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Fair value accounting and corporate cash holdings

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ABSTRACT

A trade-off often exists between relevance and reliability of accounting numbers. Prior research suggests that fair value accounting increases the relevance and decreases the reliability. The reduced reliability may lead to more agency conflicts. We predict a positive relation between the use of fair value inputs and the level of corporate cash holdings because prior research links more agency conflicts to a higher level of cash. We find that increased use of fair value inputs is associated with a higher level of cash holdings, and the results are mainly driven by Level 1 and Level 2 fair value inputs. In addition, we find that our results are stronger for firms with more-able managers.

1. Introduction

Fair value accounting has received tremendous attention in academic research since the early 2000s. In 2006, the Financial Accounting Standards Board, 2006 (FASB) issued a significant standard, Accounting Standards Codification 820, (ASC 820), *Fair Value Measurement*. ASC 820 requires that firms using fair value inputs (assets and liabilities) disclose fair value inputs by levels. Specifically, Level 1 fair value inputs have the highest level of measurement certainty, and Level 3 fair value inputs have the lowest level of measurement certainty. A large body of prior research documents that the use of fair value inputs increases the relevance (e.g., Song, Thomas, & Yi, 2010) and reduces the reliability of accounting numbers (e.g., Allen and Ramanna, 2013), suggesting a trade-off between relevance and reliability.

Despite the surge of attention on fair value accounting, there is little empirical evidence on whether and how the use of fair value inputs relates to the level of corporate cash holdings. The purpose of this study is to examine the association between fair value inputs and corporate cash holdings. From the relevance-reliability trade-off perspective, if using fair value inputs reduces the reliability of accounting numbers, then investors may make wrong decisions because these numbers are less-credible and less-verifiable. In addition, a high level of managerial opportunistic or self-serving behavior is often involved in the use of fair value accounting (Watts, 2003). Both factors suggest that the reduced reliability may increase the agency conflicts between investors and managers. Thus, we argue that a positive association may exist between the use of fair value inputs and cash holdings because prior research (e.g., Oper, Pinkowitz, Stulz, and Williamson, 1999; Dittmar, Mahrt-Smith, & Servaes, 2003; Kalcheva & Lins, 2007) suggests that firms with more agency conflicts hold more cash.

We focus on cash in our study for the following reasons. First, cash is an important liquid asset on a firm's balance sheet. Myers and Rajan (1998) argue that managers often manipulate cash to engage in activities that are against shareholders' interests because of the liquid nature of cash. Second, anecdotal evidence suggests that the level of cash holdings has significantly increased recently. For example, the average cash-to-assets ratios have increased from approximately 11% in 1980 to 23% in 2006 (Bates, Kahle, & Stulz, 2009). It appears that more companies (i.e., Apple, Google, and etc.) hold a significant amount of cash. For example, Apple held $208 billion cash in 2015. Hence, understanding why firms hold large amounts of cash has been the focus of research in finance and accounting. Third, from an accounting perspective, cash is regarded as the most risky account, because a large number of accounting transactions flow through this account. Thus, different stakeholder groups such as shareholders and auditors pay extra attention to a firm's cash account (Whittington & Pany, 2015).

Using 24,741 firm-year observations from 2008 to 2015, we regress the level of cash holdings on the intensity of fair value inputs and control for other factors that may influence the level of cash holdings. We find a significant positive relation between the intensity of fair value inputs and cash holdings, suggesting that firms using more fair value inputs hold more cash. This evidence is consistent with our prediction that more use of fair value leads to more agency problems, leading to a higher level of cash. We further find that our results are mainly driven by Level 1 and Level 2 fair value inputs, as results show a significant relation between cash and Level 1 and Level 2 inputs. We do not find a significant positive relation between cash and the intensity of Level 3 inputs, which is regarded as the least reliable level (relative to

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Level 1 and 2). We acknowledge that the insignificant relation between cash and Level 3 inputs (the least reliable level) is inconsistent with our prediction and argue that this insignificant relation may be partially caused by the lower frequency and smaller magnitude of Level 3 inputs.

It is possible that some other firm characteristics may affect the use of fair value accounting and cash holdings simultaneously. In addition, both the use of fair value accounting and cash holdings are choices of a firm, suggesting that certain endogeneity issues may exist in our study. Therefore, we perform a battery of additional tests to check the robustness of our primary findings and to mitigate concerns about endogeneity. We still obtain similar results, suggesting that our findings are robust and that endogeneity is not a major concern.

