MULTINATIONALITY AND CASH HOLDINGS: EVIDENCE FROM JAPAN[1]

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Abstract: Investors frequently criticise Japanese corporations for excessive cash holdings. On aggregate, cash holdings have increased over time. At the same time, many large-cap Japanese firms' businesses have become more international. However, there is substantial variation in cash holdings between firms and within firms over time. This research examines how international factors influence firms' cash holdings via the precautionary motive, particularly, through overseas sales, foreign ownership and cultural differences between the parent corporation and its overseas affiliates. Random effects within-between regression is used to examine both the relationships within firms over time and between firms in the cross-section. Internationalisation through a higher proportion of overseas sales has a positive relationship with cash holdings, but a greater proportion of foreign shareholders is associated with lower cash holdings within firms over time. The relationship between cash holdings and cultural heterogeneity is dominated by positive within-firm effects.

Keywords: Cash holdings; Cultural heterogeneity; Foreign shareholding; Japanese corporations; Overseas sales.

INTRODUCTION

Corporate cash holdings have trended up substantially over the last 40 years. Bates et al. (2009) observe that the ratio of cash to assets for U.S. industrial firms doubled from 1980 to 2006. Sánchez and Yurdagül (2013) note that in 2011 U.S. firms held 4 times the cash held in 1995 and 11 times their holdings in 1979. Japanese firms are renown among international investors for their high level of cash holdings. The Economist (2014) notes that Japanese and South Korean firms are the world's biggest "cash-hoarders". Japanese firms held 229 trillion yen, equivalent to 44 percent of GDP compared with 11 percent of GDP for U.S. firms. Although small and medium firms have been the main contributors to high cash holdings in Japan, large firms have increased their cash holdings recently (Aoyagi et al., 2017).
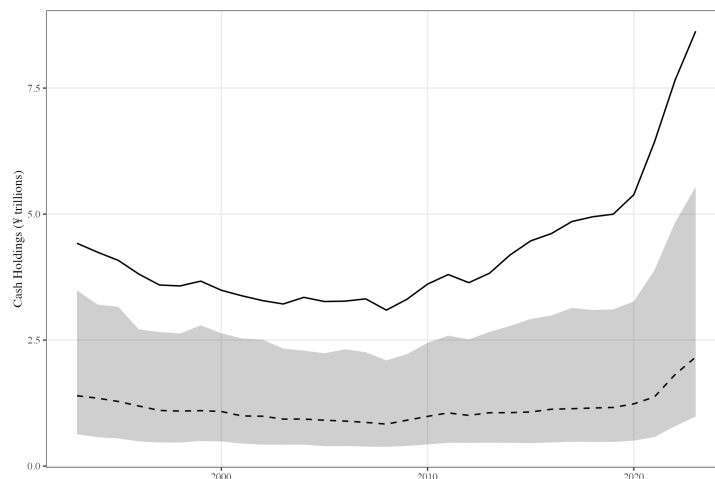

Figure 1: Cash holdings of Tokyo Stock Exchange Prime section firms by year from 1993 to 2023 in trillions of Japanese yen. The solid line shows the mean cash holding and the dashed line shows the median. The shaded area shows the interquartile range.

Figure 1 shows that Japanese firms' cash holdings decreased over the 1990s and through the 2000s until around the time of the Lehman shock in 2008. However, cash holdings began to increase during the 2010s. The increase in cash held accelerated and became more broad-based across firms from 2020 during the period of the COVID-19 pandemic and after. The wide and increasing interquartile range, and the mean substantially higher than the median suggest substantial variation in cash holdings between firms and over time.[3] At the same time as cash holdings have increased, Japanese firms have internationalised their businesses.

