in their cash levels. Moreover, John (1993) and García-Teruel et al. (2009) argued that firms that could access cheaper debts have an option of borrowing as a substitute for internal sources such as cash. Therefore, we expect the relationship between leverage and cash holdings to be negative. However, high leverage increases the probability of firms going into financial distress (Ozkan & Ozkan, 2004). Therefore, increasing cash on hand may reduce financial distress possibility. This argument leads to a positive relationship between leverage and cash holdings. Based on the conflicting arguments above, this study does not hypothesize a specific direction of the relationship between leverage and cash holding.

Dummy dividend is employed as a control variable in this study as applied by Ozkan and Ozkan (2004). They argued that dividend-paying firms tend to hold more cash. On the other hand, Oppler et al. (1999) argued that as firms are paying dividends, they have lower cash levels. Therefore, if firms want to have cheaper cost of funds, such as cash, they could reduce dividends. Based on the conflicting predictions above, the hypothesized relationship between leverage and cash holdings is indirect.

4. Empirical Results and Discussion

Descriptive-statistics Analysis

Table 2 provides descriptive statistics for all variables in the sample. There are 354 (22%) losing firm-year observations of a total of 1,632 firm-year observations used in this study. The mean (median) value of cash holdings is 9.8% (6%) for the full sample. The sub-samples of losing firms show a lower value of cash holdings than the sub-samples of profiting firms, with the mean (median) of 5.8% (2%) and 10.9% (7%),

respectively. Using a t-test for mean difference, the result shows that cash holding mean difference means that the difference between losing and profiting firms is significant at α = 1%. This is rationally understood, as losing firms generate negative profits that would reduce their retained earnings. Meanwhile, the mean (median) value of accruals' quality is -10.3% (-7.3%) for the full sample. The sub-sample analysis shows that losing firms have a lower mean and median accruals' quality than profiting firms. The mean values of accruals' quality for losing firms and profiting firms are -11.9% (-8.6%) and -9.8% (-6.9%), respectively. The result of t-test shows the accrual quality mean difference is significant at α = 10%. The corresponding correlation matrix between variables is presented in Table 3.

Table 2
Descriptive statistics

	Full Sample			Loss Firms			Profit Firms		
Variables	**Mean**	**Median**	**Std. Dev.**	**Mean**	**Median**	**Std. Dev.**	**Mean**	**Median**	**Std. Dev.**
Cash	0.098	0.06	0.104	0.058	0.02	0.091	0.109	0.07	0.104
EQ	-0.103	-0.073	0.108	-0.119	-0.086	0.117	-0.098	-0.069	0.104
CF	0.059	0.04	0.101	0.011	0	0.084	0.072	0.06	0.101
Growth	1.871	1.245	1.909	1.848	1.11	2.180	1.877	1.3	1.828
Liq	0.283	0.26	0.202	0.238	0.2	0.215	0.295	0.28	0.198
Lev	0.485	0.47	0.274	0.616	0.6	0.390	0.449	0.45	0.219
Div	0.528	1	0.499	0.149	0	0.357	0.633	1	0.482

Definitions of Variables: Cash is measured by cash ratio, estimated by dividing cash and cash equivalent by Total Assets; Accruals' quality is measured by discretionary accruals from the modified Jones model; CF is measured as cash flow from operating activities to Total Assets; Growth is proxied by Market-To-Book Ratio (MTB), measured by the sum of Book Value of debt and Market Value of Equity divided by Book Value of Total Assets; Liq is measured as current assets minus cash and cash equivalent minus accounts payable to Total Assets; Lev is measured as Total Liability to Total Assets; Div is proxied by a dummy variable, taking the value of 1 for a dividend-paying firm and 0 otherwise.

Panels A and B of Table 3 present the Pearson and Spearman correlation matrices. Two matrices show that accruals' quality is negatively related to cash holdings. The negative relationship indicates that firms with lower accruals' quality will have a lower level of cash holdings. Moreover, liquidity and leverage have negative relationships with cash holdings. Aside from that, cash flow, growth, and dividend have positive relationships with cash holdings. Further tests for the presence of multi-collinearity problems for all independent variables are undertaken and the VIFs for all bivariate correlations are found to be below 10. Therefore, it can be concluded that no multi-collinearity problem exists in the data.

