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Corporate Cash Holdings and Earnings Quality – Evidence from the Stock Market in Poland

Keywords: cash holdings; earnings management; capital market; accruals; real earnings management

JEL: G32; G30; G14; M41

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Abstract

Theoretical background: High levels of cash holdings allow companies to be financially flexible. Cash holders can react to business opportunities at once, and avoid dependence on external financing. Having cash reserves acts as a protective cushion from possible business shocks. However, cash holdings, like other asset items, incur cost. The direct costs mostly relate to obtaining and servicing of financing. Excessive cash may also induce the agency problem of free cash flow. Information asymmetry, among other factors, influences cost of capital and the efficiency of investor monitoring. Earnings management strategies are related to the informativeness of financial reports, as they can either support or disturb the assessment of company risk and performance. Hence, companies search for tailor-made strategies that usefully trade-off the benefits and costs of cash reserves and earnings quality.

Purpose of the article: Earnings management occurs either via intervention in the reporting process using accruals, or changing the structure or the timing of real business transactions. This study aims to assess the differences in accrual and real earnings management strategies between firms with relatively high and low cash reserves. Based on a sample of non-financial companies listed on the Warsaw Stock Exchange in Poland, this research provides evidence on the relationship between the level of cash holdings and earnings quality.

Research methods: Earnings management is proxied with annual cross-sectional regressions estimated in non-financial GICS sectors. The Jones and the modified Jones model allow to estimate expected accruals. Using the Roychowdhury approach, normal cash flow from operations, normal production costs, and normal discretionary expenses are estimated. These normal levels are compared with their actual value to proxy for accrual- and real-earnings management. Next, each company was assigned to one of two groups, depending on the level of cash holdings relative to the annual industry medians. Parametric and non-parametric tests were used to test statistical significance.

Main findings: The empirical results show statistically significant differences in accrual and real earnings management between companies with relatively high and low cash reserves. Cash holders seem to be more likely to manage earnings via shifting accruals between periods. However, there is no evidence that any of the groups boosted earnings more. Unsigned earnings management proxies suggest lower informativeness of financial reports for companies with cash buffers. Cash holdings were positively related to activities aimed at reducing fixed costs per unit and savings on discretionary expenses. Summing up, this research shows that companies with greater information asymmetry related to poor earnings quality preferred to hold larger cash reserves.

Introduction

Earnings are crucial information in financial reporting. They summarise company performance and provide fundamental information in the decision making process, being the basis for the forecast of performance, future cash flow and expected risk (Bernstein & Siegel, 1979). Managers are given discretion in the decision making process to increase the value of the company. This discretion also involves earnings management strategies. As a result of these decisions, earnings reported in financial statements can be more or less informative about the true performance of the company. Engaging in earnings management activities may influence the quality of financial statements, thus increasing uncertainty in financial decisions for corporate stakeholders. Companies have many possibilities for manipulating earnings. First, they can influence the financial reporting process to change earnings in the target direction (accrual-based earnings management). Second, tools to structure or time real transactions are available (real-based earnings management). Hence, the high-

er the quality of earnings, the lower the risk is for company stakeholders. In other words, the higher the transparency of earnings, the lower the information asymmetry.

Earnings management relates to many areas of corporate finance management, including window-dressing around equity or debt issues, financial distress, or its many interconnections with corporate governance (Campa, 2019; Friedlan, 1994; Grabiński & Wójtowicz, 2022; Kabaciński et al., 2022; Lizińska & Czapiewski, 2023; Piosik & Genge, 2020). One of these is cash holdings management, which is an important part of corporate financial strategy. Cash holdings management is mainly perceived as a short-term issue, but it also has significant consequences for long-term company value. Holding excess cash reserves or a cash shortfall can both have negative consequences for company shareholders. The amount of cash reserves influences corporate market value. The marginal value of cash is greater for companies with relatively small cash holdings. The value of cash relates also to debt level, financial constraints or dividend policy (Faulkender & Wang, 2006).

Corporate cash reserves are important for financial flexibility and the ability to finance essential activities, enabling a company to adapt to changes in the business environment. The benefits of financial flexibility associated with the ability to use options for investment opportunities are important for a company's growth and stability. Preparing for future investments is crucial, both for the stability of the company's financial performance, and its ability to develop a long-term dividend policy. Financially inflexible companies can lose investment opportunities and fail to create value for shareholders. If a lack of ability to finance investment coincides with a deterioration in a company's financial performance or a reduction in dividends to a level below shareholders expectations, existing and potential investors may react strongly negatively.

This study aims to assess the differences in accrual and real earnings management strategies between firms with relatively high and low cash reserves. The relationship between cash holdings and earnings quality has been an important research stream in corporate finance and accounting in recent years. Studies on the relationship between cash reserves and earnings quality are especially rare in the European setting. Moreover, the prevailing research has focused on accrual-based earnings management, almost ignoring the European empirical evidence on influencing income via real transactions. Available studies for Europe include García-Teruel et al. (2009) who focused on Spanish firms prior to the adoption of IFRS by listed business groups, and Farinha et al. (2018) who presented evidence from main and alternative UK markets.

