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The Effect of Cash Holdings on Financial Performance in German and Dutch Multinationals

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Abstract:
Aim: A global rise in inflation has sparked a renewed interest in the matter of cash holding decisions in firms. Increasing inflation makes for different cash holding practices, but the effect of cash holdings on firm performance remains unclear. This study aims to determine what the effect of higher cash holdings is on financial performance in German and Dutch multinational corporations (MNCs)

Design / Research methods: The sample consists of 105 MNCs, 69 of which are from Germany, while 36 firms are Dutch. Through a standard OLS regression, financial performance, measured in return on assets, is regressed on cash holdings, measured in a cash-to-assets ratio.

Conclusions / findings: A negative relationship is found between cash holdings and financial performance. This is because agency costs are more considerable when pools of cash become larger. Moreover, the relationship is significantly negative in the German subsample, but not in the Dutch subsample. This could be explained by differences in masculinity in national culture.

Originality / value of the article: The effect of cash holdings on firm performance has been neglected in the literature. By focusing on two similar countries, and introducing national culture into the discussion of cash management, the study is valuable to both management and literature.

Limitations: Research design is rather limited. Findings are preliminary, and need to be verified through the use of more extensive studies.

Keywords: Cash Holdings, Firm Performance, National Culture
JEL: G30

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1. Introduction

In recent times, considerable attention has been paid to the high rates of inflation developing world-wide. For instance, Statistics Netherlands (CBS) has reported an inflation rate of 6.4% and 6.2% in January and February of 2022 respectively (Statistics Netherlands 2022). As goods and services become increasingly expensive, both consumers and firms alter their saving and spending habits. In fact, research by Frenkel (1976) has shown that, in the face of inflation, firms firstly increase cash holdings, but later decrease them, as price expectations adjust.

Cash holdings form a buffer against changing economic conditions and operating costs. Therefore, when prices rise, firms firstly increase cash and cash equivalents to avoid financial distress. Additional cash helps the firm to maintain business operations and to avoid the cost of raising new capital. Nevertheless, while cash holdings benefit the firm, they can also result in inefficiency. Large cash holdings can create agency costs, as they provide managers with the opportunity to invest in projects that might reduce firm value (Awan et al. 2020). Moreover, holding cash rather than paying out dividends can pose a tax disadvantage. This makes that cash management involves a trade-off between advantages and disadvantages.

There is an added difficulty for multinationals, regarding this matter. International firms face additional risk, as they operate in multiple environments. While a domestic firm faces one inflation rate in one single economy, multinational firms encounter multiple economies, all of which carry different inflation rates and different ways of coping with inflation. This increased risk, as well as a higher potential for agency costs, makes decisions on cash holdings for multinational corporations (MNCs) even more relevant for their continuity.

In light of this complexity, it is imperative for managers to know the potential effects of their cash management decisions on the firm. The effect of cash holdings on firm value has been studied thoroughly. For instance, research has found that investors value higher cash amounts, since higher reserves can point to improved recent performance (Vasilakopoulos et al. 2018). The market for financial resources is deemed inefficient, meaning that raising cash externally is costly. Therefore, shareholders perceive a raise in cash holdings as an increase in firm value. But, while

the increase in firm value is a relevant benefit of cash holdings, it is simply a manifestation of investors' sentiment.

A consideration that is more frequently emphasized by investors, when making investment decisions, is the degree to which the firm is profitable. The interest then lies in the effect of cash holding decisions on financial performance. La Rocca et al. (2019) have confirmed that an increase in cash holdings leads to improved financial performance in small and medium businesses in Europe. However, it was established earlier that multinationals face greater difficulty in cash holding decisions, due to added risk. Therefore, the question this study aims to answer is: How does the amount of cash holdings in multinational corporations based in the Netherlands and Germany influence their financial performance?

The effect of cash holdings on financial performance is expected to be positive. This is, firstly, because transaction costs are avoided when cash remains in the company, as proposed by Keynes (1936). Secondly, cash holdings are a pre-caution for any financial distress. This means, for example, that if the MNC faces higher costs because of an exchange price increase, it has enough cash available in order to bear the increased costs. Lastly, cash holdings provide added flexibility for the MNC to pursue new projects, which yields opportunities to generate extra profits.