Table 3
Pearson and Spearman correlation matrix

Panel A: Spearman Correlation Matrix

	Cash	**Accruals' quality**	**Cash Flow**	**Growth**	**Liquidity**	**Leverage**	**Dividend**
Cash	1						
Accruals' quality	-0.072	1					
Cash Flow	0.332	0.024	1				
Growth	0.202	0.019	0.279	1			

Liquidity	-0.049	0.006	-0.178	-0.088	1		
Leverage	-0.261	0.009	-0.105	0.064	-0.017	1	
Dividend	0.386	0.036	0.315	0.192	0.089	-0.077	1

Panel B: Pearson Correlation Matrix

	Cash	**Accruals' Quality**	**Cash Flow**	**Growth**	**Liquidity**	**Leverage**	**Dividend**
Cash	1						
Accruals' quality	-0.055	1					
Cash Flow	0.302	-0.026	1				
Growth	0.092	-0.025	0.287	1			
Liquidity	-0.129	0.025	-0.199	-0.098	1		
Leverage	-0.284	-0.041	-0.115	0.129	-0.080	1	
Dividend	0.269	0.048	0.295	0.083	0.042	-0.138	1

Notes: Cash Holding is measured by cash ratio, estimated by dividing cash and cash equivalent by Total Assets; Accruals' quality is measured by Discretionary Accruals from the modified Jones model; Cash Flow is measured as cash flow from operating activities to Total Assets; Growth is proxied by Market-To-Book Ratio (MTB), measured by sum of Book Value of debt and Market Value of Equity divided by Book Value of Total Assets; Liquidity is measured as current assets minus cash and cash equivalent minus accounts payable to Total Assets; Leverage is measured as Total Liability to Total Assets; Dividend is proxied by a dummy variable, taking the value of 1 for a dividend-paying firm and 0 otherwise.

The results of regression with cluster robust standard errors at the firm level as suggested by Petersen (2009) as well as the industry and year fixed effects are presented in Table 4. The regression coefficients and their *p*-values for the basic model (Eq. 1) are reported in column 3 (Model 1). The coefficients and their *p*-values for the extended model (Eq. 2) are reported in column 4 (Model 2). The coefficients of constants as well as industry and year dummies are included in the estimations of the models, but not reported in the table.

The regression results presented in Table 4 confirm that firms' accruals' quality is negatively related to their cash holdings. The negative relationship is significant at α = 5% level in all of the regression models. According to our first hypothesis, this negative relationship indicates that lower accruals' quality forces firms to hold larger amounts of cash holdings. Firms with lower accruals' quality have higher information asymmetry, resulting in costly external funding. These results confirm the findings of García-Teruel et al. (2009), Sun et al. (2012), Mansali et al. (2019), and Farinha et al. (2018).

Table 4
Regression results

Variables	**Expected Sign**	**Coefficient (p-value)**	
		Model 1	**Model 2**
EQ	-	-0,0593** (0.034)	-0.0595** (0.023)
EQ X P/L	+	-	0.00672 (0.011)
CF	+/-	0,1702*** (0.000)	0.1829*** (0.000)
Growth	+	0,0012 (0.569)	0.0018 (0.410)

Liq	-	-0,0865*** (0.000)	-0.0814*** (0.000)
Lev	+/-	-0,0516*** (0.001)	-0.0851*** (0.000)
Div	+/-	0,0384*** (0.000)	0.0369*** (0.000)
Constant		Yes	Yes
Industry Fixed-Effect		Yes	Yes
Year Fixed-Effect		Yes	Yes
Firm Clustered Standard Errors		Yes	Yes
Adjusted R-Squared		0.2103	0.2362
N		1,632	1,632

Notes: Cash is measured by cash ratio, estimated by dividing cash and cash equivalent by Total Assets; EQ is measured by the absolute value of Discretionary Accruals from the modified Jones model; EQXP/L is an interactive term of EQ and a dummy profit/loss that takes the value of 1 if a company reports loss and 0 otherwise; CF is measured as cash flow from operating activities to Total Assets; Growth is proxied by Market-To-Book Ratio (MTB), measured by sum of Book Value of debt and Market Value of Equity divided by Book Value of Total Assets; Liq is measured as current assets minus cash and cash equivalent minus accounts payable to Total Assets; Lev is measured as Total Liability to Total Assets; Div is proxied by a dummy variable, taking the value of 1 for a dividend-paying firm and 0 otherwise.