Our study makes several notable contributions. First, it contributes to and links two distinctive streams of research: fair value measurements in accounting and corporate cash holdings in finance literature. To the best of our knowledge, this is the first study that examines the relation between the use of fair value inputs and cash holdings. Second, our study joins the debate on whether using fair value inputs is beneficial or detrimental to the transparency and quality of financial reporting. Our findings suggest that using more fair value inputs may cause more agency conflicts, leading to a high level of cash holdings. Hence, our findings are in line with prior studies (e.g., Muller & Riedl, 2002). In particular, our findings strengthen the validity of the relevance-reliability trade-off and the notion in prior research that using fair value inputs decreases the reliability of accounting numbers. Third, although a large body of literature on the determinants of cash holdings exists, Kusnadi and Wei (2012) argue that “the debate on the agency cost explanation for cash holdings is still on-going”. Hence, our study joins the debate on the agency motive for cash holdings. Moreover, examining the impact of fair value inputs on cash should also lead to a more comprehensive understanding of the determinants of cash holdings. Fourth, our study also contributes to the managerial ability literature. Prior research (e.g., Demerjian, Lev, & McVay, 2012) suggest that managerial ability influences firm performance and outcomes and that more-able managers better manage firm resources. We find that our results are stronger for firms with more-able managers, suggesting that managerial ability plays an important role in using fair value inputs. Lastly, our study has practical implications. For example, investors who are concerned about agency problems should be alert if their firms use more fair value assets and liabilities. Our results provide practitioners with additional information about the determinants of cash holdings. Our study also has implications for standard setters who design and implement standards on the use of fair value accounting.

The remainder of this paper is divided into four sections. Section 2 provides a literature review of related research and develops the hypothesis. Section 3 presents the research design. Section 4 discusses the main results and Section 5 presents results of additional tests. Section 6 concludes this paper.

2. Literature review and hypothesis development

2.1. Corporate cash holdings

Finance literature has extensively examined the determinants of corporate cash holdings. Opler, Pinkowitz, Stulz, and Williamson (1999) argue that a firm's optimal cash level is determined by the trade-off between marginal benefits and costs of holding cash. Using a large sample of public U.S. firms from 1971 to 1994, Opler et al. (1999) find that the level of cash is determined by several firm-level variables such as size, leverage, working capital, market-to-book ratio, operating cash flow, capital expenditures, dividends, and research and development expenditures. Dittmar et al. (2003) find that firms in countries with weak protection of shareholders rights need to hold more cash. Similarly, Dittmar and Mahrt-Smith (2007) find that firms with weak corporate governance hold more cash than firms with strong governance. Foley, Hartzell, Titman, and Twite (2007) find that tax burden is an important factor in determining the level of cash. Tong (2010) examines the impact of CEO's risk characteristics on cash holdings and finds that risk-taker CEOs hold less cash. Subramaniam, Tang, Yue, and Zhou (2011) argue that firm structure should influence cash holdings, and find that firms with more business segments (i.e., more diversified firms) hold less cash. Hill, Fuller, Kelly, and Washam (2014) find that firms with more political connections hold a lower level of cash. Cohen and Li (2016) find that firms that have the government as a major customer hold less cash than firms that do not have the government as a major customer.

Bates et al. (2009) propose that one possible motive to explain the level of cash is the agency conflict. This agency motive argues that entrenched managers (those do not maximize shareholders' value) would rather keep more cash than increase payouts to shareholders (Jensen, 1986). Other studies (e.g., Hartford, 1999; Dittmar et al., 2003, Faulkender & Wang, 2006; Pinkowitz, Stulz, & Williamson, 2006; and Dittmar and Mahrt-Smith, 2007) also find that firms with more agency problems (i.e., agency conflicts) tend to hold more cash. Nikolov and Whited (2011) suggest that agency problems can lead to an increase in cash holdings by approximately 22%. Gao, Harford, and Li (2013) find that public firms hold more cash than private firms, arguing that this difference (in cash) is caused by the high number of agency problems or conflicts in public firms. Cheung (2016) finds that socially responsible firms hold more cash than socially irresponsible firms and argues that socially responsible firms focus on maximizing stakeholders value instead of shareholders' value. Hence, Cheung (2016) suggests that socially responsible firms have more agency conflicts (between managers and investors) because these firms put too much focus on their stakeholders rather than their shareholders.