This study makes several contributions on the relation between earnings quality and cash holdings. First, it draws attention to the relationship between earnings management and financial flexibility. This issue is important for both academics and practitioners. Second, it discusses earnings management strategies for groups of firms with different levels of cash reserves, taking into account industry diversity. Third, we provide evidence for non-financial public companies in Poland. Poland

is a member of the European Union, but it is a relatively young capital market. Until recently it was considered an emerging market. In 2017, the FTSE Russell index agency classified the Polish capital market as developed. The Warsaw Stock Exchange in Poland is a significant regional capital market, the largest in the region of Central and Eastern Europe. It is currently one of the most important European capital markets, considering the number of publicly listed companies, total market capitalisation, share trade, or initial offerings. Considering international capital flows, the conclusions of this research for Poland can also be important for other countries.

Our paper proceeds as follows. In the next section we provide a literature review and develop research hypotheses. In third section the sample and the research methodology are described. Empirical results are detailed and discussed in the fourth section. The last part concludes.

Research perspectives on cash holdings and earnings management

Cash reserves are key to sustaining company operations. Companies hold cash for many reasons, so numerous potential financial factors of having cash buffers have been discussed in the literature. The traditional classification of motives for liquidity preference mentions the transaction motive in first place. This is related to dealing with day-to-day transactions. Firms need cash reserves to meet their short-term obligations. Companies that have enough liquid assets for ongoing transactions sometimes need more cash reserves for precautionary motives. This can prompt companies to hold higher cash holdings to protect themselves from unexpected difficulties. Cash reserves may also be accumulated for speculative motives, to exploit arising business opportunities (Keynes, 1937). The proper level of liquid assets ensures financial liquidity and allows for the financial stability of a company (Zagórski, 2008).

These motives provide the background to the trade-off theory of cash holdings, that compares the costs and benefits of holding cash reserves. Higher cash holdings allow a company to minimise costs of obtaining external funds, or costs related to the liquidation of existing non-cash assets to raise funds. They also increase the ability to finance investments if other sources are too expensive. At the optimum point, liquid assets are kept at a level that maximises company value by maintaining the equilibrium between creating value for shareholders and the risk of losing financial liquidity. The main benefit of having cash reserves is reducing the exposure to financial constraints. However, bigger cash reserves involve a higher opportunity cost of holding liquid assets. Thus, due to the cost of liquidity, excessive cash holdings may cause a decrease in the company value (Ferreira & Vilela, 2004).

The trade-off theory has inspired many empirical studies on cash reserves. Evidence supporting the proposition of firms choosing an optimal level of cash holdings is presented, e.g. by Opler et al. (1999), Kim et al. (1998), or Pinkowitz and Wil-

liamson (2001). Their results suggest that companies with easier access to capital markets tend to hold lower cash reserves. Consequently, the unavailability of external financing can lead managers to hold larger amounts of cash reserves, especially when growth opportunities arise.

The literature presents numerous factors having a potential impact on corporate cash holdings, like company size, growth opportunities, risk, profitability, cash flow generation, debt levels, debt maturity structure or R&D activities (Décamps et al., 2011; Kim et al., 1998; Ozkan & Ozkan, 2004). The determinants of cash holdings were also studied on Polish listed companies in the years 1999–2015, indicating a positive relationship with debt ratio, company size, cash flows and working capital. The level of cash holdings is also related to macroeconomic environment (Mirota & Nehrebecka, 2018).

An important factor related to the level of cash reserves is information asymmetry between investors and firms. When information asymmetry is high, external financing becomes expensive, leading to underinvestment or asset substitution. The increase in cost of external financing may be so high that it is more efficient for the company to give up some investment projects. Thus, for a company operating in an opaque information environment, the managerial propensity to maintain a high level of cash holdings may be significantly enhanced (Jensen & Meckling, 1976; Myers & Majluf, 1984).

Linking cash reserves to specific motives is extremely difficult, complicating stakeholders' assessment of the adequacy of cash holdings to company needs. When cash holdings are small, companies should be able to raise debt capital (Rzeczycka & Golawska-Witkowska, 2018), which requires risk assessment by creditors. Shareholders should evaluate to what extent cash reserves contribute to value increase. This is usually based on two approaches that emphasise the effect of cash as a buffer in case of financial constraints.

The first possible reason for maintaining cash reserves states that managers have an incentive to maintain a high level of cash holdings to increase the amount of assets under their control, which gives them discretionary power over the firm's investment decisions. Having enough cash to invest, managers do not have to obtain external funds and there is lower external pressure to provide capital markets with detailed information about the company's investment projects. Managers could therefore implement investments which have a negative impact on shareholders' wealth. This is well described by the theory on the agency cost of free cash flow (Jensen, 1986). The opaqueness of the company information environment may create managers' incentives and opportunities to engage in value-destroying activities using corporate cash reserves. Shareholders may restrict managerial access to free cash flow to mitigate this problem (Jensen, 1986; Stulz, 1990).

