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Original Article

How Does Firm Location Affect Cash Holdings?

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Abstract: Using a sample of Vietnamese listed companies, this study finds a statistically significant relationship between geographical location and cash holdings. Companies located in the two biggest financial centers, Hanoi and Ho Chi Minh City, have about a two percent higher cash over assets ratio than companies located in other regions. In addition, the average enterprises in five cities under the jurisdiction of the central government (Hanoi, Ho Chi Minh City, Da Nang, Can Tho, and Hai Phong) also have a higher cash-over-assets ratio of about two percent more than their counterparts in the provinces. If geographical location is measured as the distance from the firms' headquarters to Hanoi or Ho Chi Minh City, the analysis still shows robust evidence.

Keywords: Cash holdings**,** firm location, listed companies, Vietnam.

1. Introduction

Various studies show the relationship between firm location and corporate financial decisions and firms' characteristics. Funds often choose domestic firms' shares for their portfolio since they can more easily access these firms than foreign companies (Coval & Moskowitz, 1999). Yao et al. (2019) find that Chinese companies located in central cities and cities with high-speed rails pay more dividends than others. Loughran (2008) indicates that rural companies pay fewer dividends than urban ones do since information disclosure costs in rural areas are generally higher than in cities. Knyazeva and Knyazeva (2008) also show evidence for the relationship between Board structure, the Chief executive officer (CEO)'s power, and corporate geographical location. Firm location and cash holdings relationship, however, attract little attention from researchers, especially in emerging markets.

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To the best of my knowledge, there are a scant number of studies on the relationship between firm location and cash holdings. The study of Boubaker et al. (2015) is among the few studies on the relationship. Using French-listed companies, this study shows a positive relationship between distance to big cities and cash holdings. In other words, businesses that are farther away from big cities will have a higher degree of cash reserves. However, to the best of my knowledge, there is no study examining the relationship in an emerging market. Besides, while Boubaker et al. (2015) argue that the higher level of cash holdings of distant firms is attributable to agency problems between minority and controlling shareholders, the agency conflicts between shareholders and managers may also matter.

Free cash flow theory suggests that firms should hold less cash when information asymmetry is severe to reduce agency costs due to conflict of interest between shareholders and managers (Jensen, 1986). Firm location is a potential factor that exacerbates information asymmetry between shareholders and managers. Geographical distance may restrict shareholders' monitoring ability since regular and in-person contacts are limited. Investors often concentrate in big cities because of a high population density and a better education system for financial management. For listed companies, shareholders can monitor their businesses through periodic reports issued by management, such as financial reports, annual reports, and managerial reports. However, the reliability of the reports may be necessarily taken into consideration since emerging economies like Vietnam often face severe misreporting problems (Li et al., 2014). Therefore, the direct meeting and supervision over the board of directors makes it easier for the shareholders to confirm the accuracy of the reports and investment decisions. Investors, who often live in big cities, may face more difficulties to have on-site meetings with and monitor distant companies, leading to a higher degree of information asymmetry. Low cash reserves will

prevent management from extracting private benefits or overinvesting.

This study tests the relationship between firm location and cash holdings by using a sample of all the companies listed on the Hanoi and Ho Chi Minh stock exchanges. The sample includes 7975 firm-year observations of 669 companies from 2006 to 2019. The results of both univariate and multivariate analyses show that distantly located firms have a lower degree of cash holdings. Companies located in the two biggest financial centers, Hanoi and Ho Chi Minh City, have about a two percent higher cash-over-assets ratio than companies located in other regions, on average. In addition, the average enterprises in five cities under the jurisdiction of the central government (Hanoi, Ho Chi Minh City, Da Nang, Can Tho, and Hai Phong) also have about a two-percent higher cash over assets ratio than their counterparts in the provinces. If geographical location is measured as the distance from the firms' headquarters to Hanoi and Ho Chi Minh City, the analysis still shows robust evidence.

This study contributes to the literature in several ways. First, this is among the first studies examining the geographical effect on cash holdings in emerging markets. Second, contrary to Boubaker et al. (2015), we find a significantly negative relationship between a remote location and cash holdings. Boubaker et al. (2015) argue that agency problems between minority and controlling shareholders are behind the higher level of cash holdings of distant firms. The degree of high cash holdings is a channel for controlling shareholders to extract private benefits. I, however, argue that principal-agent issues between shareholders and managers also matter. Shareholders attempt to reduce cash holdings to prevent managers from obtaining private benefits.