Model 2 in Table 4 represents the regression model with the interaction term between accruals' quality and firms' profitability that is proxied by a dummy variable. The regression result of the dummy interaction from model 2 is positive and significant at $\alpha = 1\%$ level. Unlike Farinha et al. (2018) who found an insignificant relationship between accruals' quality and profitability, this study provides evidence for a positive and significant coefficient of loss on the accruals-cash holdings relationship in Indonesian firms.

Losses may cause accruals' quality to become less informative or create more barriers to fundraising in terms of cost and availability. The positive sign on the interaction term between accruals' quality and firms' profitability depicts the additional effect of accruals' quality on cash holdings for losing firms in the IDX. Since the relationship between accruals' quality and cash holdings is negative for all firms, the positive sign of the dummy interaction variable provides evidence that the negative effect of accruals' quality on the cash holding level is found to lessen—by 11% (0,00672/-0,0595)—in Indonesian losing firms. Investors of losing firms in Indonesia may find that liquidation is not an entirely economically viable option and, therefore, must assume that those firms will still be a going concern for a longer period than in a country with strong outside investor rights and legal enforcement. Thus, these investors may still demand the informativeness of financial reports to assess the default or bankruptcy risk of losing firms. By the same token, the existence of losses creates barriers in fundraising efforts, in terms of the increase in the relative cost of external funding or its availability being doubtful in some cases. Managers in Indonesia, however, still find that quality financial reports are beneficial to convince investors of lessening agency problems between insiders and outsiders, and thus encourage investors to further finance firms. Therefore, the accruals' quality still has a negative effect on the firm's level of cash balances, but its role in cash-holding reduction slightly decreases due to the low informativeness of Indonesian firms' financial reports regarding the future of the firms.

Considering the control variables, this study found that cash flow is positively and significantly related to cash holdings at $\alpha = 1\%$. This indicates that Indonesian firms prefer to save their cash rather than to invest. This supports the results of Oppler et al. (1999), Sun et al. (2012), and Mansali et al. (2019). Conversely, no significant relationship between cash holdings and growth opportunity is found in this study. As expected, liquidity is negatively related to cash holdings at $\alpha = 1\%$. This indicates that firms with sufficient liquid

assets may avoid using external funding during cash holding shortages. This result confirms the findings of Ozkan and Ozkan (2004) and Farinha et al. (2018). Leverage has a negative relationship with cash holdings at α =1%, because firms can use debt as an alternative for cash holdings to make investments. This result confirms the findings of García-Teruel et al. (2009), Sun et al. (2012), and Farinha et al. (2018). The dividend dummy is positively related to cash holdings at α =1%, showing that firms that pay dividends tend to hold more cash to align with their dividend policy. This finding is consistent with that of Mansali et al. (2019).

Robustness Tests

Robustness tests are performed to examine the validity of our empirical findings by analyzing the panel-data regression. As mentioned earlier, we control the fixed effects in our prior testing models by considering the clustering of the sample in industries, years, and firms. Therefore, for the first robustness test, we drop the aforementioned method to control for the fixed effects and employ the pooled OLS and random effect regression models on the same dataset instead. The next robustness test is conducted to tackle endogeneity issues in the model.

Table 5
Results of the pooled OLS and random effect regression models

Variables	Expected Sign	Coefficient (p-value)	
		Pooled	Random
EQ	-	-0.0800*** (0.000)	-0.0257* (0.099)
EQ X P/L	+	0.0416 (0.376)	0.0735 (0.025)
CF	+/-	0.1867*** (0.000)	0.1836*** (0.000)
Growth	+	0.0024* (0.056)	0.0004 (0.351)
Liq	-	-0.0591*** (0.000)	-0.0991*** (0.000)
Lev	+/-	-0.0952*** (0.000)	-0.0772*** (0.000)
Div	+/-	0.0369*** (0.000)	0.0128*** (0.000)
Constant		Yes	Yes
Industry Fixed-Effect		No	No
Year Fixed-Effect		No	No
Firm Clustered Standard Errors		No	No
Adjusted R-Squared		0.2007	0.1189
N		1,632	1,632

Notes: Cash is measured by cash ratio, estimated by dividing cash and cash equivalent by Total Assets; EQ is measured by the absolute value of Discretionary Accruals from the modified Jones model; EQXP/L is an interactive term of EQ and a dummy profit/loss variable that takes the value of 1 if a company reports loss and 0 otherwise; CF is measured as cash flow from operating activities to Total Assets; Growth is proxied by Market-To-Book Ratio (MTB), measured by sum of Book Value of debt and Market Value of Equity divided by Book Value of Total Assets; Liq is measured as current assets minus cash and cash equivalent minus accounts payable to Total Assets; Lev is measured as Total Liability to Total Assets; Div is proxied by a dummy variable, taking the value of 1 for a dividend-paying firm and 0 otherwise.