A large extant literature aims to empirically identify the financial factors that explain corporate cash holding behaviour, primarily at the firm level (Opler et al., 1999; Pinkowitz et al., 2012; Bates et al., 2018; Marwick et al., 2020). The key motivations for firms to hold cash include transactions (Keynes, 1937), precautionary (Keynes, 1937; Han and Qiu, 2007; Bates et al., 2009) and agency (Ferreira and Vilela, 2004; Harford et al., 2008; Jensen, 1986). Other factors influencing cash holdings include taxation (Foley et al., 2007), the cost of earnings repatriation (Gu, 2017), geographical diversification (Fernandes and Gonenc, 2016), and macroeconomic factors (Andre et al., 2007; Gruber and Kamin, 2016; Chen et al., 2017; Armenter and Hnatkovska, 2017). Most studies examine US firms, with a relatively small number conducting cross-country studies (Dao and Maggi, 2018; Dittmar et al., 2003; Pinkowitz et al., 2006; Kalcheva and Lins, 2007) or examining Japanese firms (Pinkowitz and Williamson, 2001; Luo and Hachiya, 2005; Aoyagi et al., 2017; Kang and Piao, 2015; Kim et al., 2023; Fujitani et al., 2023a,b).

Recently, cultural explanations have been explored in studies that relate cash holdings to measures of cultural values. Chang and Noorbakhsh (2009) find a positive relationship between firms' cash holdings and their home country levels of uncertainty avoidance, masculinity and long-term orientation. Chen et al. (2015) argue that cash holdings are negatively associated with individualism and positively associated with uncertainty-avoidance through the precautionary motive. So and Zhang (2022) find that broad measures of cultural heterogeneity – the difference between multinational firms' home national cultural dimensions and those of the countries in which its subsidiaries operate – explain cash holdings.

This research examines the relationship between cash holdings and three international characteristics of Japanese firms that I group together under the term "multinationality". The research sits at the intersection between corporate finance and international business. The first characteristic is the degree to which firms are exposed to overseas sales, either through exports or sales by overseas affiliates. The second is the extent of foreign shareholding in the firm. The third characteristic applies only to multinational firms – that is, firms with at least one overseas affiliate – and represents the cultural heterogeneity between the parent corporation in Japan and the countries in which the multinationals' overseas affiliates are based. An important aspect of this research is that the relationship between cash holdings and internationalisation is examined both within firms over time and between firms in the cross-section.

Internationalisation through a higher proportion of overseas sales has a positive relationship with cash holdings, but a greater proportion of foreign shareholders is associated with lower cash holdings within firms over time. The relationship between cash holdings and cultural heterogeneity is dominated by positive within-firm effects.

DATA AND METHODOLOGY

Hypotheses

I examine the following hypotheses.

H1: Cash holdings are positively associated with the ratio of overseas to total sales. A high reliance on overseas sales suggests greater cash flow risk and corporate risks consistent with the precautionary motive for cash holdings (Kang and Piao, 2015).

H2: Cash holdings are positively associated with the degree of foreign ownership. Foreign investors are generally more active traders of Japanese stocks than domestic investors, and thus are more likely to sell down their holdings in response to bad news or weak growth forecasts, presenting a crash risk for the firm. Firms with more liquid stocks hold higher cash balances because high market liquidity implies a higher crash risk (Fujitani et al., 2023b).

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[3]Note that Figure 1 provides a simple picture of cash holdings where cash is not normalised by firms' assets or sales.

H3: The cash holdings of Japanese multinational firms are positively associated with their cultural heterogeneity with respect to their foreign subsidiaries. Cultural distance has been shown to influence equity investment decision-making consistent with a comfort with the familiar effect (Grinblatt and Keloharju, 2001), negatively influence bank lending to firms (Mian, 2006), increase agency costs in managing culturally diverse subsidiaries because of information asymmetry between the parent and subsidiary (Gong, 2003), lead to over-investment (Chou et al., 2023) and reduce monitoring of foreign subsidiaries Kang and Kim (2008).