2.2. Fair value accounting and ASC 820

Relevance and reliability are “two primary qualities that make accounting information useful for decision making” (FASB, 1980; p50). Relevance refers to timeliness, comparability and understandability, while reliability refers to credibility and verifiability of accounting information. The FASB suggests a trade-off between relevance and reliability and states that significant disagreements often arise whether the relevance is more important than the reliability to information users (FASB, 1980; p8). Recent studies (e.g., Schondube-Pirchegger & Schondube, 2017) also suggest that whether a focus on relevance or reliability makes accounting information more useful still remains unknown. Allen and Ramanna (2013) argue that there is a trade-off between relevance and reliability and that the FASB tends to propose accounting standards that increase relevance and reduce reliability. One classic example of such standards is the fair value accounting standard. Since the early 2000s, the FASB has expanded the use of fair value accounting. Examples of fair value accounting include derivatives and hedges, financial assets, and goodwill impairment.

The savings and loan crisis of the 1980s and 1990s has generated tremendous criticism of the use of historical cost accounting. Many argue that the use of historical cost accounting fails to provide accurate and timely information to users. Instead, many believe that the use of fair value accounting may better reflect the true economic substance or reality. Accounting standard setters have moved toward greater use of fair values for reporting assets and liabilities since the beginning of the 2000s (Song et al., 2010). For example, the FASB established a project for fair value measures in 2003. In September 2006, the FASB issued ASC 820 (formerly known as FAS No. 157), *Fair Value Measurement*. The FASB claims that fair value information is relevant to information users (Paragraph C2 of ASC 820).

ASC 820 defines fair value as “the price that would be received to sell an asset or paid to transfer in an orderly transaction between market participants at the measurement date”. ASC 820 establishes a hierarchy of inputs for fair value measurements from the least to most risky. Level 1 inputs are observable prices for identifiable assets or

liabilities in the active market. Level 2 inputs include quoted prices for similar assets or liabilities in active markets or observable prices in the inactive market. Level 3 inputs are unobservable and firm-supplied estimates for assets or liabilities, and hence Level 3 is regarded as the least reliable level (relative to Level 1 and 2). Song et al. (2010) suggest that Level 3 fair value assets and liabilities are subject to the highest level of information asymmetry between managers and investors because Level 3 inputs, compared to Level 1 and Level 2 inputs, may contain estimation errors caused by managerial discretion.

Prior research has focused on the reliability of fair value accounting. Empirical findings are still mixed. On one hand, some studies (e.g., Barth, Beaver, & Landsman, 1996; Eccer, Ramesh, and Thiagargajan, 1996; Carroll, Linsmeier, & Petroni, 2003; Song et al., 2010) find that fair value assets and liabilities are value relevant, suggesting that fair value accounting has more explanatory power than historical cost accounting. Penman (2007) argues that fair value inputs are indeed market-based inputs. Specifically, fair value assets and liabilities contain timely and important information of market expectations about future cash flows (Hitz, 2007). Thus, such timely information in fair value inputs better reflect a firm's true financial position (Wang & Zhang, 2017). For example, Plantin, Sapra, and Shin (2008) suggest that any changes in fair value accounting signal the changes in a firm's risk assessment, allowing investors to take early corrective actions. Taken together, this research stream suggests that fair value inputs are relevant to decision making and can reduce information asymmetry between managers and investors.

On the other hand, some studies find that fair value assets and liabilities are not reliable, leading to lower quality of financial reporting. For example, prior research (e.g., Dechow, Myers, & Shakespeare, 2008; Deitrich, Harris, & Muller, 2000; Lee & Park, 2013; Muller & Riedl, 2002) suggests that managers manipulate the estimation of fair value inputs, especially Level 3 inputs. Wang and Zhang (2017) argue that fair value inputs (e.g., Level 2 and Level 3 inputs) are either based on the market prices of similar inputs or managers' estimation, leading to more information asymmetry between managers and financial statement users such as investors. Taken together, the above studies suggest that agency conflicts may increase when a firm uses more fair value assets and liabilities.

In sum, the above arguments are consistent with the trade-off between relevance and reliability of accounting numbers. On one hand, using fair value inputs appears to increase the relevance (i.e., timeliness, comparability, and understandability). On the other hand, using fair value inputs decreases the reliability (i.e., creditability; verifiability) of accounting numbers, leading to a high possibility of investors making wrong decisions and a high level of managerial opportunistic or self-serving behavior.

