

Corporate cash holdings, culture and international factors in Japan

Clinton Watkins PhD

Akita International University

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Cash holdings have increased substantially

- Bates et al. (2009): U.S. firms' cash to assets ratio doubled between 1980 to 2006.
- Sánchez and Yurdagül (2013): In 2011 U.S. firms held 4 times the cash in 1995 and 11 times the cash in 1979.
- Dao and Maggi (2018): By early 2000s non-financial firms in U.S., U.K., Canada, France, Germany, Italy, Japan, Korea, and the Netherlands became net lenders to the rest of the economy.
- The Economist (2014): 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.

- Transactions motive
 - Firms do not need to liquidate assets to make transactions.
- Precautionary motive
 - Hedge the risk of future cash shortfalls with respect to their requirements for investment and working capital (financing constraints, corporate risks).
- Agency motive
 - Managers misuse cash for their own gain (governance).
- Taxation, repatriation costs, diversification, product market competitiveness and others.

- Investigate the relationship between international factors and the cash holdings of Japanese multinational firms.
 - Cultural heterogeneity between parent & subsidiaries.
 - Exposure to overseas sales.
 - Foreign shareholding.

Related literature, culture and cash holdings

- Culture (Guiso et al., 2006): "those customary beliefs and values that ethnic, religious, and social groups transmit fairly unchanged from generation to generation."
- Chang and Noorbakhsh (2009): U.S. firms' cash holdings positively related to home country uncertainty avoidance, masculinity and long-term orientation.
- Chen et al. (2015): Firms' cash holdings negatively associated with individualism, positively associated with uncertainty-avoidance through the precautionary motive.
- So and Zhang (2022): U.S. multinational firms' cash holdings positively associated with cultural heterogeneity between parent and subsidiaries.

Hypotheses

- H1: The cash holdings of Japanese multinationals are positively associated with their cultural heterogeneity.
 - Cultural heterogeneity between a Japanese multinational and its subsidiaries increases perceived financial constraints and corporate risks, widens scope for potential agency costs.
- H2: Cash holdings are also positively associated with the ratio of overseas to total sales.
 - Japanese firms rely to a greater extent on internal funds for expansion overseas because they are more financially constrained (Kang and Piao, 2015). A high reliance on overseas sales suggests suggest greater cash flow and corporate risks.
- H3: Cash holdings are positively associated with the degree of foreign ownership.
 - Firms with more liquid stocks hold higher cash balances because high market liquidity implies a higher crash risk, thus greater financing risks (Fujitani et al., 2023). Foreign investors hold 30% of TSE stocks, responsible for 60% of turnover.

Cash Ratios: CATA, CANA, CANS



Annual average cash ratios for 191 constituents of the Nikkei 225 index from 2014 to 2023. The cash ratios are: cash to total assets (CATA), cash to net assets (CANA) and cash to net sales (CANS). $CASH_{i,t} = \alpha + \beta_1 CH_{i,t} + \beta_2 OSNS_{i,t} + \beta_3 FSHR_{i,t}$ $+ \delta CONTROLS_{i,t} + INDUSTRY_{i,t} + YEAR_t + \epsilon_{i,t}$

- Firm-level financial controls:
 - size, market-to-book, cash flow to total assets, cash flow volatility, net working capital to total assets, leverage to total assets, capital expenditure to total assets, R&D expenditure to total assets, acquisitions to total assets, payout to total assets.
- Country-level controls:
 - financial development (IMF FDI) and corporate taxation differential with Japan.



- Listed Japanese multinational firms included in the Nikkei 225 index.
- Financial firms and those with no overseas subsidiaries are excluded.
- Exclude firms with missing financial data.
- Unbalanced panel containing 1,407 annual observations for 156 firms over the period 2014 to 2023.

Yukashouken Houkokusho (有価証券報告書)

- Known as the "Yuho".
- Section 1(4) provides information on affiliates.
- Record the countries where each firm has at least one subsidiary in which it controls 50.01 percent or more of the voting rights as variable SUB for company i and country j.
- Example, Toyota Motor (name, location, investment, business details, percentage of voting rights held, and other information).

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Hofstede's cultural dimensions

- Power distance (PDI)
 - Extent the less powerful members of organizations and institutions accept and expect that power is distributed unequally.
- Individualism collectivism (IND)
 - Extent to which people feel independent, as opposed to being interdependent as members of larger wholes.
- Masculinity femininity (MAS)
 - Extent to which the use of force in endorsed socially.
- Uncertainty avoidance (UAI)
 - Society's tolerance for uncertainty and ambiguity.
- Long-term orientation (LTO)
 - The world is in flux, preparing for the future is necessary versus the world is as it was created, the past provides a moral compass.
- Indulgence self restraint (LVR)
 - Its good to be free versus life is hard, importance of duty is normal.