In the next section, the paper is divided into four parts as follows: the first part presents hypothesis development; the second part shows data and methodology; the findings are discussed in part 4; the final part is the conclusion.

2. Hypothesis development

Boubaker et al. (2015) is among the few studies on the relationship between firm location and corporate cash holdings. This study shows businesses that are farther away from big cities will have a higher degree of cash reserves (a positive relationship between distance to big cities and cash holdings) using French-listed companies. Boubaker et al. (2015) argue that the higher level of cash holdings of distant firms is attributable to agency problems between minority and controlling shareholders. The agency problem between shareholders and managers may also affect the relationship.

According to Boubaker and Mezhoud (2011), managerial ownership of French firms is about 30%. This suggests that controlling shareholders are likely the managers in French firms. In other words, agency problems between controlling and minority shareholders may be severe in this country. The finding, however, may be different when agency conflicts between shareholders and managers prevail. This may be the case for Vietnamese firms. Nguyen et al. (2021) show that managerial ownership of Vietnamese in Vietnam is only about 10%. The small managerial ownership indicates that controlling shareholders may not be the managers and the prominent agency problem for Vietnamese firms would be between shareholders and managers.

Free cash flow theory suggests that firms should hold less cash when information asymmetry is severe to reduce agency costs due to conflict of interest between shareholders and managers (Jensen, 1986). The separation in ownership and management of shareholders and managers generates conflicts of interest because of the difference in objectives between the two groups. While shareholders aim to maximize financial returns by conducting positive-NPV (net present value) projects, managers desire to increase business sizes (empire building) by possibly conducting negative-NPV projects to increase their compensations and personal reputation. Overinvestment may damage firm value (Jensen, 1986). The conflict may become more severe for firms with a large surplus of cash on hand, especially when factors potentially exacerbating information asymmetry exist. Drobetz et al. (2010) find that information asymmetry decreases the value of corporate cash holdings due to moral hazard problems.

Firm location is a potential factor that exacerbates information asymmetry between shareholders and managers. Geographical distance may restrict shareholders' monitoring ability since regular and in-person contacts are limited. Investors often concentrate in big cities because of high population density and a better education system for finance management. For listed companies, shareholders can monitor their businesses through periodic reports issued by management, such as financial reports, annual reports, and managerial reports. However, the reliability of the reports may be necessarily taken into consideration since emerging economies like Vietnam are often faced with severe misreporting problems (Li et al., 2014). Therefore, the direct meeting and supervision over the board of directors make it easier for the shareholders to confirm the accuracy of the reports and investment decisions. Investors, who often live in big cities, may face more difficulties to have on-site meetings and monitoring, leading to a higher degree of information asymmetry. Free cash flow theory suggests that reducing free cash flow in a firm can help reduce agency costs. Low cash reserves will prevent management from extracting private benefits or overinvesting. John et al. (2011) indicate that distant companies pay more dividends to reduce their cash reserves.

These discussions give rise to the following hypothesis:

Hypothesis: Firms located in remote areas have lower cash holdings than those in central regions.

3. Data and methodology

3.1. Data

All listed companies on HNX and HSX (Hanoi and Ho Chi Minh stock exchanges) were

adopted to construct the sample. The list of companies, firms' financial information, and addresses are collected on cophieu68. Due to differences in financial report items, financial-industry firms were excluded from the sample. Eventually, the sample size is 669 companies with 7975 firm-year observations from 2006 to 2019.

3.2. Methodology

3.2.1. Proxies for firm location

To measure firm location, three different proxies were used:

Main_city: A dummy variable, which equals 1 if the firm is located in Hanoi or Ho Chi Minh City, and 0 otherwise. This variable captures the difference in corporate cash holdings between the two biggest financial centers and other areas.

Urban_area: A dummy variable, which equals 1 if the firm is located in five cities under the jurisdiction of the central government (Hanoi, Ho Chi Minh City, Da Nang, Can Tho, and Hai Phong), and 0 otherwise. This variable captures the difference in corporate cash holdings between cities and provinces.

Ln(distance): Natural log of one plus the distance in kilometers from the firm's location to the nearest central city. This is a continuous variable measuring the distance from the firm location to the nearest central city (Hanoi or Ho Chi Minh City).

3.2.2. Methodology

First, univariate analysis was used to observe the difference in mean and median cash holdings between groups. Mean and median difference tests are adopted.