2.3. Hypothesis development

It is documented that fair value accounting increases the relevance and decreases the reliability of accounting numbers (Allen & Ramanna, 2013). If using fair value accounting generates less-credible information to shareholders, then it is more likely that these shareholders (i.e., investors) may make wrong investment decisions, causing potential agency conflicts between investors and managers. In addition, if fair value inputs are manipulated by managers who engage in self-serving actions at principals' expenses (Jensen & Meckling, 1976; Watts, 2003), we posit that estimation errors in fair value inputs caused by managers' opportunistic behavior also lead to more agency conflicts. Thus, based on the agency motive of cash holdings, we expect a positive relation between the use of fair value inputs and cash holdings, leading to the following hypothesis:

H1. The intensity of fair value assets and liabilities is positively related to cash holdings.

3. Research design

3.1. Empirical specification

We use the following models to test the impact of fair value inputs on corporate cash holdings.

$$CASH = \beta_0 + \beta_1 FV + \beta_2 SIZE + \beta_3 LEV + \beta_4 MTB + \beta_5 ROA + \beta_6 CFO + \beta_7 CAPX + \beta_8 NWC + \beta_9 REA + \beta_{10} DP + \beta_{11} DIV + \beta_{12} REPUR + \beta_{13} RD + \beta_{14} SGR + Year/Industry\ Dummy\ Variables + \varepsilon \quad (1)$$

$$CASH = \beta_0 + \beta_1 FVL1 + \beta_2 FVL2 + \beta_3 FVL3 + \beta_4 SIZE + \beta_5 LEV + \beta_6 MTB + \beta_7 ROA + \beta_8 CFO + \beta_9 CAPX + \beta_{10} NWC + \beta_{11} REA + \beta_{12} DP + \beta_{13} DIV + \beta_{14} REPUR + \beta_{15} RD + \beta_{16} SGR + Year/Industry\ Dummy\ Variables + \varepsilon \quad (2)$$

In both equations, we use two measures of cash holdings. The first cash measure (*CASH1*) is calculated as the ratio of cash to total assets, and the second cash measure (*CASH2*) is calculated as the ratio of cash to total assets net of cash. Hence, the dependent variable (*CASH*) alternatively represents one of the two above cash measures. Both cash measures (*CASH1* and *CASH2*) have been used extensively in finance and accounting literature (e.g., Bates et al., 2009; Cheung, 2016; Opler et al., 1999).

In Eq. (1), the primary independent variable of interest is the intensity of fair value assets and liabilities (*FV*). Specifically, following prior studies (e.g., Magnan, Menini, and Parbonett, 2015), *FV* is calculated as the total value of fair value assets and liabilities, scaled by total assets. In Eq. (2), the primary independent variables of interest are *FVL1*, *FVL2*, and *FVL3*. *FVL1* is the Level 1) fair value assets and liabilities, scaled by total assets. Similarly, *FVL2* (*FVL3*) is the Level 2 (Level 3) fair value assets and liabilities, scaled by total assets.

In addition to our variable of interest, we also control for factors that are related to corporate cash holdings in prior research. Specifically, following prior studies (e.g., Opler et al., 1999; Dittmar & Mahrt-Smith, 2007; Bates et al., 2009; Arouri and Pijourlet, 2015; Cheung, 2016), we control for firm size (*SIZE*), financial performance (*ROA*), leverage ratio (*LEV*), market to book ratio (*MTB*), cash flows from operating activities (*CFO*), capital expenditures (*CAPX*), net working capital (*NWC*), retained earnings (*REA*), dividend-paying dummy (*DP*), dividends (*DIV*), share repurchases (*REPUR*), sales growth (*SGR*), and research and development expenditures (*RD*). All variables are defined in Appendix 1.

Petersen (2009) suggests that research studies using panel data should control for firm and year effects. Hence, we use clustered standard errors regression (by firm and year) as the primary regression. We winzorize the continuous variables in Eqs. (1) and (2) at the level of 1% and 99%. Additionally, we include the industry and year dummy variables in the regression analysis.[1]

3.2. Sample selection and descriptive statistics

From Compustat, we obtain financial statement data for the following variables: Level 1 fair value assets (*AQPL1*), Level 1 fair value liabilities (*LQPL1*), Level 2 fair value assets (*AOL2*), Level 2 fair value liabilities (*LOL2*), Level 3 fair value assets (*AUL3*), Level 3 fair value liabilities (*LUL3*), current assets (*ACT, #4*), total assets (*AT, #6*), capital expenditures (*CAPX, #128*), cash and cash equivalents (*CHE, #1*), book value of equity (*CEQ, #60*), common stock shares (*CSHO, #25*), dividends (*DVC, #21*), long-term debt (*DLTT, #9*), income before extraordinary items (*IB, #18*), total current liabilities (*LCT, #5*), stock price

[1] Fama and French (1997)

Table 1
Sample distribution.