General model

The specification of the general model is shown in equation (1).

$$CASH_{i,t} = \alpha + \beta_1 OSNS_{i,t} + \beta_2 FSHR_{i,t} + \beta_3 CH_{d,i,t} \\ + \delta CONTROLS_{i,t} + INDUSTRY_{k,t} + \epsilon_{i,t} \tag{1}$$

The dependent variable, $CASH_{i,t}$, is a measure of firm i's cash holding in year t. Cash holdings are measured as deposits and cash equivalents in Japanese yen 100 millions. Two dependent variables are used: the natural logarithm of cash ($CASH$) and the ratio of cash to total assets ($CATA$).

Hypotheses H1, H2 and H3 motivate the inclusion of the following variables of interest: (i) the ratio of overseas sales to net sales ($OSNS_{i,t}$), (ii) the ratio of shares held by foreign entities to total shares outstanding ($FSHR_{i,t}$), and (iii) the cultural heterogeneity between Japanese multinational parent firms and their overseas subsidiaries ($CH_{d,i,t}$) for each cultural dimension (d), respectively.

$CONTROLS_{i,t}$ represents a set of firm-level financial characteristics and firm-level exposure to country characteristics consistent with those recommended by Opler et al. (1999) and Bates et al. (2009). Country level control variables are included in the models in which the cultural heterogeneity variables appear to control for country characteristics that may influence cash holdings following So and Zhang (2022). Dummies ($INDUSTRY_{k,t}$) are included to account for k industry effects. $\epsilon_{i,t}$ is the residual.

Annual firm-level financial data is obtained from the Nikkei NEEDS database for the period 2000 to 2023 for firms listed in the Prime (formerly First) Section of the Tokyo Stock Exchange. Prime (or First) section firms are included in the analysis where the firm has at least two years of data for all variables. Financial and utilities firms are excluded as their cash holdings may be influenced by regulation.

Cultural heterogeneity

The cultural heterogeneity variables are constructed based on the six cultural dimensions of Hofstede (1980) and Hofstede et al. (2010).[4] Average cultural heterogeneity ($CH_{d,i,t}$) is calculated for each cultural dimension (d), Japanese multinational firm (i) in year t by multiplying a subsidiary dichotomous indicator variable ($SUB_{i,j,t}$) by a cultural distance score ($CD_{d,j}$) for each country (j) and dimension, then dividing by the total number of countries in which the multinational has subsidiaries ($BR_{i,t}$), as shown in equation 2.

$$CH_{d,i,t} = \frac{\sum_{j=1}^{J} SUB_{i,j,t} \times CD_{d,j}}{BR_{i,t}} \tag{2}$$

$SUB_{i,j,t}$ indicates the countries in which each Japanese firm has at least one subsidiary in which the Japanese parent controls more than half of the voting rights. This data was collected by machine reading section 1(4) (Status of Affiliated Companies (関係会社の状況)) of each firm's 'Yukashouken Houkokusho" (有価証券報告書), also known as the "Yuho" or Annual Securities Report, obtained from the Financial Services Agency on-line document depository EDINET. $BR_{i,t}$ is the sum of $SUB_{i,j,t}$ over countries j.