Cultural dimensions for 71 countries and Japan



Hofstede Cultural Dimensions

Measuring cultural heterogeneity

• Euclidean cultural distance (CD) between country j and Japan over k cultural dimensions scaled by the in-sample variance of each dimension:

$$CD_j = rac{1}{K} imes \sqrt{\sum\limits_{k=1}^K rac{\left(I_{k,j} - I_{k,JPN}
ight)^2}{V_k}}$$

 Average cultural heterogeneity (CH) for firm i (BR is the number of subsidiary-countries):

$$CH_i = \frac{\sum_{j=1}^{J} SUB_{i,j} \times CD_j}{BR_i}$$

- Ratio of overseas sales to net (total) sales (OSNS).
- Ratio of foreign shareholding to total shares outstanding (FSHR).

	Mean	Median	Minimum	Maximum	Stdev	Skewness	Kurtosis
OSNS	0.547	0.576	0.018	0.970	0.220	-0.305	-0.837
FSHR	0.316	0.300	0.004	0.929	0.125	1.226	2.988

Correlations between variables of interest

	CH6	CH4	СНРDI	CHIDV	CHMAS	CHUAI	СНГТО	CHLVR	log(BR)	OSNS
CH4	0.850	1.000								
CHPDI	0.445	0.375	1.000							
CHIDV	0.454	0.363	-0.075	1.000						
CHMAS	0.407	0.531	-0.051	-0.224	1.000					
CHUAI	0.624	0.715	0.453	0.480	-0.167	1.000				
CHLTO	0.457	-0.057	0.178	0.211	-0.035	-0.054	1.000			
CHLVR	0.366	0.004	0.199	0.403	-0.200	0.050	0.546	1.000		
$\log(BR)$	-0.298	-0.313	0.109	-0.712	0.166	-0.412	-0.032	-0.120	1.000	
OSNS	-0.280	-0.269	-0.039	-0.298	-0.047	-0.262	-0.137	0.010	0.343	1.000
FSHR	-0.129	-0.074	-0.156	-0.003	-0.058	-0.046	-0.155	0.035	0.072	0.201

Quintile portfolios for CH6, rebalanced annually.

Mean	Quintile 1 (Low CH)	Quintile 2	Quintile 3	Quintile 4	Quintile 5 (High CH)
CATA	0.174	0.160	0.133	0.128	0.112
CANA	0.253	0.212	0.172	0.167	0.148
CANS	0.298	0.263	0.188	0.200	0.170
CH6	0.598	0.628	0.645	0.668	0.712
CH4	0.799	0.839	0.865	0.893	0.943
BR	2.275	2.528	2.471	2.139	1.881
OSNS	0.632	0.593	0.543	0.533	0.427
FSHR	0.343	0.331	0.303	0.311	0.293
SIZE	14.051	14.417	14.062	14.055	14.404
MTB	1.967	1.946	1.873	1.846	1.296
CFTA	0.087	0.079	0.078	0.074	0.057
CFV	0.029	0.030	0.027	0.026	0.030
NWCTA	0.294	0.249	0.218	0.203	0.128
LEV	0.155	0.200	0.205	0.194	0.234
CAPEXTA	0.052	0.044	0.048	0.042	0.040
RDTA	0.035	0.040	0.034	0.030	0.017
AQTA	0.024	0.029	0.031	0.035	0.048
ΡΟΤΑ	0.025	0.023	0.023	0.020	0.012
ROA	0.085	0.072	0.075	0.066	0.051
ROE	0.099	0.091	0.093	0.075	0.070