Determinants of cash holdings have been researched extensively. Authors have shown that the amount of cash holdings depends greatly on cash flow volatility and investment uncertainty (Acharya et al. 2012). Moreover, differences in cash holdings and dividend payout between firms have been linked to differences in shareholder protection (LaRiviere et al. 2018). This implies that cash holdings can be influenced by the markets in which firms are active. The effect of cash holdings on financial performance is likely to vary between countries as well, as cash allows a firm to cope with risk, and risk differs between business environments. Moreover, culture plays a considerable role in how firms are set up, and therefore a firm's structure depends on its country of origin. Accordingly, this study will specifically focus on two European countries, namely Germany and the Netherlands. These two countries have long-standing roots in Protestantism, which makes that they are relevant to the discussion, as Protestantism is shown to negatively influence cash holdings (Hu et al. 2019). Furthermore, the Netherlands and Germany are considerably similar when it comes

to other characteristics. Both countries are members of the European Union, and they have similar GDP growth and comparable political and legal systems. One considerable point of difference is the disparity in population number. Population numbers, however, are not likely to have a significant influence on cash holdings in multinationals, making that the discrepancy is irrelevant for this study. Therefore, the two countries still make for a valuable combination.

In doing this, the study will contribute to an understanding for MNCs' managers of the effect of their cash management decisions on the firms' financial performance. While determinants, as well as the value of cash holdings have been researched thoroughly, its effects on financial performance have not received enough attention. By focusing on Germany and the Netherlands and using recent data, this study will supplement existing literature with a new perception. This ensures that financial managers are adequately informed to make the right decisions regarding cash holding.

The rest of this paper will be structured as follows. In section 2, existing literature is examined and a hypothesis is developed. Then, in section 3, the data utilized in the study, as well as the sample and variables are described. The methodology of the study will be explained in section 4, and its results in section 5. Lastly, section 6 entails a discussion, after which section 7 will conclude the paper.

2. Literature review

In this section, existing literature on the topic of cash holdings and firm performance will be described. Beginning with determinants of cash holdings, subsection 2.1 will discuss the effect of cash holdings on financial performance. Following this, subsection 2.2 will examine the added layer of nationality. Lastly, subsection 2.3 will discuss multinationalism, after which a hypothesis is developed.

2.1. The effect of cash holdings on financial performance

As mentioned before, the effect of cash holdings on firm value has been researched thoroughly. This started with Keynes (1936), who established that firms hold cash to avoid the transaction costs of raising new capital. Internal financing is

thus less costly than external financing, making it more attractive. This preference is strengthened by the pecking order theory, which states that firms first turn to internal financing through cash, then move to debt, and if nothing else is possible, rely on equity to raise funds to finance an investment. This line of reasoning results in the fact that investors perceive cash holdings as valuable for the firm.

Retaining cash is valuable to managers as well. Higher cash holdings make for financial flexibility, so that managers are able to invest in opportunities as they come (Nerantzidis 2018). Furthermore, cash holdings can help avoid financial distress in difficult times. Cash reserves help firms cope with higher costs of financing, or economic hardship (Habib et al. 2021). Thus, retaining cash can act as a precaution (Boot, Vladimirov 2019). These motives provide additional reasons as to why cash holdings provide value for the firm.

Based on these arguments, La Rocca et al. (2019) have examined whether the positive effect of cash holdings on firm value also transcends onto financial performance. In their study, focusing on small and mid-sized European firms, they have confirmed that cash buffers positively influence financial performance of small and mid-sized firms in Europe. The following preliminary hypothesis then results from previous arguments: Higher cash holdings have a positive effect on financial performance.

Nonetheless, one could also argue the other way around. There are added agency costs involved in the holding of large amounts of cash, as managers could use the cash for their personal gain (Awan et al. 2020). It could encourage managers to invest in low-NPV or even negative-NPV projects (Li et al. 2019). This implies that the benefit of retaining cash reduces as cash holdings become larger and larger. However, a study by La Rocca et al. (2019) shows that these negative aspects makes less of an impact on financial performance, since the net effect of cash holdings is still positive. Therefore, cash holdings are even so expected to positively influence financial performance.