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[4]Hofstede (1980) proposes four dimensions of national culture: individualism – collectivism (IND) , power distance reflecting the strength of social hierarchy (PDI), uncertainty avoidance (UAI) and masculinity – femininity reflecting task-orientation versus person-orientation (MAS). Later, a fifth dimension was added reflecting short-term – long-term orientation based on the research of other scholars. Finally, Hofstede et al. (2010) included indulgence – self restraint (IVR) in the framework.
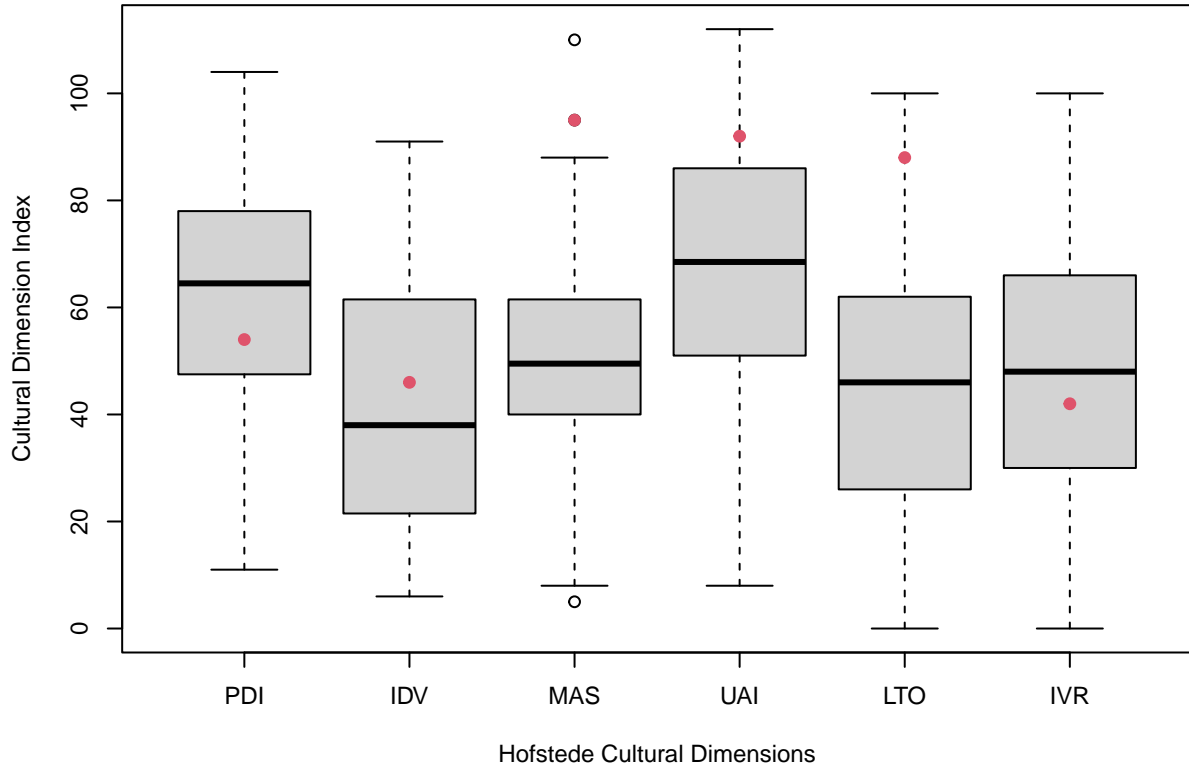
Figure 2: The distributions of the six Hofstede cultural dimensions for the 78 countries in the study, including the index levels for Japan shown as red dots. For reference, the index values for Japan are 54, 46, 95, 92, 88, and 42 for PDI, IDV, MAS, UAI, LTO and IVR, respectively.

$CD_{d,j}$ is a measure of the cultural distance between Japan and each of other 77 nations in the sample for each of Hofstede's cultural dimensions using the Euclidean distance measure described in Konara and Mohr (2019). $CD_{d,j}$) is the difference between the cultural dimension index ($I_{d,j}$) for country j and Japan ($I_{d,JPN}$), standardised by the in-sample variance of each cultural dimension (V_d), is given in equation (3).

$$CD_{d,j} = \sqrt{\frac{(I_{d,j} - I_{d,JPN})^2}{V_d}} \tag{3}$$

Figure 2 shows the cultural dimensions indices for Japan relative to those for the other countries in the sample. Shenkar (2001) argues that cultural dimensions are distinct from one another and it may not make sense to combine them in an aggregate index in all circumstances. Hofstede (2001) notes that some cultural gaps may be less disruptive than others, and positive or negative gaps may have different effects, while Lim et al. (2016) observes that elements of cultural distance may complement each other. Accordingly, I create a separate cultural heterogeneity variables for each cultural dimension higher and lower relative to Japan, resulting in 12 cultural difference variables.[5]