To control for other factors that are also likely to affect corporate cash holdings, the ordinary least squares (OLS) regression with a set of control variables was used. In this stage, control for firm-, industry-, and year-specific characteristics were conducted by adding firm-characteristics variables, industry and year dummy. Since the main independent variables *(Center, Municipality, and Ln(distance))* are

time-invariant, the fixed-effect estimation is not appropriate. Specifically, the model for estimations is as follows:

$$Y_i = \beta_0 + \beta_1 X_i + \beta_2 CV_i + \beta_3 Industry_i + \beta_4 Year_i + \varepsilon$$

Where *Y* is *Cash holdings*, which is measured by cash over total assets ratio. *X* is the firm location variables. *CV* is a set of control variables, following Al-Najjar & Belghitar (2011); García-Teruel and Martínez-Solano (2008); Harford et al. (2008), Martínez-Sola et al. (2018); Ogundipe et al. (2012); Ozkan & Ozkan (2004): *Ln(Assets)* measured by the natural log of total assets; *Growth_rate* measured by the natural log of sales; *Leverage* measured by ratio of total liabilities to total assets; *ROE* measured by net income over total equity. *Industry* is dummy variables, controlling for difference in industry characteristics. *Year* is year dummy variable, controlling for economy-wide factors. Robust standard errors clustered at the firm level are adopted. *Cash_holdings* and all the control variables are winsorized at the top and bottom one percentile values to limit extreme outliers.

With respect to the effect of control variables on firms' cash holdings, a small firm is likely to hold more cash due to the high financial distress risk (Al-Najjar & Belghitar, 2011; Ozkan & Ozkan, 2004). Growing firms are likely to increase their cash level to take advantage of profitable investment projects (García-Teruel & Martínez-Solano, 2008). Since the costs of investing in liquid assets increase when leverage increases, the leverage negatively affects the cash holding level (García-Teruel & Martínez-Solano, 2008). Finally, the higher profitability, the higher the cash holdings. This is due to that, profitable firms may generate higher cash flows. Also, higher cash holdings allow them to continue to conduct the profitable projects (Abushammala & Sulaiman, 2014).

4. Findings and discussion

Table 1 shows the summary statistics for firms in the sample. Roughly 53.3% of firms in

the sample have headquarters in the two main financial centers (Hanoi and Ho Chi Minh City), and about 62.9% of firms are located in the five central cities in Vietnam, suggesting that firms listed on stock exchanges are mainly located in big cities. On average, the distance between a firm to a main central city is 115 kilometers, while the largest distance is 820 kilometers. The average firms in the sample keep about 5.9% of the cash-over-assets ratio. Regarding firm characteristics, the firms in the sample are diverse in total assets, growth, leverage, and ROE. The firm sizes range from 17,611 to 38,600,000 million dong. While listed firms in Vietnam have a growth rate of 10.8%, they achieved a 12.6% return on equity on average.

Table 1: Summary statistics of the variables

	Mean	Standard deviation	Min.	Median	Max.	N
Main_city	.533	.498	0	1	1	7975
Urban_area	.629	.483	0	1	1	7975
Distance (km)	115	202	0	0	820	7975
Cash_holdings	.096	.104	.000	.059	.510	7907
Total asset (mil. VND)	1,906,422	5,102,050	17,611	459,110.5	38,600,000	7944
Growth_rate	.293	.995	-.761	.108	7.808	7233
Leverage	.502	.224	.036	.524	.924	7927
ROE	.137	.126	-.284	.126	.554	7836

Note: This table reports summary statistics for all the variables used in this study. *Main_city* is a dummy variable, which equals 1 if the firm is located in Hanoi or Ho Chi Minh City, and 0 otherwise. *Urban_area* is a dummy variable, which equals 1 if the firm is located in one of five cities under the jurisdiction of the central government (Hanoi, Ho Chi Minh City, Da Nang, Can Tho, and Hai Phong), and 0 otherwise. *Distance* is the distance in kilometers from the firm's location to the nearest central city (Hanoi or Ho Chi Minh City). *Cash_holdings* are measured by cash over total assets ratio. *Total assets* are in million Vietnam dong. *Growth_rate* is measured by the natural log of sales. *Leverage* is measured by the ratio of total liabilities to total assets. *ROE* is measured by net income over total equity.

Source: Author's computation (2022).