The second approach is based on the study of Myers and Majluf (1984). They show that, at least for some companies, maintaining financial slack may be beneficial to shareholders. This observation has been developed into the concept of financial

flexibility. This is a company's ability to respond to changes in the business environment by providing cost-effective ways of funding its future activities or restructuring its financing (Gryko, 2018). The ability to finance the business's response to changes which occur facilitates company value growth by exploiting profitable investment opportunities as and when they arise. It also allows a company to avoid financial distress during negative shocks. Financial flexibility protects against shocks on the financial market. The potentially positive impact of financial flexibility on company value is related to the benefits of avoiding the direct and indirect costs of financial difficulties and the ability to cost-effectively finance future investments despite financial constraints related to external fundraising.

Information asymmetry is likely to affect corporate cash holdings. It affects both the behaviour of managers and the ability of outsiders to understand management decisions when the principal-agent problem arises. Owning corporate cash holdings enables firms to take advantage of profitable investment opportunities and make obligatory debt repayments in case of cash flow shortages without accessing external capital markets, avoiding both transaction costs and the costs of information asymmetry. However, corporate cash resources can be costly if managers use them for their own benefit at the expense of shareholders. This may incline shareholders to put restrictions on managers accumulating cash reserves. Moreover, both managers and shareholders may be more concerned about the future capital needs of companies with greater information asymmetry, as they fear possible underpricing on their future equity issues. These problems may encourage managers to engage in earnings management activities to window-dress unsatisfactory company performance.

The primary way to reduce the problem of information asymmetry is reporting company activities in financial statements. Financial reports help to communicate company results to market participants. Companies with big cash reserves can be less eager to manipulate earnings, because cash holdings secure against the need to quickly raise capital from the market. On the other hand, it cannot be assumed that there is absolutely no pressure on the use of earnings management tools. Managers of companies maintaining higher cash reserves should convince investors that these assets provide financial flexibility and viable real growth options. Financial performance should be satisfactory enough to convince shareholders that the cash surplus is not a manifestation of agency costs.

Earnings management strategy can be based on two groups of activities. The first is based on shifting accruals between periods and it is connected with the reporting process. The second group of tools includes changes in real business transactions. Excessive use of these tools distorts the true financial performance of a company. Then, financial statements are less informative, increasing the difficulty of a company's proper risk assessment.

Earnings management is usually observed via proxies. No company informs about activities aimed at the performance manipulation. The existing literature pro-

poses several models to proxy for earnings management. First, there are several methods to detect accrual-based earnings management. Accruals are differences between earnings and cash flows. Up to a certain level, accruals appear in financial reporting during normal business activities. Depreciation of fixed assets is one example of an accrual. Hence, not all kinds of accruals are a consequence of earnings manipulation aimed at misleading stakeholders. Following this, nondiscretionary (normal) accruals are estimated with annual cross-sectional regressions. Then, they are compared to the actual accruals reported in financial statements to get discretionary accruals that proxy for accrual-based earnings management.

Real earnings management relates to cash flow from operations, production costs, and discretionary expenses (Cohen et al., 2008; Dechow et al., 1998; Roychowdhury, 2006; Zang, 2012). Abnormal cash flow from operations relates to earnings management via acceleration of sales timing. This usually happens through more lenient credit terms or favourable price discounts. Second, producing more products enables lower fixed costs per unit and higher operating margins and results in abnormal production costs. The third method of real earnings management assumes decreasing discretionary expenses. It allows a company to boost profits in the current reporting period and abnormal discretionary expenses should be observed. All of these activities influence several accounting items in financial statements at the same time, and earnings management detection methods enable us to detect such unusual activities. Normally, an increase in sales is connected with an increase in cash flow from operations. However, when companies boost sales to achieve target profits, the linear relation between sales and cash flow from operations is disturbed. This can be detected by deviations from normal levels of cash flow from operations. Similar steps of real earnings management detection relate to production costs and discretionary expenses. Hence, estimates of cash flow from operations, production costs, and discretionary expenses are compared to their actual level to get proxies of window-dressing manipulation. These real earnings management measures are called abnormal cash flow from operations, abnormal production costs, and abnormal discretionary expenses.

Real activities are perceived as more difficult to detect in comparison with accrual-based activities. However, they are usually more expensive, as they cause deviations from optimal financial decisions. This means that the availability and consequences of both earnings management tools may be related to corporate financial performance, including financial flexibility (Zang, 2012).