Table 5 (see columns 3 and 4) represents the results of regression with pooled OLS and random effect models, respectively. Employing a pooled OLS model for testing panel data is a naive test, but because it ignores certain attributes of panel data, it can be seen in Table 5 (column 3) that accruals' quality still has a negative and significant impact at α =5%. Table 5 (column 4) shows similar results that accruals' quality has a negative and significant effect at α =10% in the random effect model. For the dummy interaction between accruals' quality and profit/loss firm, the employment of pooled OLS model still results in a positive coefficient, but insignificant at the conventional levels. In contrast, the random effect model results in a positive and significant influence of accruals' quality on cash holding at the 5% level, as expected. For control variables cash flow and dividend, we found both coefficients from the two statistical models to be positive and significant at the 1% level. For growth opportunity, this study found a positive and significant effect of cash holding only in the pooled OLS regression model. For the other control variables, liquidity and leverage, this study found both coefficients from the two statistical models to be significantly negative at α =1%.

To gauge the relationship between accrual quality and cash holding, this study uses Equations (1) and (2) that include cash flows both as an independent variable (control variable) and as an intermediary step to estimate the dependent variable (accrual quality). The simultaneous usage of the same measures for independent and dependent variables might induce potential endogeneity issues. To check the robustness of the findings, we implement the previous statistical tests that control the fixed effects from industries, years, and firms. In the first test, cash flow is excluded as an independent variable in the models. In the second test, the one-period lag of the accrual quality proxy is used to replace the contemporaneous one. The results of both tests (not reported) are qualitatively the same. There is still a negative and significant relationship between accruals' quality and cash holdings and the relationship is significantly weakened in losing firms.

Although most prior studies used the absolute form of discretionary accruals as a proxy of earnings' quality, there are a few studies (i.e., Utama & Siregar, 2008) that used discretionary accruals at their face value (both positive and negative). According to Menicucci (2020), the discretionary accrual is basically an abnormal (deviation) accrual that is the difference between total accrual and non-discretionary accrual. Therefore, it could be interpreted that discretionary accruals are not relevant to business reasons, and hence, can be regarded as earnings' management. To that extent, Menicucci (2020) stated that the lower the discretionary accruals, the lower the probability of managers' choice, and the higher the earnings' quality, and *vice versa*.

This study conducted other robustness tests using relative discretionary accruals as a proxy of measurement. The mean and median of the relative EQ are –0.0446 and –0.0435, respectively. The OLS regression-analysis results are presented in Table 6. In general, the results show the same interpretation of the main results. EQ is found to be negatively related to cash flow holding. However, the loss does not moderate the relationship between EQ and cash holding.

Table 6
Regression results

Variables	Expected Sign	Coefficient (p-value)	
		Model 1	Model 2
EQ	-	-0,0098** (0.014)	-0.0189 (0.126)
EQ X P/L	+	-	0.0118

			(0.364)
CF	+/-	0,1823*** (0.000)	0.1832*** (0.000)
Growth	+	-0,0002 (0.659)	-0.0002 (0.410)
Liq	-	-0,0488*** (0.000)	-0.0490*** (0.000)
Lev	+/-	-0,0282*** (0.000)	-0.0283*** (0.000)
Div	+/-	0,0378*** (0.000)	0.0377*** (0.000)
Constant		Yes	Yes
Industry Fixed-Effect		Yes	Yes
Year Fixed-Effect		Yes	Yes
Firm Clustered Standard Errors		Yes	Yes
Adjusted R-Squared		0.1656	0.1659
N		1,632	1,632

Notes: Cash is measured by cash ratio, estimated by dividing cash and cash equivalent by Total Assets; EQ is measured by relative Discretionary Accruals from the modified Jones model; EQXP/L is an interactive term of EQ and a dummy profit/loss variable that takes the value of 1if a company reports loss and 0 otherwise; CF is measured as cash flow from operating activities to Total Assets; Growth is proxied by Market-To-Book Ratio (MTB), measured by sum of Book Value of debt and Market Value of Equity divided by Book Value of Total Assets; Liq is measured as current assets minus cash and cash equivalent minus accounts payable to Total Assets; Lev is measured as Total Liability to Total Assets; Div is proxied by a dummy variable, taking the value of 1 for a dividend-paying firm and 0 otherwise.