Econometric approach

Although the random effects within-between (REWB) model has infrequently been applied to panel estimation in corporate finance applications, it would appear to have advantages over the more frequently

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[5]The twelve cultural heterogeneity variables are IDVL and IDVH, PDIL and PDIH, MASL and MASH, UAIL and UAIH, LTOL ad LTOH, and IVRL and IVRH, where the last letter "L" ("H") means lower (higher) than the cultural dimension index level for Japan.

used pooled ordinary least squared (pooled OLS) and fixed effects (FE) methods. REWB is a more general specification than the standard FE and random effects (RE) models. The approach allows for the possibility that the effects within firms over time and between firms in the cross section may be different, and allows for the separate estimation of within and between coefficients (Bell and Jones, 2015; Bell et al., 2019; Fairbrother, 2013; Mundlak, 1978).

FINDINGS

Table 1 provides the results for the REWB models for both dependent variables (CASH and CATA) containing all explanatory variables of interest, with controls, and with and without industry dummy variables.[6]

The proportion of foreign to net sales (OSNS) has a positive relationship with cash holdings, both within and between firms. The between effect is larger than the within effect. This is consistent with hypothesis H1.

However, the proportion of foreign shareholders to total shares outstanding (FSHR) is negatively related to cash holdings within firms over time, while there is no significant between effect when industries are controlled for. An explanation may be that as foreign investors increase holdings in a Japanese firm, they demand better governance and management reduce cash holdings.

The results for the cultural heterogeneity variables suggest the different dimensions matter in different ways. Heterogeneity in power distance lower than Japan's level (PDIL) has a positive within effect on cash holdings. Individuality lower than Japan's (IDVL) has a positive within effect, while for individuality above Japan (IDVH) the within estimate is negative. Masculinity below Japan (MASL) has a positive within and negative between effect on cash holdings. Uncertainty avoidance below Japan (UAIL) has a positive within effect and negative between effect. Long term orientation below Japan (LTOL) has a positive within effect for the models with CATA as dependent variable (models (3) and (4)). Indulgence below Japan (IVRL) has a negative within effect for the CATA models (3) and (4), while indulgence above Japan (IVRH) has a positive within effect for the CASH models (1) and (2). The coefficients for PDIH, MASH, UAIH, and LTOH are not significant.

CONCLUSION

In general, the relationship between cash holdings and internationalisation is complex. Firms hold more cash when they make a greater proportion of their sales overseas. However, within the firm the proportion of foreign investors has a negative relationship with cash holdings. Regarding cultural heterogeneity, within effects appear to be more prevalent than between effects, and they are more often positive than negative. The few significant between effects detected are negative. This may mean that increases in cultural heterogeneity within firms as they internationalise over time mostly result in greater cash holdings as managers desire higher cash holdings for precautionary purposes. However, this effect is not evident between firms. Indeed the significant significant between estimates for the cultural heterogeneity variables were negative.

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[6]REWB models estimated for each explanatory variable separately are provided in the full paper. The results are broadly consistent with the models containing all explanatory variables. Quintile portfolios based on the variables of interest are also examined in the full paper.

Table 1: Ramdom Effects Within-Between regressions of CASH and CATA on all explanatory variables.