The relationship between cash holdings and earnings quality has been a significant line of research in the field of corporate finance in recent years. In the European setting, García-Teruel et al. (2009) analysed the relationship between accounting quality and cash holdings for firms listed on the Spanish stock exchange over the period from 1995 to 2001. They concluded that firms with good accrual quality had lower cash levels than firms with poor accruals quality. It might indicate that the quality of accounting information may reduce the negative effects of information

asymmetries and adverse selection costs. They showed that cash holdings decrease when firms use more bank debt in the presence of cash substitutes. Farinha et al. (2018) also discussed earnings quality as a determinant of corporate cash holdings. They emphasised the difference between profit- and loss- makers, and discuss the importance of the level of financial disclosure proxied by the market where firms are listed (Main or Alternative Investment Markets in the UK). Their results provided evidence that cash reserves are positively related to greater information asymmetry arising from poor earnings quality, but also from the existence of lower levels of regulatory oversight and the occurrence of losses. Furthermore, firms with lower earnings quality seemed to benefit from holding higher cash reserves by decreasing the dependence on costly external financing.

Here appeared also opposite arguments on the relationship between cash reserves and earnings quality. Companies with high cash holdings may be supposed to have better earnings quality, as they do not need to boost their financial performance. Thus, it is possible that companies with high cash holdings manage their earnings less. According to Myers and Majluf (1984), managerial flexibility assumes that managers hold cash to exploit uncertain future investment opportunities for the benefit of shareholders (Chung et al., 2015). Additionally, the research of Dittmar et al. (2003) has shown that firms hold larger cash reserves when they have easier access to funds, especially in countries with poor shareholder protection.

In the presence of strong information asymmetry, external financing tends to become more costly or even unavailable. Cash buffers would help to mitigate financial constraints. Companies with low cash holdings may be tempted to manage earnings more to meet financial market expectations. Thus, earnings management allows them to make their financial performance more favourable to obtain additional funds or avoid financial distress.

Different expectations about the relationship between cash holdings and earnings management can be driven from the managerial entrenchment hypothesis, which is in line with Jensen's approach. Self-interested managers can hoard cash to use it more for their own benefit than for the benefit of shareholders (Chung et al., 2015). Entrenched managers maintain large cash reserves to achieve their private goals at the expense of shareholders. This threat can be particularly dangerous and costly for shareholders if they are unable to effectively limit managers' access to free cash flow. Entrenched managers may also hold large cash reserves to pursue self-serving investment projects. This can be especially detrimental for company value when capital market monitoring is limited. Earnings management could be used then to hide the negative, value-destroying effects of such self-serving investments as it allows managers to report positive results. Thus, when the entrenchment hypothesis is valid, we should observe a positive relation between cash holdings and earnings management.

The existing literature constituted a background to define the research gap in order to exploit it in this empirical study. It also allowed us to develop the following hypotheses:

H1: Accrual-based earnings management strategy differs between companies with low and high cash holdings.

H2: Real earnings management strategy differs between companies with low and high cash holdings.

Research methods

The research sample includes non-financial companies listed on the Warsaw Stock Exchange (WSE) in Poland. The data sample was obtained from the Capital IQ database and the Notoria Serwis database. The research period is 2005–2020. Industries were defined according to the Global Industry Classification Standard (GICS).

In the existing literature, there are several models to proxy for earnings management. This empirical research applied several of them, including two general groups of tools to influence earnings. The first group of measures allows us to detect accrual earnings management that involves intervention in the reporting process through accrual adjustments. The second group of measures relates to real earnings management via influencing business transactions.

First, proxies based on accruals are used (Ball & Shivakumar, 2005, 2006; Dechow & Dichev, 2002; Jones, 1991; McNichols, 2002). The starting point is the decomposition of accruals into nondiscretionary (NDACC) and discretionary (DACC). Nondiscretionary (normal) accruals are estimated with annual cross-sectional regressions. Then, this normal level of accruals is compared to accruals reported in financial statements to get the abnormal part of accruals (discretionary accruals, DACC) that proxies for earnings management.

The Jones model allows us to estimate non-discretionary accruals (Jones, 1991):

$$NDACC_{i,t}^{J} = \alpha_{i,1}\left(\frac{1}{A_{i,t-1}}\right) + \alpha_{i,2}\left(\triangle REV_{i,t}\right) + \alpha_{i,3}PPE_{i,t} + \varepsilon_{i,t},$$

where: $A_{i,t-1}$ is lagged total assets, $\triangle REV_{i,t}$ is the change in revenues, $PPE_{i,t}$ is property, plant and equipment.

Robustness of results is checked with the modified Jones model (Dechow et al., 1995):

$$NDACC_{i,t}^{mJ} = \alpha_{i,1}\left(\frac{1}{A_{i,t-1}}\right) + \alpha_{i,2}\left(\triangle REV_{i,t} - \triangle REC_{i,t}\right) + \alpha_{i,3}PPE_{i,t} + \varepsilon_{i,t},$$

where: $\triangle REC_{i,t}$ – change in receivables.