2.2. The influence of nationality on cash holding decisions

Previous research has found a number of determinants when it comes to cash holdings. Many of these determinants are location-bound. Examples of country-

specific determinants of cash holdings are shareholder protection (LaRiviere et al. 2018) and GDP growth (Fernandes, Gonenc 2016). Moreover, research has found that firms adjust their cash holdings based on litigation risk (Malm, Kanuri 2017) and corruption (Thakur, Kannadhasan 2019). These determinants confirm that cash holdings can depend on a firm's country of origin.

Another determinant refers to religion. Hu et al. (2019) have determined that protestant values influence cash holdings negatively. Protestantism values a hard-working ethic, meaning that management uses cash to invest in less-risky projects or to pay out to shareholders, and is not likely to use it for personal gain or reckless investments. This means that agency costs are lower in predominantly protestant countries. It was mentioned earlier that agency costs increase when cash holdings are higher, implying that firm performance deteriorates as a result of agency costs. In protestant countries, however, this negative effect of agency costs should be limited.

Nonetheless, Protestantism is associated with uncertainty avoidance. This not only manifests in managers taking less risks, but can also result in them taking more precautions in uncertain times. For example, with recent high inflation rates, managers from protestant countries might be inclined to retain more cash than managers from non-protestant countries would be. Thus, cash holding strategies of firms originating from protestant countries are likely to differ significantly from those of others. This study focuses on two predominantly protestant countries, namely Germany and the Netherlands.

2.3. Multinationalism and cash holdings

Since cash holdings act as a precaution for uncertain times, cash management is even more relevant for multinationals. MNCs face multiple markets, contributing to increased risk in the form of exchange risks, as well political and institutional risks, etc. The result of this is that cash management decisions may hold more weight in MNCs, than in non-MNCs. Yet, it also makes that the more a firm diversifies, the more risk is spread. In fact, Fernandes and Gonenc (2016) have established that the more an MNC diversifies, the lower its cash-to-assets ratio will be. The same reasoning can be found when it comes to capital structure in multinationals. Aggarwal and Kyaw (2010) have found that multinationalism decreases the amount of debt that

firms relatively have. Moreover, Pinkowitz et al. (2016) found differences in cash holdings between MNCs and domestic firms, when looking at the differences in cash holdings between US and non-US firms. Because of this difference, it is probable that the effect of cash holdings on financial performance also differs. This makes that it is important to focus this study on multinationals. Following this discussion, the preliminary hypothesis can now be updated to Hypothesis 1:

Hypothesis 1: Higher cash holdings of multinational corporations incorporated in Germany and the Netherlands have a positive effect on financial performance.

3. Data

In order to be able to either confirm or reject the hypothesis, it is necessary to be able to measure the relevant variables. This section will firstly explain the data source, and the sample used in the study. In subsection 3.2, the variables will be operationalized. Lastly, subsection 3.3 will provide descriptive statistics on the variables.

3.1. Sample

The sample data is retrieved from Reuter's Refinitiv Eikon database. The interest of the study lies in public firms incorporated in the Netherlands and Germany. To make the study feasible, focus is put on firms whose yearly sales exceed 1 billion US Dollars. These firms have larger pools of cash, making the costs and benefits of holding cash more considerable. From these criteria, 123 firms were obtained, and then filtered for multinationalism, by examining their annual reports. Out of the 123 firms, 11 firms were not multinationals, and 7 multinationals lacked the data required, resulting in a final sample of 105 firms.

The data is taken for a period of 10 years, ranging from 2012 to 2021. This time frame is extensive enough to find significant effects, yet does not contain any influence of the recession of 2008 and onwards. This makes for a final number of 1,050 firm-year observations. Out of the 105 firms, 69 firms were incorporated in

Germany, while 36 were incorporated in the Netherlands. This makes for a sample of 690 German observations (66%) and 360 Dutch observations (34%).

3.2. Variables

The dependent variable of the study is financial performance, which will be measured by return on assets (ROA). ROA is calculated as the net income divided by the total assets of the firm. In order to measure the independent variable of cash holdings, a cash-to-assets ratio is used. This is computed as the total of amount cash and cash equivalents divided by total assets. This cash ratio is preferred over the value of total cash and equivalents, because the measure is relative to firm size. This makes the amount of cash holdings comparable between firms.