Panel A: Firm-year observations by fiscal year

Fiscal year	Observations	Percent	Cumulative percent
2008	2208	8.92%	8.92%
2009	3272	13.23%	22.15%
2010	3453	13.96%	36.11%
2011	3455	13.96%	50.07%
2012	3341	13.50%	63.57%
2013	3101	12.53%	76.11%
2014	3060	12.37%	88.48%
2015	2851	11.52%	100.00%
Total	24,741	100.00%	

Panel B: Firm-year observations by industry

2 SIC	Description	Sample		Compustat		2 SIC	Description	Sample		Compustat	
		#	%	#	%			#	%	#	%
01	Agricultural crops	67	0.27%	193	0.19%	45	Air transportation	257	1.04%	448	0.45%
02	Agricultural livestock	9	0.04%	39	0.04%	46	Pipelines	3	0.01%	119	0.12%
07	Agricultural services	14	0.06%	36	0.04%	47	Transportation services	107	0.43%	232	0.23%
08	Forestry	2	0.01%	27	0.03%	48	Communications	1000	4.04%	1883	1.90%
10	Metal mining	888	3.59%	5927	5.97%	49	Utilities services	1092	4.41%	3086	3.11%
12	Coal mining	90	0.36%	239	0.24%	50	Wholesale durable	373	1.51%	971	0.98%
13	Oil & gas extraction	1491	6.03%	4363	4.40%	51	Wholesale nondurable	267	1.08%	754	0.76%
14	Mining	78	0.32%	432	0.44%	52	Building materials	29	0.12%	79	0.08%
15	Building construction	32	0.13%	257	0.26%	53	General stores	112	0.45%	217	0.22%
16	Heavy construction	102	0.41%	221	0.22%	54	Food stores	119	0.48%	312	0.31%
17	Special construction	54	0.22%	104	0.10%	55	Automotive service	120	0.49%	230	0.23%
20	Food	671	2.71%	1313	1.32%	56	Apparel stores	239	0.97%	387	0.39%
21	Tobacco	38	0.15%	60	0.06%	57	Furniture stores	63	0.25%	183	0.18%
22	Textile	57	0.23%	111	0.11%	58	Eating & drinking	292	1.18%	713	0.72%
23	Apparel	175	0.71%	382	0.38%	59	Miscellaneous retail	313	1.27%	849	0.86%
24	Lumber	141	0.57%	289	0.29%	60	Depository institutions	63	0.25%	11,301	11.39%
25	Furniture	126	0.51%	222	0.22%	61	Nondepository institutions	56	0.23%	1900	1.91%
26	Paper	235	0.95%	469	0.47%	62	Brokers	246	0.99%	1761	1.77%
27	Printing	177	0.72%	453	0.46%	63	Insurance carriers	58	0.23%	2398	2.42%
28	Chemicals	2878	11.63%	6974	7.03%	64	Insurance	61	0.25%	200	0.20%
29	Petroleum	222	0.90%	477	0.48%	65	Real estate	172	0.70%	1055	1.06%
30	Rubber	158	0.64%	386	0.39%	67	Investment offices	491	1.98%	21,760	21.93%
31	Leather	66	0.27%	127	0.13%	70	Hotels	81	0.33%	247	0.25%
32	Stone clay glass	123	0.50%	282	0.28%	72	Personal services	64	0.26%	119	0.12%
33	Primary metal	341	1.38%	673	0.68%	73	Business services	3060	12.37%	7219	7.28%
34	Fabricated metal	281	1.14%	550	0.55%	75	Auto repair	35	0.14%	109	0.11%
35	Industrial machinery	1276	5.16%	2405	2.42%	78	Motion pictures	82	0.33%	278	0.28%
36	Electronic equ.	2146	8.67%	4065	4.10%	79	Amusement	219	0.89%	557	0.56%
37	Transportation equ.	558	2.26%	1198	1.21%	80	Health services	426	1.72%	910	0.92%
38	Measuring instruments	1468	5.93%	2978	3.00%	81	Legal services	3	0.01%	8	0.01%
39	Other manufacturing	189	0.76%	364	0.37%	82	Educational services	139	0.56%	318	0.32%
40	Railroad	28	0.11%	92	0.09%	83	Social services	16	0.06%	50	0.05%
41	Local transit	11	0.04%	30	0.03%	87	Engineering & accounting	363	1.47%	817	0.82%
42	Motor freight	116	0.47%	274	0.28%	99	Nonclassified	96	0.39%	1115	1.12%
44	Water transportation	316	1.28%	632	0.64%		Total	24,741	100.00%	99,229	100.00%