A similar procedure is repeated to detect real earnings management that influences the level of cash flow from operations (CFO), production costs (PROD), and discretionary expenses (DISX) (Cohen et al., 2008; Dechow et al., 1998; Roychowdhury, 2006; Zang, 2012). We estimate expected (normal) cash flow from operations, expected production costs, and expected discretionary expenses with annual cross-sectional models. Then, the estimates are compared with their actual level to get proxies of real earnings management, i.e. abnormal cash flow from operations (ACFO), abnormal production costs (AROD), and abnormal discretionary expenses (ADISX).

Cross-sectional regressions for normal cash flow from operations are run according to:

$$\frac{CFO_{i,t}}{A_{i,t-1}} = \alpha_{i1}\left(\frac{1}{A_{i,t-1}}\right) + \alpha_{i2}\frac{REV_{i,t}}{A_{i,t-1}} + \alpha_{i3}\frac{\triangle REV_{i,t}}{A_{i,t-1}} + \varepsilon_{i,t},$$

Normal production costs are modelled as:

$$\frac{PROD_{i,t}}{A_{i,t-1}} = \alpha_{i1}\left(\frac{1}{A_{i,t-1}}\right) + \alpha_{i2}\frac{REV_{i,t}}{A_{i,t-1}} + \frac{\triangle REV_{i,t}}{A_{i,t-1}} + \frac{\triangle REV_{i,t-1}}{A_{i,t-1}} + \varepsilon_{i,t},$$

Normal discretionary expenses are estimated according to:

$$\frac{DISX_{i,t}}{A_{i,t-1}} = \alpha_{i1}\left(\frac{1}{A_{i,t-1}}\right) + \alpha_{i2}\frac{REV_{i,t-1}}{A_{i,t-1}} + \varepsilon_{i,t},$$

Models for normal accruals, cash flow from operations, production costs, and discretionary expenses include intercepts (Kothari et al., 2005; Yoon et al., 2022; Zang, 2012). Components of models are scaled by lagged assets to mitigate heteroskedasticity. Outliers of individual financial categories were eliminated. The boundaries were defined based on the interquartile range.

The higher the discretionary accruals (DACC), the more firms boost their earnings and the lower the quality of financial reports in the reporting period. Boosting earnings via higher discretionary accruals influences also the informativeness of financial statements in the surrounding periods. If companies abuse discretionary accruals to inflate earnings to target levels, it will usually be followed by a decrease in discretionary accruals in subsequent periods. On the other hand, companies can anticipate the necessity to have higher earnings in the future and reduce discretionary accruals in advance. All these excessive shifts in discretionary accruals between periods disturb the informativeness of financial reports. Hence, this research also involves the absolute value of discretionary accruals (absDACC). This allows us to capture activities aimed at earnings management or observe their consequences in the surrounding periods. The higher absolute discretionary accruals are, the less informative financial statements are.

Three individual measures of real earnings management (ACFO, AROD, and ADISX) proxy for deviations from transparent reporting. The difference between

reported and normal levels of cash flow from operations is multiplied by negative one. The same procedure is repeated for discretionary expenditures (Kim & An, 2018). In consequence, higher levels of ACFO, APROD or ADISX are related to lower quality of earnings. Next, absolute values of individual real earnings management measures are estimated to catch total effect of downward and upward earnings manipulation (absCFO, absPROD, and absADISX). In the next step, three individual measures of real earnings management are standardised and summed, giving aggregated measures of total real earnings management. TREM1 sums standardised ADISX and standardised APROD. TREM2 reflects the effect of standardised ACFO and standardised ADISX. TREM3 summarises the effect of standardised ACFO, standardised APROD, and standardised ADISX. A higher level of absolute and aggregated measures of real earnings management reflects poorer transparency of financial reports.

The level of cash holdings is related to the industry in which the company operates. The need for financial flexibility is not only industry specific but also changes over time. These factors are included in the research procedure. Relative cash levels were compared to the industry median in a given year. Each company was assigned to one of two groups, depending on the financial flexibility level. Companies with cash levels below (above) medians were assigned to the group named low (high) cash holders. For these groups, we compare the differences in discretionary accruals (DACC), absolute discretionary accruals (absDACC), abnormal cash flow from operations (ACFO), abnormal production costs (APROD), abnormal discretionary expenses (ADISX) and their absolute levels (abs ACFO, absAPROD, absADISX) and total real earnings management proxies (TREM1, TREM2, and TREM3). Parametric and non-parametric test were used to test statistical significance. The normality of the distribution was checked with the Shapiro–Wilk test. Statistical significance of average earnings management measures was checked with the parametric *t*-Student test for the mean and the non-parametric Wilcoxon test. The significance of differences in the distribution between the groups was checked using tests for independent samples: the parametric *t*-Student test (equality of variance in the research groups was assumed) and the non-parametric Mann–Whitney test.