A number of control variables are included, in order to reduce possible omitted variable bias. Three control variables are used, namely on firm size, firm age and on leverage. The first control variable is firm size, measured by the total of the firm's assets. Secondly, a variable on firm age is used, defined as the number of years that the firm has been incorporated. In the database of Eikon, the firm age of only 40% of observations was available. Therefore, the other 60% was supplemented manually by examining firm history online. Lastly, a variable on leverage in the form of the debt-equity ratio is used. This debt-equity ratio is calculated by dividing the total debt of the firm by the total shareholders' equity. All three control variables are given a natural logarithm, in order to obtain meaningful coefficients.

3.3. Data description

The variables utilized in the regression are summarized in Table 1 below. On average, the firms in the sample have a return on assets of 3%, with a standard deviation of 7.3%. The average firm maintains a cash ratio of 10.9% of cash on assets, holding a standard deviation of 10%. Total assets are on average 22.7 billion US Dollars, and the average firm age is 53 years. Lastly, the debt-equity ratio of the average firm is 1.02. It is important to highlight that the distributions of the variables are significantly different from the normal distribution, based on the skewness and kurtosis measures shown in Table 1. This problem is partially solved by the natural logarithm for the control variables, especially for Debt-Equity Ratio. This variable's

Table 1. Descriptive statistics

Variables	Obs	Mean	Std. Dev.	Min	Max	Skew.	Kurt.
Return on Assets	1011	0.030	0.073	-0.736	0.242	-4.150	36.503
Cash Ratio	1009	0.109	0.100	0.000	0.799	2.756	15.034
Total Assets (In Billions)	1012	22.716	60.558	0.027	515.612	4.723	29.500
Firm Age	1023	52.888	57.108	0.000	353.000	1.985	8.603
Debt-Equity Ratio	968	102.103	308.139	0.021	8309.630	20.762	529.089

Source: author's own elaboration

skewness is reduced to -1.21 and its kurtosis is brought back to 6.60. While a natural logarithm creates some normality to the distribution of variables, Return on Assets and Cash Ratio will not be treated with it. This is because it results in less meaningful regression coefficients when regressing ROA on the independent variables.

Table 2 compares the numbers of observation, means and standard deviations between Germany and the Netherlands. Full tables on both countries can be found in the Appendix, namely in Tables A1 and A2. On average, the Dutch multinationals in the sample have a higher return on assets, with 3.6% as opposed to 2.7%. Furthermore, the average cash ratio for Dutch multinationals is 11.2%, while German multinationals average around 10.7%. However, because German firms are better represented in the sample, the overall averages resemble German averages more closely. Total assets and debt-equity ratio are both on average higher in Dutch firms. Nevertheless, in the sample, German firms are older on average.

Table 2. Observations, mean and standard deviation for subsamples

Germany	Obs	Mean	Std. Dev.	Netherlands	Obs	Mean	Std. Dev.
Return on Assets	657	0.027	0.079	Return on Assets	354	0.036	0.058
Cash Ratio	657	0.107	0.089	Cash Ratio	352	0.112	0.117
Total Assets (In Billions)	658	21.860	63.405	Total Assets (In Billions)	354	24.308	54.928
Firm Age	668	58.602	65.044	Firm Age	355	42.135	35.587
Debt-Equity Ratio	649	99.097	360.805	Debt Equity Ratio	319	108.216	152.981

Source: author's own elaboration

Table 3. Pairwise correlations

Variables	(1)	(2)	(3)	(4)	(5)
(1) ROA	1.000				
(2) Cash Ratio	-0.183	1.000			
	(0.000)				
(3) Log Total Assets	0.149	-0.168	1.000		
	(0.000)	(0.000)			
(4) Log Firm Age	0.158	-0.187	-0.086	1.000	
	(0.000)	(0.000)	(0.007)		
(5) Log Debt-Equity Ratio	-0.052	-0.204	0.289	0.044	1.000
	(0.109)	(0.000)	(0.000)	(0.177)	

Values in parentheses represent the significance of each correlation.
Source: author's own elaboration

Correlation coefficients between the variables used in the regression are displayed in Table 3. This correlation matrix is relevant for checking for multicollinearity. Multicollinearity is a high correlation between two independent variables, and can lead to biased results. Multicollinearity arises when correlation between two variables exceeds 0.7, which is not the case for the variables in this study. The highest correlation in the matrix is that between the logarithm of Total Assets and the logarithm of the Debt-Equity Ratio, which is 0.289. Therefore, there are no multicollinearity issues present.