4.1. Univariate analysis

Univariate analyses between firm location and cash holdings was carried out. Table 2 shows the results. While firms located in the two largest cities have a mean (median) cash-over-assets ratio of about 10.5% (6.8%), the others have lower values with 8.5% (5.0%) in mean (median). The difference between the two groups is approximately two percent in both mean and median values, and significant at the 1% level, suggesting that firms, not located in main cities, are likely to hold less cash than firms in big cities. The result is also robust when dividing firms into urban and non-urban firms. Firms located in the five central cities tend to hold more cash than the others. The difference is about two percent and significant at the 1% level. Finally, while dividing firms based on their distance from the two main cities (Hanoi and Ho Chi Minh City), the result also indicates that firms close to the main cities keep more cash than their counterparts. Given that the average firms in the sample keep about 5.9% of the cash-over-assets ratio, the geographical effect of two percent is economically sizable. These results are consistent with the free cash flow theory and support the hypothesis that firms located in remote areas have lower cash holdings than those in central regions. One potential issue when using univariate analysis is that there are many other factors that may affect firms' cash

holdings. The omission of these variables may affect our results. The next section attempts to reduce the concern by using regression to control for other potential factors.

Table 2: Firm location and cash holdings: Univariate analysis

| Variable | Whole sample | Main_city | | | Urban_area | | | Distance | | |
		Yes	No	Difference	Yes	No	Difference	Close to a main city	Far from a main city	Difference
Cash_hol dings										
Mean	.096	.105	.085	.019*** (8.292)	.105	.086	.020*** (8.363)	.100	.083	.017*** (6.396)
Median	.059	.068	.050	.018*** (9.779)	.066	.047	0.019*** (10.594)	.063	.048	.015*** (8.050)
N	7907	4232	3675		4980	2927		5840	2067	

Note: This table presents the univariate analysis of firm location and cash holdings. The entire sample is adopted for the analysis. *Cash holdings* are measured by the cash over total assets ratio. Location variables are *Main_city*, *Urban_area*, and *Distance*. *Main_city* is a dummy variable, which equals 1 if the firm is located in Hanoi or Ho Chi Minh City, and 0 otherwise. *Urban_area* is a dummy variable, which equals 1 if the firm is located in one of five cities under the jurisdiction of the central government (Hanoi, Ho Chi Minh City, Da Nang, Can Tho, and Hai Phong), and 0 otherwise. *Distance* is the distance in kilometers from the firm's location to the nearest central city (Hanoi or Ho Chi Minh City). A firm is considered as *Close to* (*Far from*) a main city if its distance is below (above) the 75 percentile. *Cash_holdings* are measured by cash over total assets ratio. Mean and median values are presented for the whole samples and subsamples. T-statistics for mean and median difference tests are presented in parentheses. ***, **, * indicates significance at 1, 5, and 10 percent levels, respectively.

Source: Author's computation (2022).

4.2. Multivariate analysis

Table 3 presents the results for regression. After controlling for firm-specific, industry, and year characteristics, the positive relationship between distant location and cash holdings' level is still robust. Specifically, the coefficient on *Main_city* of .020 means that firms located in central cities have about 2% higher cash holdings level than remotely located firms. Second, the coefficient on *Urban_area* of .016 means that firms located in five big cities have about 1.6% lower cash holdings than the others. Finally, the coefficient on *Distance* of -.003 suggests that the farther a firm's location is from Hanoi or Ho Chi Minh City, the lower its cash holdings. All the coefficients of location variables are statistically significant at the 1% level.

These results provide robust evidence for the univariate analysis and support the hypothesis that remotely located firms are likely to have lower cash holdings. Accordingly, direct meeting and supervision over the board of directors makes it easier for the shareholders to confirm the accuracy of the reports and investment decisions. Investors, who often live in big cities, may face more difficulties to have on-site meetings and monitoring, leading to a higher degree of information asymmetry. Reducing free cash flow in a firm can help reduce agency costs by preventing management from extracting private benefits or overinvesting.

This study contributes to the literature on corporate behavior. Boubaker et al. (2015) argue that agency problems between minority and controlling shareholders are behind the positive relationship between distant location and cash holdings, but this study shows a contrary result. Boubaker et al. (2015) claim that a high degree of cash holdings is a channel for controlling shareholders to extract private benefits. Using

Vietnam-listed company data, this study points out that principal-agent issues between shareholders and managers also matter. Shareholders attempt to reduce cash holdings to prevent managers from obtaining private benefits.