Results

Measures of earnings management estimated for non-financial firms on the Warsaw Stock Exchange were compared between groups of companies with low and high cash holdings. Considering p-values for the Shapiro–Wilk test, mostly medians and differences in medians are interpreted in this research. Empirical results for discretionary accruals (estimates according to the Jones model and the modified Jones model, DACC(J) and DACC(mJ)) and absolute discretionary accruals (estimates according to the Jones model and the modified Jones model, absDACC(J), and absDACC(mJ)), are detailed in Table 1 and Table 2, respectively.

Table 1. Raw measures of accrual earnings management

Description	Cash holdings		Difference High – Low
	Low	High	
Panel A: DACC(J) according to Jones model			
Mean	-0.001	0.008	0.008
p-value (parametric test)	0.914	0.298	0.366
Median	0.003	-0.003	-0.006
p-value (non-parametric test)	0.751	0.949	0.890
p-value (Shapiro–Wilk)	0.000***	0.000***	x
N	3,547	2,006	x
Panel B: DACC(mJ) according to modified Jones model			
Mean	0.000	0.007	0.007
p-value (parametric test)	0.986	0.292	0.386
Median	0.004	-0.002	-0.006
p-value (non-parametric test)	0.887	0.855	0.937
p-value (Shapiro–Wilk)	0.000***	0.000***	x
N	3,531	1,991	x

*p-value < 0.1; **p-value < 0.05; ***p-value < 0.01

Source: Authors' own study.

Table 2. Absolute measures of accrual earnings management

Description	Cash holdings		Difference High – Low
	Low	High	
Panel A: absDACC(J) according to Jones model			
Mean	0.180	0.192	0.013
p-value (parametric test)	0.000***	0.000***	0.083*
Median	0.094	0.103	0.009
p-value (non-parametric test)	0.000***	0.000***	0.013**
p-value (Shapiro–Wilk)	0.000***	0.000***	x
N	3,547	2,006	x
Panel B: absDACC(mJ) according to modified Jones model			
Mean	0.165	0.175	0.010
p-value (parametric test)	0.000***	0.000***	0.106
Median	0.091	0.100	0.009
p-value (non-parametric test)	0.000***	0.000***	0.014**
p-value (Shapiro–Wilk)	0.000***	0.000***	x
N	3,531	1,991	x

*p-value < 0.1; **p-value < 0.05; ***p-value < 0.01

Source: Authors' own study.

Average discretionary accruals were not significant either for companies with low or high levels of cash holdings. Proxies for accrual-earnings management were positive but statistically insignificant. The differences between companies holding small or big cash reserves were neither statistically significant. There is no evidence that companies with different cash holdings levels have different strategies aimed strictly at boosting or lowering earnings. However, a more detailed analysis of

earnings management strategies based on unsigned values of discretionary accruals allows us to draw interesting conclusions. First, median values of absDACC were statistically significant in both groups of companies. It seemed that the transparency of financial statements was disturbed for both groups of companies. Profits reported for firms with relatively high and low cash reserves were opaque to some extent.

Differences in absolute discretionary accruals reported for firms with relatively high and low cash reserves were statistically significant. This indicates that the informativeness of financial statements for cash holders was poorer. Comparison of the results for DACC and absDACC allows us to suspect that shifts of accruals between periods to achieve target earnings could be aimed either at boosting or lowering the original profits, depending on corporate goals. It should be noted that this observation, when based on absolute values, does not allow us to exaggerate the motives of earnings management to support either Mayers and Majluf's or Jensen's approach. Some companies could boost profits to hide agency costs and convince stakeholders about the proper use of accumulated cash reserves. Other companies could report lower profits because of the reversals of discretionary accruals used in previous periods. Both such strategies could be reflected in the differences in the absolute values of DACCs. The overall findings on accrual earnings management support Hypothesis 1.

In the next step, proxies for real earnings management were observed for groups of companies with low and high relative cash holdings. Empirical results for individual measures are detailed in Table 3. They include estimates of abnormal cash flow from operations (ACFO), abnormal production costs (APROD), and abnormal discretionary expenses (ADISX). Table 4 reports on absolute values of these measures (absACFO, absAPROD, and absADISX). Detailed results for aggregated measures are shown in Table 5. Standardised aggregated measure 1 (TREM1) sums the effect of abnormal production costs (APROD) and abnormal discretionary expenses (ADISX). Standardised aggregated measure 2 (TREM2) reflects the total effect of abnormal cash flow from operations (ACFO) and abnormal discretionary expenses (ADISX). Standardised aggregated measure 3 (TREM3) combines the effect of abnormal cash flow from operations (ACFO), abnormal production costs (APROD) and abnormal discretionary expenses (ADISX). All proxies for real earnings management were compared between groups of companies with low and high relative cash reserves.