4. Methodology

The purpose of the study is to determine whether there is a relationship between cash holdings and financial performance, and whether this relationship is positive or negative. This section will discuss what methods are utilized to achieve this purpose.

The goal of the study will be fulfilled through an ordinary least squares (OLS) regression, using STATA. Since the sample consists of firm-year observations, this regression should be a panel regression. Fixed effects or random effects could be included in the panel regression. To determine whether a fixed effects regression is

necessary, a Hausman test is conducted. This test indicates that fixed effects are not preferred over random effects. Since a random effects regression does not fit the purpose of the study, the study utilizes a standard ordinary least squares regression. Results of the Hausman test, as well as the results of the model if it were to include fixed effects or random effects, can be found in the Appendix Tables A5 through A7.

The ordinary least squares regression method assumes that the population model can be defined in a linear equation. The hypothesis to be tested expects a positive effect of cash holdings on financial performance. Therefore, for the purpose of this study, it is assumed that there is a linear relationship between the cash ratio and return on assets. Another assumption underlying the OLS technique is that the variance of the error term is not correlated with any independent variables. This assumption is satisfied by including a command for robustness, in order to correct for any heteroskedasticity issues. Lastly, independent variables cannot be highly correlated with each other. In Subsection 3.3, it was established that none of the independent variables were highly correlated. In order to verify this, variance inflation factor (VIF) scores of the independent variables are checked. These scores can be found in Appendix Table A3. None of the variables show a VIF score higher than 5, and therefore multicollinearity is indeed not a concern.

5. Results

In this section, the findings resulting from the regressions will be presented. Subsection 5.1 will discuss the results of the main regression model. Furthermore, subsection 5.2 highlights the results of the same model in the country subsamples. Lastly, the robustness of the results will be assessed through a sensitivity analysis in subsection 5.3. In Appendix Table A4, the univariate regression of ROA on cash ratio can be found, as well as Model 1, both with and without robust standard errors.

5.1. Main results

Results from the main regression are presented in Table 4. In Model 1, ROA was regressed on Cash Ratio and the three control variables for the sample as a whole.

Table 4. Main regression results

VARIABLES	Model 1
Cash Ratio	-0.187***
	(0.069)
Log Total Assets	0.007***
	(0.002)
Log Firm Age	0.009***
	(0.002)
Log Debt-Equity Ratio	-0.008**
	(0.004)
Constant	-0.109***
	(0.042)
Observations	941
R-squared	0.116

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.
Source: author's own elaboration

Model 1 was repeated within Germany and the Netherlands separately, and these results are displayed in Table 5.

Hypothesis 1 states that cash holdings should have a positive impact on financial performance. The regression results in table 4 confirm a relationship between return on assets and cash ratio. This relationship, however, is negative. The regression coefficient is significant at the 1% level, meaning that a rise of 1 percentage point in the ratio of cash holdings on total assets is expected to decrease return on assets by 0.187 percentage points. This makes that Hypothesis 1 is not confirmed.

All control variables are significant as well. At the 1% level, the logarithm of total assets has a significant, positive impact on ROA. This makes that if total assets increase by 1%, return on assets is expected to increase with 0.007 percentage points. Moreover, the logarithm of firm age has a positive effect on ROA, which is significant

at the 1% significance level as well. When firm age increases by 1%, return on assets in turn would increase with 0.009 percentage points. Lastly, the regression results indicate that the logarithm of debt-equity ratio significantly impacts return on assets negatively, at the 5% significance level. This means that when the debt-equity ratio of the multinational rises with 1%, ROA is expected to decrease with 0.008 percentage points.

Table 5. Regression results for both countries

VARIABLES	Model 2 Germany	Model 3 Netherlands
Cash Ratio	-0.290***	-0.020
	(0.094)	(0.039)
Log Total Assets	0.006***	0.005*
	(0.002)	(0.003)
Log Firm Age	0.009***	0.005*
	(0.003)	(0.003)
Log Debt-Equity Ratio	-0.008*	-0.015***
	(0.005)	(0.005)
Constant	-0.079*	-0.024
	(0.048)	(0.057)
Observations	630	311
R-squared	0.164	0.100

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.
Source: author's own elaboration

5.2. Country comparison

Table 5 shows that the regression results differ between the two countries. The model on Germany shows a significant, negative relationship between cash ratio and ROA. While the model on the Netherlands also displays a negative relationship, it is not significant. This means that neither of the two models can confirm Hypothesis 1, which is in line with Model 1. All control variables are significant, and have the same direction as the previous results. In the model on Germany, firm size and firm age

have a larger impact on ROA, while leverage has a larger impact in the model on the Netherlands.