	Dependent variable: CASH				Dependent variable: CATA			
	(1)		(2)		(3)		(4)	
	Within	Between	Within	Between	Within	Between	Within	Between
OSNS	0.112*	0.176**	0.115*	0.259***	0.019*	0.013	0.020**	0.037**
	(0.066)	(0.084)	(0.066)	(0.089)	(0.010)	(0.014)	(0.010)	(0.014)
FSHR	−0.192**	0.395**	−0.197**	0.249	−0.022*	0.070**	−0.023**	0.043
	(0.077)	(0.175)	(0.077)	(0.170)	(0.012)	(0.028)	(0.012)	(0.027)
PDIL	0.071*	0.071	0.073*	0.021	0.014**	0.014	0.014**	0.007
	(0.039)	(0.080)	(0.039)	(0.077)	(0.006)	(0.013)	(0.006)	(0.012)
PDIH	−0.021	−0.073	−0.013	−0.053	0.003	−0.013	0.003	−0.009
	(0.042)	(0.084)	(0.042)	(0.082)	(0.006)	(0.014)	(0.006)	(0.013)
IDVL	0.087**	−0.064	0.082**	0.056	0.013**	−0.012	0.012**	0.007
	(0.036)	(0.106)	(0.036)	(0.104)	(0.005)	(0.017)	(0.005)	(0.017)
IDVH	−0.095***	0.088	−0.097***	0.086*	−0.011***	0.011	−0.011***	0.013
	(0.022)	(0.053)	(0.022)	(0.051)	(0.003)	(0.009)	(0.003)	(0.008)
MASL	0.059*	−0.146**	0.060*	−0.172***	0.003	−0.024**	0.003	−0.028***
	(0.031)	(0.066)	(0.031)	(0.065)	(0.005)	(0.011)	(0.005)	(0.010)
MASH	−0.036	0.230	−0.040	0.191	−0.015	0.029	−0.015	0.027
	(0.099)	(0.189)	(0.099)	(0.180)	(0.015)	(0.030)	(0.015)	(0.029)
UAIL	0.047*	−0.192***	0.043	−0.213***	0.010**	−0.018**	0.010**	−0.024***
	(0.028)	(0.056)	(0.028)	(0.055)	(0.004)	(0.009)	(0.004)	(0.009)
UAIH	0.004	0.044	0.000	0.111	0.000	−0.028	−0.001	−0.005
	(0.096)	(0.233)	(0.096)	(0.227)	(0.014)	(0.037)	(0.014)	(0.037)
LTOL	0.030	−0.008	0.033	0.028	0.012***	0.008	0.012***	0.009
	(0.028)	(0.050)	(0.028)	(0.050)	(0.004)	(0.008)	(0.004)	(0.008)
LTOH	0.021	0.147	0.021	0.111	0.004	0.015	0.004	0.012
	(0.058)	(0.096)	(0.058)	(0.093)	(0.009)	(0.015)	(0.009)	(0.015)
IVRL	−0.031	0.055	−0.027	0.081	−0.011**	0.021	−0.011*	0.022
	(0.038)	(0.087)	(0.038)	(0.086)	(0.006)	(0.014)	(0.006)	(0.014)
IVRH	0.063**	0.017	0.060**	0.009	−0.003	−0.003	−0.004	−0.008
	(0.031)	(0.070)	(0.031)	(0.068)	(0.005)	(0.011)	(0.005)	(0.011)
SIZE	1.123***	0.907***	1.122***	0.914***	0.027***	−0.011***	0.027***	−0.010***
	(0.022)	(0.016)	(0.022)	(0.016)	(0.003)	(0.003)	(0.003)	(0.003)
MTB	0.008*	0.073***	0.008*	0.044***	0.002***	0.016***	0.002***	0.011***
	(0.004)	(0.016)	(0.004)	(0.016)	(0.001)	(0.003)	(0.001)	(0.003)
CFTA	1.575***	1.990**	1.575***	2.158***	0.288***	0.646***	0.288***	0.587***
	(0.087)	(0.779)	(0.087)	(0.761)	(0.013)	(0.125)	(0.013)	(0.123)
CFV	−1.455***	1.818	−1.469***	0.472	−0.276***	0.407**	−0.277***	0.172
	(0.450)	(1.002)	(0.450)	(1.000)	(0.068)	(0.161)	(0.068)	(0.161)
NWCTA	2.046***	1.613***	2.051***	1.794***	0.390***	0.347***	0.391***	0.371***
	(0.064)	(0.163)	(0.064)	(0.163)	(0.010)	(0.026)	(0.010)	(0.026)
CAPTA	−0.642***	−1.915**	−0.638***	−1.678*	−0.121***	−0.604***	−0.121***	−0.599***
	(0.136)	(0.945)	(0.136)	(0.933)	(0.020)	(0.151)	(0.020)	(0.150)
LEVTA	0.190**	−0.844***	0.184**	−0.512***	0.064***	−0.048*	0.064***	−0.023
	(0.075)	(0.170)	(0.075)	(0.174)	(0.011)	(0.027)	(0.011)	(0.028)
RDTA	0.225	−0.952	0.153	−0.418	−0.115	−0.347***	−0.132	−0.193
	(0.681)	(0.800)	(0.680)	(0.925)	(0.103)	(0.128)	(0.103)	(0.149)
AQTA	−0.136	−1.013	−0.156	−0.087	−0.024	−0.027	−0.025	0.020
	(0.298)	(0.638)	(0.298)	(0.629)	(0.045)	(0.102)	(0.045)	(0.102)
POTA	−0.871***	−0.733	−0.870***	−1.242	−0.212***	−0.291	−0.211***	−0.365
	(0.264)	(1.859)	(0.264)	(1.790)	(0.040)	(0.298)	(0.040)	(0.289)
FDI	0.014	−0.878***	0.023	−0.635**	0.012	−0.124***	0.014	−0.094**
	(0.136)	(0.297)	(0.136)	(0.286)	(0.021)	(0.048)	(0.021)	(0.046)
TAX	0.802***	−4.526***	0.792***	−4.125***	0.095***	−0.476***	0.094***	−0.399***
	(0.151)	(0.960)	(0.151)	(0.940)	(0.023)	(0.154)	(0.023)	(0.152)
SEG	−0.084***	−0.059	−0.083***	−0.053	−0.017***	−0.014**	−0.017***	−0.014**
	(0.030)	(0.037)	(0.030)	(0.037)	(0.005)	(0.006)	(0.004)	(0.006)
(Intercept)		−0.401		−1.256***		0.307***		0.237***
		(0.382)		(0.430)		(0.061)		(0.069)
Industry		N		Y		N		Y
Firms		807		807		807		807
Observations		6672		6672		6672		6672
AIC		2550		2545		−22409		−22299
BIC		2938		3123		−22021		−21721
Marginal R2		0.889		0.900		0.557		0.590
Cond. R2		0.973		0.973		0.902		0.902
Entity ICC		0.760		0.730		0.780		0.760