Table 3. Raw individual measures of real earnings management

Description	Cash holdings		Difference High – Low
	Low	High	
Panel A: Individual measure 1 (ACFO)			
Mean	-0.047	-0.113	-0.066
p-value (parametric test)	0.000***	0.000***	0.000***
Median	-0.026	-0.053	-0.027
p-value (non-parametric test)	0.000***	0.000***	0.000***
p-value (Shapiro–Wilk)	0.000***	0.000***	x
N	4,202	2,267	x

Description	Cash holdings		Difference High – Low
	Low	High	
Panel B: Individual measure 2 (APROD)			
Mean	0.803	0.859	0.057
p-value (parametric test)	0.000***	0.000***	0.017**
Median	0.657	0.722	0.065
p-value (non-parametric test)	0.000***	0.000***	0.037**
p-value (Shapiro–Wilk)	0.000***	0.000***	x
N	3,323	1,706	x
Panel C: Individual measure 3 (ADISX)			
Mean	-1.356	-6.442	-5.086
p-value (parametric test)	0.017**	0.008**	0.040**
Median	0.076	0.110	0.034
p-value (non-parametric test)	0.000***	0.000***	0.000***
p-value (Shapiro–Wilk)	0.000***	0.000***	x
N	4,260	2,323	x

*p-value < 0.1; **p-value < 0.05; ***p-value < 0.01

Source: Authors' own study.

Table 4. Absolute individual measures of real earnings management

Description	Cash holdings		Difference High – Low
	Low	High	
Panel A: Absolute individual measure 1 (absACFO)			
Mean	0.192	0.276	0.084
p-value (parametric test)	0.000***	0.000***	0.000***
Median	0.087	0.114	0.027
p-value (non-parametric test)	0.000***	0.000***	0.000***
p-value (Shapiro–Wilk)	0.000***	0.000***	x
N	4,202	2,267	x
Panel B: Absolute individual measure 2 (absAPROD)			
Mean	0.822	0.897	0.075
p-value (parametric test)	0.000***	0.000***	0.001**
Median	0.663	0.728	0.065
p-value (non-parametric test)	0.000***	0.000***	0.006**
p-value (Shapiro–Wilk)	0.000***	0.000***	x
N	3,323	1,706	x
Panel C: Absolute individual measure 3 (absADISX)			
Mean	3.091	7.425	4.334
p-value (parametric test)	0.000***	0.002**	0.080*
Median	0.194	0.224	0.030
p-value (non-parametric test)	0.000***	0.000***	0.000***
p-value (Shapiro–Wilk)	0.000***	0.000***	x
N	4,260	2,323	x

*p-value < 0.1; **p-value < 0.05; ***p-value < 0.01

Source: Authors' own study.

Table 5. Standardised aggregated measures of real earnings management

Description	Cash holdings		Difference High – Low
	Low	High	
Panel A: Standardized aggregated measure 1 (TREM1)			
Mean	0.314	0.400	0.087
p-value (parametric test)	0.000***	0.000***	0.025**
Median	0.095	0.199	0.104
p-value (non-parametric test)	0.000***	0.000***	0.031**
p-value (Shapiro-Wilk)	0.000***	0.000***	x
N	3,298	1,702	x
Panel B: Standardized aggregated measure 2 (TREM2)			
Mean	-0.041	-0.293	-0.252
p-value (parametric test)	0.037**	0.000***	0.000***
Median	0.046	-0.052	-0.098
p-value (non-parametric test)	0.001**	0.000***	0.000***
p-value (Shapiro–Wilk)	0.000***	0.000***	x
N	4,167	2,256	x
Panel C: Standardized aggregated measure 3 (TREM3)			
Mean	0.278	0.211	-0.067
p-value (parametric test)	0.000***	0.000***	0.194
Median	0.042	0.036	-0.006
p-value (non-parametric test)	0.000***	0.000***	0.213
p-value (Shapiro–Wilk)	0.000***	0.000***	x
N	3,285	1,676	x

*p-value < 0.1; **p-value < 0.05; ***p-value < 0.01

Source: Authors' own study.

The median values of individual measures of real earnings management suggest that cash holders boosted earnings via reducing fixed costs per unit or savings on discretionary expenses. This resulted in positive and statistically significant differences in APROD and ADISX. Unsigned proxies for real earnings management suggest that the financial reports of companies with higher relative cash holdings were less informative. It was related to artificial sales volume increases, reducing fixed costs per unit or savings on discretionary expenses in current or surrounding periods. The negative and statistically significant differences for ACFO suggest that companies with lower cash holdings managed earnings more via inflating sales in the current period. This pattern is also reflected in the differences between the comprehensive measure TREM2. Such results may suggest that companies managed earnings via real transactions along with more complex strategies, implementing only selected tools, instead of using all opportunities to the maximum extent. Taking all the findings on real-based reporting quality together, we find support for the predictions of Hypothesis 2.