Table 6. Sensitivity analysis

VARIABLES	Model 4 ROE	Model 5 ROA, Log Cash
Cash Ratio	-1.733***	
	(0.503)	
Log Total Assets	0.108***	0.022***
	(0.028)	(0.003)
Log Firm Age	0.106***	0.010***
	(0.040)	(0.002)
Log Debt-Equity Ratio	-0.216***	-0.007***
	(0.036)	(0.002)
Log Cash		-0.013***
		(0.002)
Constant	-1.730***	-0.203***
	(0.648)	(0.032)
Observations	941	941
R-squared	0.059	0.097

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.
Source: author's own elaboration

5.3. Robustness of results

While the relationship between cash ratio and return on assets is significant in Model 1 and 2, it is not in Model 3. This makes that a sensitivity analysis on the results would be fitting, in order to assess the robustness of the results. This analysis is achieved in two ways, the results of which are presented in Table 6. The first step in the analysis is accomplished through changing the measure of financial performance. This means that instead of return on assets, Model 4 includes return on equity as the dependent variable. Secondly, the measure of cash holdings is changed to the natural logarithm of cash and cash equivalents in Model 5. Both models show support of

previous findings of a negative relationship, strengthening the conclusion previously made.

6. Discussion

The results of the regressions point to a different conclusion than was hypothesized before. In this section, possible explanations for this discrepancy will be discussed. This means that, firstly, reasoning behind the negative relationship between cash holdings and ROA will be developed. Secondly, differences between Germany and the Netherlands were found. Therefore, this section will also include a discussion on the differences between the two countries. This discussion will lead to a preliminary explanation of the discrepancies.

6.1. Main results

Previous literature had pointed to a positive effect of cash holdings on financial performance, because it provides financial flexibility, the ability to avoid transaction costs, and the ability to take pre-cautions. As mentioned before, the regression results find a significant negative relationship between cash ratio and return on assets. This implies that higher cash holdings result in lower financial performance in multinationals.

A negative effect of cash holdings is not new to the literature. Literature points to agency costs as a downside of retaining cash (Awan et al. 2020). Higher cash reserves make that managers have more freedom in choosing what to invest in. This is a double-edged sword, as it provides financial flexibility, which stimulates the company's growth, but it also gives managers the opportunity to invest irresponsibly. When managers hold power over sizable cash holdings, they could be inclined to use these reserves for their own personal gain, investing in projects that do a firm's financial performance more harm than good.

As discussed previously, LaRocca et al. (2019) found that cash holdings had a positive effect on financial performance for small and medium firms in Europe, implying that the benefits of financial flexibility outweighed the agency cost of cash

holdings. The point of difference with this study, however, is that this study focuses on multinational corporations. This makes that the pools of cash holdings are significantly larger, and therefore the power that managers in MNCs hold is larger as well. This makes that the potential of agency costs is higher in MNCs.

Not only are agency costs more considerable because of the increased cash holdings, they are also more considerable because of increased information asymmetry. MNCs control operations in multiple countries, leading to distance between the parent company and subsidiaries in both geographical and psychological ways. Because the parent company does not have a direct hand in the business decisions of the subsidiary, subsidiary managers can act out of their own interest. A case example is the scandal that the Netherlands-listed Stellantis NV experienced with its subsidiary Fiat Chrysler Automobiles (FCA), which is based in the US (Spector, Shepardson 2021). Without Stellantis' knowledge, FCA had manipulated the pollution results of its cars. This has led to considerable penalties to be paid by Stellantis.

Following Li et al. (2019), shareholders are aware of the increased potential for agency costs, and therefore their demand for accounting conservatism increases. Increased conservatism in accounting weakens financial flexibility for managers. So while agency costs increase as pools of cash and information asymmetry become larger, the ability to invest in growth opportunities decreases. This makes that cash holdings in MNCs impact financial performance negatively.