The relative discretionary accruals are also run on the pooled and random effect panel data regression. Similar results also found that the higher EQ of a firm, the less cash holding is required. The loss neither weakens nor strengthens the EQ-cash holding relationship. Other control variables retain their significance as in the main results.

Table 7

Results of the pooled OLS and random effect regression models

Variables	**Expected Sign**	**Coefficient (p-value)**	
		Pooled	**Random**
EQ	-	-0.0449* (0.06)	-0.0387** (0.049)
EQ X P/L	+	0.0286 (0.490)	0.0648 (0.247)
CF	+/-	0.1805*** (0.000)	0.1670*** (0.000)
Growth	+	0.0013 (0.056)	0.0029 (0.108)
Liq	-	-0.0939*** (0.000)	-0.1346*** (0.000)
Lev	+/-	-0.0535*** (0.000)	-0.0559*** (0.000)
Div	+/-	0.0366*** (0.000)	0.0137** (0.012)

Constant		Yes	Yes
Industry Fixed-Effect		No	No
Year Fixed-Effect		No	No
Firm Clustered Standard Errors		No	No
Adjusted R-Squared		0.1841	0.1745
N		1,632	1,632

Notes: Cash is measured by cash ratio, estimated by dividing cash and cash equivalent by Total Assets; EQ is measured by relative Discretionary Accruals from the modified Jones model; EQXP/L is an interactive term of EQ and a dummy profit/loss variable that takes the value of 1 if a company reports loss and 0 otherwise; CF is measured as cash flow from operating activities to Total Assets; Growth is proxied by Market-To-Book Ratio (MTB), measured by the sum of Book Value of debt and Market Value of Equity divided by Book Value of Total Assets; Liq is measured as current assets minus cash and cash equivalent minus accounts payable to Total Assets; Lev is measured as Total Liability to Total Assets; Div is proxied by a dummy variable, taking the value of 1 for a dividend-paying firm and 0 otherwise

5. Conclusion

This study investigates the effect of earnings' quality on corporate cash holdings and the impact of profit and loss on their relationship in Indonesia, an emerging market. The investigation is carried out on all Indonesian public listed companies, except for companies in the financial industry, from 2013 to 2017. This study includes other factors that also determine the firm-level cash holdings, such as cash flow, growth opportunity, liquidity, leverage, and dividend.

This study found an inverse relationship between accruals' quality and cash holding level of Indonesian firms. This result is consistent with the argument that higher accruals' quality may reduce the negative effects of information asymmetries that cause costly external financing. This result also confirms the notion that in a less-transparent environment with less-developed financial systems, weak investor protection, and low legal enforcement, issuing financial reports containing high earnings' quality can lead to an improvement in cash holdings' management. Second, accruals' quality has more negative effects on profit-making firms than on losing firms. It can be inferred that losses cause accrual quality to be less informative and exhibit more barriers in fundraising both in terms of costs and availability. Therefore, accruals' quality plays a less important role in determining cash holdings in losing firms. Although the role of accruals' quality in cash-holding reduction is diminished due to less informative losing firm financial reports regarding the future of the firms, this study confirms that the accruals' quality in a losing firm still plays a role in determining the level of a firm's cash holdings. The possible reason for a stronger negative relationship between accrual quality and cash holding in Indonesian losing firms is that investors in Indonesia still demand the informativeness of financial reports, since it is difficult and costly to force a bankrupt firm into liquidation as a result of weak investor protection and legal enforcement. The managerial implication of this result is that firms with good earnings' quality can hold lower levels of cash; hence, the remaining cash can be invested in positive NPV investments or less liquid assets to create added firm value.

In terms of control variables, cash flow has a positive effect on cash holdings. Firms in Indonesia that have a higher level of cash flow tend to hold their cash rather than to invest in other less liquid assets. For growth opportunity, we failed to find its relationship with cash holdings, although the coefficient is still positive as in previous studies. Firms with higher asset liquidity have a lower level of cash holdings. This is in line with the substitute effects of liquid assets on cash holdings. Firms with higher liquid assets may not need external funding when they have cash shortages. Leverage is a cash substitute for investment level, so if

firms have higher leverage, their cash holdings will be lower. For dividends, firms hold more cash to preserve their ability to pay dividends, and thus reduce the probability of dividend cuts in the future.