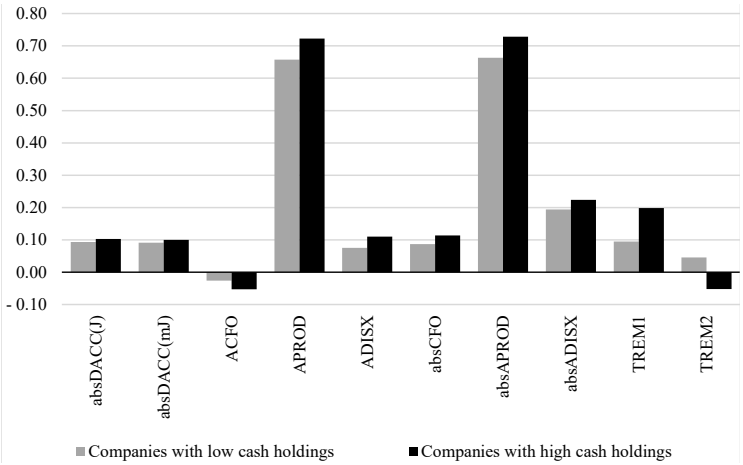

Figure 1. Median measures of accrual and real earnings management

Source: Authors' own study.

Figure 1 illustrates median accrual and real earnings management proxies. It plots only measures with statistically significant differences in transparency of financial reports between companies with low and high cash holdings.

This research suggests that Polish listed companies showed a lower quality of reports when they have high cash reserves. Our results are consistent with García-Teruel et al. (2009) and Islam et al. (2022) who provide evidence that better earnings quality minimises the level of cash reserves. Similarly, Sun et al. (2012) show that poor earnings quality has a positive relationship with corporate cash holdings.

Conclusions

Management of cash reserves is an important factor in short- and long-term corporate finance strategy. Business competition forces companies to optimise cash reserves, trading off the benefits and costs of too meagre or exaggerated cash buffers. Accrual- or real-based earnings management activities relate to the quality of financial reports. Hence, they are very important for the proper assessment of company risk and return by stakeholders. This research discusses differences in earnings management strategies between companies with high and low cash reserves. This issue is present in the corporate finance and accounting literature, but it has not hitherto been analysed for public companies in Poland.

This study supports the hypotheses that there are differences in both accrual-based and real earnings management strategies between companies with low and high cash buffers. The empirical results show a lower quality of financial statements for more conservative cash holders. These companies managed earnings to a greater extent

than companies with lower cash reserves. Statistically significant differences were reported for all absolute measures of earnings management.

Considering the lack of statistically significant differences in raw discretionary accruals, it seems that the motives for earnings management can be different between conservative and aggressive cash holders, as well as the direction of earnings management. If, according to Jensen's theory, cash surplus is related to agency costs, then managers of cash holders will be under pressure to show good financial performance. This would justify the adequacy of exaggerated cash holdings and more aggressive earnings management strategies would be observed, resulting in lower quality of financial reports. On the other hand, the discussion of the empirical results could follow the arguments of Myers and Majluf (1984). If cash holdings give temporary independence from the capital market, a lower propensity to employ aggressive earnings management should be observed when cash buffers are relatively bigger.

An important observation is the differentiation of strategies regarding the use of real earnings management tools. Companies with high cash holdings can choose the ways of influencing their financial performance by earnings management. This research shows statistically significant evidence that cash holders boosted their earnings by reducing discretionary expenses and fixed costs per unit more than companies with an aggressive approach to cash management.

This study would be remiss without at least identifying the limitations of this research that need to be addressed in future analyses. The first extension of this empirical study could take into account other determinants of cash reserves, such as debt level or dividend policy. Next, the research uses a one-item relative measure that proxies for cash reserves. Measures of cash management can also be expanded to include other dimensions of financial flexibility. This research was mainly focused on offering wide-ranging possibilities of robustness checks in the area of management earnings proxies. This was because of the research hypotheses that aimed to discuss earnings management strategies.

Some theories indicate that management of both cash holdings and profits is sensitive to the macroeconomic situation. Including changes in the macroeconomic situation that may affect corporate decisions could be another possibility to contribute. Further research could provide new insights into the issue, and aim at analysing sub-periods of bull and bear markets and the impact of market situation on the propensity to manipulate company financial performance. The existing literature, especially for European countries, suffers from a lack of such studies. Our study seeks to contribute conclusions for a long research period as the sample period covered the years 2005–2020.

Next, the sample for this research is drawn from companies listed on the stock exchange in Poland. The results probably cannot be generalised to smaller companies that are not quoted on any exchange. Although it is not a limitation *per se*, smaller firms are largely unique in their capital structure or investment decisions.

Finally, given the research approach used in this study, the empirical results provide detailed evidence on the relationship between cash reserves and earnings quality.

In order to understand the direct consequences for shareholders, other approaches including equity market value are needed.

Within the limitations discussed above, this research contributes to the area of corporate finance and accounting by showing cash-related differences in earnings management strategies. These limitations may be a starting point to develop new ideas of further research. More theoretical and empirical research can and should be done to provide a fuller picture of cash and earnings management strategy.

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