6.2. Country differences

From Models 2 and 3, it becomes clear that the relationship between cash ratio and ROA differs between Germany and the Netherlands. While the German subsample confirms a negative effect, the Dutch sample does not. So, the effect of cash holdings on financial performance is weaker in the Netherlands than in Germany. This result is surprising, as the countries are considerably similar, in terms of economic development, political risk, and legal system. One possibly remarkable point of difference between the two countries, however, is culture. Considerable research has focused on the influence of Hofstede's national culture dimensions on cash holdings. For starters, Chen et al. (2015) have found that individualism in a

culture leads to lower cash holdings. Moreover, uncertainty avoidance has been found to increase cash holdings, coming from a pre-cautionary perspective (Alves 2018). However, Germany and the Netherlands only differ slightly in these dimensions, as is shown in Table A8 in the Appendix.

The only Hofstede dimension that the German and Dutch cultures differ in significantly is masculinity (Hofstede Insights 2022). Germany scores 66 out of 100 points on this dimension, whereas the Netherlands scores only 14 out of 100. This makes that German culture emphasizes more masculine values, such as competition, while Dutch culture focuses on more feminine values, such as cooperation. In the previous subsection, agency costs were pointed out to be the cause of the negative relationship between cash reserves and financial performance. It became clear that managers can use cash holdings for their own personal gain, in order to gain an advantage for themselves. This can be related to the masculine value of competition in culture, implying that agency costs are higher in countries with more masculine cultures.

According to a study by El-Halaby et al. (2021), masculinity in a culture is expected to decrease cash holdings. This makes sense, because in a culture with more emphasis on competition, managers are inclined to use cash reserves for their own gain, increasing agency costs, and increasing the need for conservative accounting. Accordingly, in relatively more masculine cultures, such as Germany, cash holdings are lower and potential agency costs are higher. On the other side, agency costs are lower in cultures that value cooperation over competition. This can explain why the effect of higher cash holdings in German multinationals is significantly negative, while this effect cannot be found in Dutch multinationals.

7. Conclusion

Recently, inflation rates have increased drastically, which has impacted the spending and saving habits of companies. For managers, it is imperative to be aware of the effects their cash holding decisions have on the firm. Therefore, the purpose of the study was to determine whether or not cash holdings have an impact on the

financial performance of Dutch and German MNCs. Focus is put on multinationals, as both cash pools and cash holding decisions are more considerable there than in non-multinationals.

Results have pointed to a negative relationship between cash ratio and return on assets, meaning that higher cash holdings make for lower financial performance. This finding contradicts both existing literature and the hypothesis of the study. While cash holdings provide for numerous benefits in the form of financial flexibility and precautions, it becomes clear that they can also be harmful for a firm. So, managers of MNCs may think that they are helping the company by building up reserves, but it is actually decreasing financial performance. This can lead to fewer investors wanting to invest in the company, and also makes shareholders question the ability of management to remain profitable.

The findings differ from those in existing literature, which is likely due to the larger size of multinationals. Pools of cash are more considerable, meaning that the disadvantages of holding cash are also larger. This makes for agency costs being more significant than in smaller firms, or in non-multinational firms. Therefore, it is important for managers to keep in mind that the effect of cash management decisions can differ greatly, depending on the size of the firm and the amount of cash. The effect of agency costs is larger in multinational firms, so the downside of increasing cash holdings is greater.

While the findings were significant in the overall sample, they differed in the separate sub-samples of Germany and the Netherlands. It became clear that German multinationals experience a statistically significant negative relationship between cash holdings and firm performance, while Dutch multinationals do not. It is probable that this discrepancy comes from a cultural difference in masculinity. Agency costs are likely to be higher in firms from relatively more masculine cultures, like that of Germany. Culture, therefore, seems to play a significant role in cash management decisions. This could be relevant for financial managers, as it points out that they need to take culture into consideration.

Previous research has been conducted on the effect of culture on cash management. Now, however, it becomes clear that culture not only affects cash holdings themselves, but also their impact on profitability. This makes for a new

perspective on the relevance of culture within firms. Managers' knowledge of this could significantly improve their decision making, as well as firm performance.

Nevertheless, the findings are preliminary. Further research is required in order to investigate the influence of masculinity in the relationship between cash holdings and financial performance. While national culture could indeed be the cause for the discrepancies in the results, the argument is not backed by an additional analysis. Moreover, the findings are based on a fairly simplistic research design. The study was not able to take changes within and between groups, or any fixed factors. This makes for a deficiency, as it is possible that relevant trends in the data have been ignored. Furthermore, the research sample utilized in the study is extremely narrow, with a small number of multinationals from two developed European countries. These limitations point to a need to repeat the study as well as to improve it.