REFERENCES

Acharya, V.V., Almeida, H., & Campello, M. (2007). Is cash negative debt? A hedging perspective on corporate financial policies. *Journal of Financial Intermediation*, *16* (4), 515-554.

Ahmed, A.S., Neel, M., & Wang, D. (2013). Does mandatory adoption of IFRS improve accounting quality? Preliminary evidence. *Contemporary Accounting Research*, *30* (4), 1344-1372.

Akhtar, T., Tareq, M.A., Sakti, M.R.P., & Khan, A.A. (2018). Corporate governance and cash holdings: The way forward. *Qualitative Research in Financial Markets*, *10* (2), 152-170.

Baxter, P., & Cotter, J. (2009). Audit committees and earnings' quality. *Accounting and Finance*, *49* (2), 267-290.

Cheryta, A.M., Moeljadi, M., & Indrawati, N.K. (2018). Leverage, asymmetric information, firm value, and cash holdings in Indonesia. *Jurnal Keuangan dan Perbankan*, *22* (1), 83-93.

Chu, E.L., & Wu, W. (2009). Legal institutions and timeliness of earnings. *Corporate Ownership and Control*, *6*, 509-523.

Chung, K.H., Kim, J.C., Kim, Y.S., & Zhang, H. (2015). Information asymmetry and corporate cash holdings. *Journal of Business Finance & Accounting*, *42* (9-10), 1341-1377.

Claessens, S., Djankov, S., & Lang, L.H. (2000). The separation of ownership and control in East Asian corporations. *Journal of Financial Economics*, *58* (1-2), 81-112.

Darrough, M., & Ye, J. (2007). Valuation of loss firms in a knowledge-based economy. *Review of Accounting Studies*, *12* (1), 61-93.

Dechow, P.M., Sloan, R.G., & Sweeney, A.P. (1995). Detecting earnings' management. *Accounting Review*, *70*, 193-225.

Easterbrook, F.H. (1984). Two agency-cost explanations of dividends. *The American Economic Review*, *74* (4), 650-659.

Farinha, J., Mateus, C., & Soares, N. (2018). Cash holdings and earnings quality: Evidence from the main and alternative UK markets. *International Review of Financial Analysis*, *56*, 238-252.

Ferreira, M.A., & Vilela, A. S. (2004). Why do firms hold cash? Evidence from EMU countries. *European Financial Management*, *10* (2), 295-319.

Francis, J., LaFond, R., Olsson, P.M., & Schipper, K. (2004). Costs of equity and earnings' attributes. *The Accounting Review*, *79* (4), 967-1010.

Francis, J., LaFond, R., Olsson, P., & Schipper, K. (2005). The market pricing of accruals' quality. *Journal of Accounting and Economics*, *39* (2), 295-327.

García-Teruel, P.J., Martínez-Solano, P., & Sánchez-Ballesta, J. P. (2009). Accruals' quality and corporate cash holdings. *Accounting and Finance*, *49* (1), 95-115.

Hamed, A.K., & Al-Momani, M.A. (2018). Effect of accounting conservatism in managing the risk of downside of operating cash flows of companies listed in Amman Stock Exchange: An analytical study. *Jordan Journal of Business Administration*, *14* (1), 81-104.

Hayn, C. (1995). The information content of losses. *Journal of Accounting and Economics*, *20* (2), 125-153.

Hutagaol-Martowidjojo, Y., & Valentincic, A. (2016). Valuation and forecasting roles of dividends of Indonesian listed firms. *Journal of International Financial Management & Accounting*, *27* (2), 126-157.

Hutagaol-Martowidjojo, Y., Valentincic, A., & Warganegara, D.L. (2019). Earnings' quality and market values of Indonesian listed firms. *Australian Accounting Review*, *29* (1), 95-111.

Jensen, M.C., & Meckling, W.H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, *3* (4), 305-360.

Jiang, W., & Stark, A.W. (2013). Dividends, research and development expenditures, and the value relevance of book value for UK loss-making firms. *British Accounting Review*, *45* (2), 112-124.

John, T.A. (1993). Accounting measures of corporate liquidity, leverage, and costs of financial distress. *Financial Management*, *22* (3), 91-100.