Pooled OLS regressions

Dependent:		CATA			CANA			CANS	
Model:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Constant	0.213*	0.181*	0.175	0.177	0.114	0.038	0.430	0.357	0.225
	(1.80)	(1.86)	(1.47)	(0.763)	(0.554)	(0.137)	(1.34)	(1.07)	(0.674)
CH6	-0.322**			-0.455			-0.760*		
	(-2.04)			(-1.64)			(-1.91)		
CH4		-0.207**			-0.274			-0.492	
		(-2.20)			(-1.65)			(-1.59)	
CHPDI			-0.056			-0.051			-0.253
			(-0.870)			(-0.386)			(-1.24)
CHIDV			0.073			0.210			0.214
			(1.27)			(1.38)			(1.47)
CHMAS			-0.043*			-0.047			-0.055
			(-1.74)			(-1.10)			(-0.910)
CHUAI			-0.042			-0.089			-0.103*
			(-1.54)			(-1.47)			(-1.74)
CHLTO			-0.030			-0.040			-0.114*
			(-0.872)			(-0.656)			(-1.74)
CHLVR			0.012			-0.070			0.238
			(0.187)			(-0.553)			(1.56)
OSNS	0.103***	0.104***	0.113***	0.183***	0.185***	0.210***	0.086	0.088	0.111
	(2.92)	(3.00)	(3.16)	(2.67)	(2.73)	(2.83)	(0.891)	(0.877)	(1.22)
FSHR	0.255***	0.261***	0.236**	0.663**	0.671**	0.638*	0.763***	0.777***	0.681**
	(2.64)	(2.70)	(2.51)	(2.01)	(2.04)	(1.97)	(2.76)	(2.81)	(2.59)
Observations	1,407	1,407	1,407	1,407	1,407	1,407	1,407	1,407	1,407
Adjusted R^2	0.203	0.201	0.225	0.213	0.212	0.231	0.156	0.155	0.199

Fixed effect panel regressions

- Including the 12 control variables mentioned earlier.
- Tokyo Stock Exchange classification industry (INDY) and YEAR fixed effects.
- Standard errors double clustered on FIRM and YEAR to take account of within cluster serial correlation and heteroscedasticity.

Dependent:		CATA			CANA			CANS	
Model:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
CH6	0.030			0.126			-0.155		
	(0.281)			(0.688)			(-0.500)		
CH4		-0.025			0.137			-0.069	
		(-0.380)			(1.01)			(-0.293)	
CHPDI			0.016			0.062			-0.049
			(0.323)			(0.550)			(-0.310)
CHIDV			-0.105**			-0.157			-0.211
			(-2.36)			(-1.68)			(-1.40)
CHMAS			0.010			0.058			0.072
			(0.609)			(1.78)			(1.44)
CHUAI			0.014			0.038			0.026
			(0.823)			(1.02)			(0.452)
CHLTO			0.043**			0.054			0.063
			(2.46)			(1.45)			(0.967)
CHLVR			-0.048			-0.172			-0.110
			(-1.03)			(-1.55)			(-1.03)
OSNS	0.075**	0.074**	0.069**	0.201**	0.203**	0.199**	0.143	0.144	0.134
	(2.57)	(2.49)	(2.31)	(2.48)	(2.49)	(2.41)	(1.53)	(1.52)	(1.41)
FSHR	0.082	0.082	0.088	0.386	0.385	0.399	0.218	0.219	0.237
	(1.39)	(1.38)	(1.45)	(1.74)	(1.75)	(1.78)	(1.24)	(1.25)	(1.35)
Significant	CFTA	CETA	CFTA	CFTA	CFTA	CFTA	SIZE	SIZE	SIZE
control	CFV	CFV	CFV	CFV	CFV	CFV	CFV	CFV	CFV
variables	NWCTA	NWCTA	NWCTA	NWCTA	NWCTA	NWCTA	NWCTA	NWCTA	NWCTA
	CAPEXTA	CAPEXTA	CAPEXTA	CAPEXTA	CAPEXTA	CAPEXTA	CAPEXTA	CAPEXTA	CAPEXTA
			FDI				RDIA	RDIA	POTA
TSEINDY	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
VEAR	Vec	Vec	Vec	Vec	Vec	Vec	Vec	Vec	Vec
TEAN	163	103	163	103	103	163	103	103	103
Observations	1,407	1,407	1,407	1,407	1,407	1,407	1,407	1,407	1,407
R ²	0.700	0.700	0.713	0.630	0.630	0.641	0.558	0.557	0.568
Within R^2	0.567	0.567	0.586	0.501	0.502	0.516	0.370	0.370	0.384

Conclusion, limitations, next steps

- Cash holdings positively associated with the overseas sales ratio.
- Contrary to U.S. evidence no support for a positive relationship between cash holdings and cultural heterogeneity.
- Foreign shareholding ratio is not important in the presence of controls.
- Sample is too small and firms possibly too homogeneous. NLP machine learning approach to collect subsidiary data for all listed firms?
- Robustness and alternative measures of cultural heterogeneity.

Cultural heterogeneity (CH6) by firm (TICKER)



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