The potential problems was checked in the regression model, i.e. multicollinearity, heteroskedasticity, and autocorrelation, and the tests show no significant evidence for these problems. However, the feasible generalized least squares (FGLS) model that is expected to mitigate the concerns of heteroskedasticity and autocorrelation were still estimated. The result is quantitatively similar to the main result (untabulated).

With respect to the control variables, while firm size shows insignificantly negative coefficients on cash holdings, firm growth shows negative and significant ones. These results do not support our expected effects as shown in part 3.2.2. Meanwhile, leverage and ROE together shows the negative and positive impact on cash holdings, respectively. The results are consistent with the findings of previous studies (García-Teruel & Martínez-Solano, 2008; Abushammala & Sulaiman, 2014).

Table 3: Firm location and cash holdings: Regression analysis

Cash_holdings	Model (1)	Model (2)	Model (3)
Main_city	.020***		
(t-statistic)	(4.04)		
Urban_area		.016***	
(t-statistic)		(3.25)	
Ln(distance)			-.003***
(t-statistic)			(-4.08)
Ln(Assets)	-.003	-.002	-.003
(t-statistic)	(-1.63)	(-1.24)	(-1.71)*
Growth_rate	-.005***	-.005***	-.005***
(t-statistic)	(-5.16)	(-5.00)	(-5.18)
Leverage	-.100***	-.101***	-.099***
(t-statistic)	(-8.29)	(-8.33)	(-8.24)
ROE	.203***	.203***	.204***
(t-statistic)	(10.83)	(10.84)	(10.87)
Year dummy	Yes	Yes	Yes
Industry dummy	Yes	Yes	Yes
Constant	.089***	.082***	.112***
(t-statistic)	(3.92)	(3.63)	(4.64)
R^2	0.171	0.167	0.171
N	7216	7216	7216

Note: This table presents the regression analysis of the firm location and cash holdings. The entire sample is adopted for the analysis. Pooled ordinary least square (OLS) regressions are used for the estimation. The dependent variable is *Cash holdings*, which is measured by the cash over total assets ratio. Location variables are *Main_city*, *Urban_area*, and *Ln*(distance). *Main_city* is a dummy variable, which equals 1 if the firm is located in Hanoi or Ho Chi Minh City, and 0 otherwise. *Urban_area* is a dummy variable, which equals 1 if the firm is located in one of five cities under the jurisdiction of the central government (Hanoi, Ho Chi Minh City, Da Nang, Can Tho, and Hai Phong), and 0 otherwise. *Ln*(distance) is the natural log of one plus the distance in kilometers from the firm's location to the nearest central city. *Ln*(Assets) is measured by the natural log of total assets. *Growth_rate* is measured by the natural log of sales. *Leverage* is measured by the ratio of total liabilities to total assets. ROE is measured by net income over total equity. Industry and year dummies are included. T-values reported in the parentheses are estimated using White's (1980) heteroskedasticity-consistent standard errors. ***, **, * indicate significance at 1, 5, and 10 percent levels, respectively.

Source: Author's computation (2022).

5. Conclusion

Using a sample of all the companies listed in Vietnam, this study examines the relationship between firm location and corporate cash holdings. Firm location is a potential factor that exacerbates information asymmetry between shareholders and managers due to the restriction in shareholders' monitoring ability over the firm's operation. Since investors often concentrate in big cities, regular and in-person contacts are limited. Free cash flow theory suggests that reducing free cash flow in a firm

can mitigate agency problems. Distant firms, accordingly, should decrease their cash holdings. Low cash reserves will prevent management from extracting private benefits or overinvesting.

This study finds that distantly located firms have a lower degree of cash holdings. Companies located in the two biggest financial centers, Hanoi and Ho Chi Minh City, have about a two percent higher cash-over-assets ratio than companies located in other regions on average. Besides, the average enterprises in five cities under the jurisdiction of the central government also have about a two-percent higher cash-over-assets ratio than their counterparts in the provinces. The result is also robust when using the distance from firms' headquarters to Hanoi and Ho Chi Minh City as a location proxy.

This study contributes to the literature on corporate behavior. First, this is among the first studies examining the geographical effect on cash holdings in emerging markets. Second, while Boubaker et al. (2015) argue that agency problems between minority and controlling shareholders are behind the higher level of cash holdings of distant firms, this study finds a contrary result. Boubaker et al. (2015) claims that the degree of high cash holdings is a channel for controlling shareholders to extract private benefits. This study, however, argues that principal-agent issues between shareholders and managers also matter. Shareholders attempt to reduce cash holdings to prevent managers from obtaining private benefits.

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