Note: *** $p < 0.01$; ** $p < 0.05$; * $p < 0.1$. Prob-values calculated using Satterthwaite degrees of freedom. Standard errors in parentheses. CASH is the natural logarithm of cash and CATA is the ratio of cash to total assets. OSNS is the ratio of overseas sales to net sales. FSHR is the ratio of shares held by foreign entities to total shares outstanding. Low and high measures of PDI, IDV, MAS, UAI, LTO, and IVR are the cultural dimensions as as defined in the text. SIZE is the natural logarithm of total assets. MTB is the market to book ratio. CFTA is the ratio of cash flow to total assets. CFV is cash flow volatility over the previous 10 years. NWCTA is net working capital to total assets. LEV is the ratio of short- and long-term debt to total assets. CAPTA is the ratio of capital expenditure to total assets. RDTA is the ratio of R&D expenditure to total assets. AQTA is the ratio of acquisitions to total assets. POTA is the ratio of payouts, via dividends and repurchases, to total assets. SEG represents the number of business segments that firms operate in. FDI represents the weighted average index of financial development calculated over firms' subsidiary countries. TAX is a weighted average of the tax differential between Japan and the firms' subsidiary countries. INDUSTRY represents dummies included to account for industry effects. Firms represents the number of unique firms in the sample.

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