Even though the study is relatively limited, the results from the study are both interesting and promising. It is assumed to be relatively sure that national culture has a role in the effect of cash holdings on financial performance in MNCs. But the scope of this finding is yet to be determined.

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Appendix 1. Additional Tables

Table A1. Descriptive statistics Germany

Variables	Obs	Mean	Std. Dev.	Min	Max	p1	p99	Skew.	Kurt.
Return on Assets	657	0.027	0.079	-0.736	0.242	-0.268	0.158	-4.667	37.753
Cash Ratio	657	0.107	0.089	0.001	0.750	0.003	0.440	2.464	13.862
Total Assets	658	21.860	63.405	0.027	497.114	0.105	351.209	4.520	25.662
Firm Age	668	58.602	65.044	0.000	353.000	1.000	347.000	1.783	7.042
Debt-Equity Ratio	649	99.097	360.805	0.021	8309.630	0.309	556.290	19.123	420.152

Source: author's own elaboration

Table A2. Descriptive statistics Netherlands

Variables	Obs	Mean	Std. Dev.	Min	Max	p1	p99	Skew.	Kurt.
Return on Assets	354	0.036	0.058	-0.247	0.208	-0.153	0.186	-0.855	6.606
Cash Ratio	352	0.112	0.117	0.000	0.799	0.003	0.669	2.821	13.803
Total Assets	354	24.308	54.928	0.043	515.612	0.277	258.387	5.228	40.344
Firm Age	355	42.135	35.587	0.000	148.000	1.000	145.000	1.068	3.298
Debt-Equity Ratio	319	108.216	152.981	0.242	1689.189	1.046	865.306	5.410	45.176

Source: author's own elaboration

Table A3. Variance inflation factors associated with Model 1

	VIF	1/VIF
Log DE Ratio	1.128	.886
Log Total Assets	1.12	.893
Cash Ratio	1.107	.904
Log Firm Age	1.061	.942
Mean VIF	1.104	.

Source: author's own elaboration

Table A4. Complete regression results of Model 1

VARIABLES	(1) No Controls	(2) Controls	(3) No Controls, R	(4) Controls, R
Cash Ratio	-0.133***	-0.187***	-0.133**	-0.187***
	(0.023)	(0.025)	(0.062)	(0.069)
Log Total Assets		0.007***		0.007***
		(0.001)		(0.002)
Log Firm Age		0.009***		0.009***
		(0.002)		(0.002)
Log Debt-Equity Ratio		-0.008***		-0.008**
		(0.002)		(0.004)
Constant	0.044***	-0.109***	0.044***	-0.109***
	(0.003)	(0.032)	(0.006)	(0.042)
Observations	1,008	941	1,008	941
R-squared	0.034	0.116	0.034	0.116

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.
Source: author's own elaboration

Table A5. Model 1 with fixed effects

VARIABLES	(1)
CashRatio	-0.180***
	(0.025)
LogTotalAssets	0.007***
	(0.001)
LogFirmAge	0.009***
	(0.002)
LogDEratio	-0.008***
	(0.002)
Constant	-0.116***
	(0.033)
Observations	941
R-squared	0.114
Number of Years	10

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.
Source: author's own elaboration

Table A6. Model 1 with random effects

VARIABLES	(1)
Cash Ratio	-0.187***
	(0.055)
Log Total Assets	0.007***
	(0.002)
Log Firm Age	0.009***
	(0.001)
Log DE Ratio	-0.008*
	(0.005)
Constant	-0.109***
	(0.038)
Observations	941
Number of Years	10

Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1.
Source: author's own elaboration

Table A7. Hausman (1978) specification test

	Coef.
Chi-square test value	5.495
P-value	.24

Source: author's own elaboration

Table A8. Hofstede's national culture scores for Germany and the Netherlands

Dimension	Germany	Netherlands
Power Distance	35	38
Individualism	67	80
Masculinity	66	14
Uncertainty Avoidance	65	53
Long-Term Orientation	83	67
Indulgence	40	68

Source: Hofstede Insights (2022).