Johnson, S., Boone, P., Breach, A., & Friedman, E. (2000). Corporate governance in the Asian financial crisis. *Journal of Financial Economics*, *58*, 141-186.

Khanna, T., & Palepu, K. (2000). Is group affiliation profitable in emerging markets? An analysis of diversified Indian business groups. *The Journal of Finance*, *55* (2), 867-891.

Kim, W.S., & Sorensen, E.H. (1986). Evidence on the impact of the agency costs of debt on corporate debt policy. *The Journal of Financial and Quantitative Research, 21* (2), 131-144.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R.W. (1998). Law and finance. *Journal of Political Economy*, *106* (6), 1131-1150.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (2000). Investor protection and corporate governance. *Journal of Financial Economics*, *58* (1-2), 3-27.

Le, D.H., Tran, P.L., Ta, T.P., & Vu, D.M. (2018). Determinants of corporate cash holding: Evidence from UK listed firms. *Business and Economic Horizons*, *14* (3), 561-569.

Love, I. (2003). Financial development and financing constraints: International evidence from the structural investment model. *The Review of Financial Studies*, *16* (3), 765-791.

Mansali, H., Derouiche, I., & Jemai, K. (2019). Accruals' quality, financial constraints, and corporate cash holdings. *Managerial Finance*, *45* (8), 1129-1145.

Miller, M.H., & Orr, D. (1966). A model of the demand for money by firms. *The Quarterly Journal of Economics, 80* (3), 413-435.

Mokhtari, B., Kangarlouei, S.J., & Motavassel, M. (2012). The Investigation of the relationship between accruals' quality and corporate cash holdings in firms listed in Tehran Stock Exchange (TSE). *Journal of Management Research*, *4* (3). 120-132.

Myers, S.C. (1977). Determinants of corporate borrowing. *Journal of Financial Economics*, *5* (2), 147-175.

Myers, S.C., & Majluf, N.S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics, 13* (2), 187-221.

Opler, T., Pinkowitz, L., Stulz, R., & Williamson, R. (1999). The determinants and implications of corporate cash holdings. *Journal of Financial Economics, 52* (1), 3-46.

Ozkan, A., & Ozkan, N. (2004). Corporate cash holdings: An empirical investigation of UK companies. *Journal of Banking & Finance*, *28* (9), 2103-2134.

Peasnell, K.V., Pope, P.F., & Young, S. (2000). Detecting earnings' management using cross-sectional abnormal accruals models. *Accounting and Business Research, 30* (4), 313-326.

Petersen, M.A. (2009). Estimating standard errors in finance panel datasets: Comparing approaches. *The Review of Financial Studies*, *22* (1), 435-480.

Riahi-Belkaoui, A., & AlNajjar, F.K. (2006). Earnings opacity internationally and elements of social, economic and accounting order. *Review of Accounting and Finance, 5* (3), 189-203.

Sari, L.P., Kurniawati, S.L., & Wulandari, D.A. (2019). The determinants of cash holdings and characteristics of the industrial business cycle in Indonesia. *Jurnal*

Keuangan dan Perbankan, *23* (4), 525-539.

Schipper, K., & Vincent, L. (2003). Earnings quality. *Accounting Horizons*, *17* (SUPPL.), 97-110.

Shin, M., Kim, S., Shin, J., & Lee, J. (2017). Earnings' quality effect on corporate excess cash holdings and their marginal value. *Emerging Markets Finance and Trade*, *54* (4), 901-920.

Shubita, M.F. (2020). The impact of capital structure and cash holdings on firm value: an empirical study on Jordanian Industrial Listed Companies. *Jordan Journal of Business Administration, 16 (1),* 53-68.

Sun, Q., Yung, K., & Rahman, H. (2012). Earnings' quality and corporate cash holdings. *Accounting and Finance*, *52* (2), 543-571.

Tran, Q.T. (2020). Corporate cash holdings and financial crisis: New evidence from an emerging market. *Eurasian Business Review*, *10*, 271-285.

Uyar, A., & Kuzey, C. (2012). Determinants of corporate cash holdings: Evidence from the emerging market of Turkey. *Applied Economics*, *46* (9), 1035-1048.

White, H. (1980). A heteroskedasticity-consistent covariance estimator and a direct test for heteroskedasticity. *Econometrica*, *48* (4), 817-838.

Wysocki, P. (2011). New institutional accounting and IFRS. *Accounting and Business Research*, *41* (3), 309-328.