Panel A: This panel presents the firm-year observations by fiscal year. The sample consists of 24,741 firm-year observations from 2008 to 2015, representing 5682 individual firms.
Panel B: This panel presents the firm-year observations by industry, based on the first two digits of the Standard Industrial Classification (SIC) code. The sample consists of 24,741 firm-year observations from 2008 to 2015, representing 5682 individual firms.

at fiscal-year end (*PRCC_F, #24*), share repurchases (*PRSTKC, #115*), retained earnings (*RE, #36*), sales (*SALE, #12*), and research and development expenses (*XRD, #46*) from 2008 to 2015. The initial dataset consists of 99,229 firm-year observations. Next, we remove observations with missing data. The final sample with complete data consists of 24,741 firm-year observations from 2008 to 2015, representing 5682 unique firms.

Panel A of Table 1 shows the distribution of firm-year observations by fiscal year. For example, there are 2208 firm-year observations in 2008 and 2851 observations in 2015. The sample observations indicate an upward trend from 2008 to 2011 and a downward trend from 2011 to 2015. The year 2011 has the largest number of observations (Obs. = 3455). Panel B of Table 1 reports the distribution of firm-year observations by industry (based on the first 2 digits of the SIC code) for our sample and for the entire Compustat population from 2008 to 2015. For instance, there are 1000 firm-year observations in the communications industries and 3060 observations in the business services industries. The most heavily represented industry is business services (12.37%, SIC 73), followed by chemicals (11.63%, SIC 28), and electronic equipment (8.67%, SIC 36). Additionally, Table 1 Panel B reveals that our financial services firms (2 SIC: 60–67) do not represent the Compustat population. The large difference in the number of observations in financial services industries between our sample and the Compustat population may be partially caused by the control variable,

Table 2
Sample descriptive statistics.

Variable	Observations	Mean	Std dev	P1	Median	P3
CASH1	24,741	0.220	0.232	0.045	0.132	0.321
CASH2	24,741	0.684	1.762	0.047	0.152	0.472
FV	24,741	0.192	0.263	0.011	0.066	0.278
FVL1	24,741	0.094	0.173	0.000	0.009	0.106
FVL2	24,741	0.068	0.145	0.000	0.004	0.044
FVL3	24,741	0.023	0.090	0.000	0.000	0.003
SIZE	24,741	6.426	2.414	4.893	6.493	8.108
LEV	24,741	0.193	0.218	0.000	0.139	0.306
MTB	24,741	2.579	5.068	0.973	1.803	3.306
ROA	24,741	− 0.109	0.481	− 0.066	0.025	0.067
CFO	24,741	0.011	0.271	0.012	0.075	0.126
CAPX	24,741	0.052	0.065	0.013	0.030	0.064
NWC	24,741	− 0.048	0.387	− 0.078	0.001	0.100
REA	24,741	− 1.498	5.760	− 0.568	0.036	0.300
DP	24,741	0.990	0.101	1.000	1.000	1.000
DIV	24,741	0.012	0.026	0.000	0.000	0.014
REPUR	24,741	0.016	0.038	0.000	0.000	0.009
RD	24,741	0.011	0.029	0.000	0.000	0.005
SGR	24,741	− 0.006	0.526	− 0.062	0.053	0.171

This table presents the sample descriptive statistics of the variables. Specifically, this table reports the number of observations, pooled mean, standard deviation, 25th percentile (P1), median, and 75th percentile (P3) of dependent variables, independent variables of interest, and control variables. The sample consists of 24,741 firm-year observations from 2008 to 2015, representing 5682 individual firms. All continuous variables are winsorized at 1% and 99% percentiles. Refer to Appendix 1 for variable definition.

net working capital (NWC). Financial institutions do not report current assets or current liabilities because it is difficult to determine the due dates of assets and liabilities.

Table 2 presents sample descriptive statistics. Specifically, Table 2 reports the number of observations, mean, standard deviation, the 25th percentile, the 50th percentile (median), and the 75th percentile of the following variables: *CASH1, CASH2, FV, FVL1, FVL2, FVL3, SIZE, LEV, MTB, ROA, CFO, CAPX, NWC, REA, DP, DIV, REPUR, RD*, and *SGR*. For example, the mean and median values of *CASH1* and *CASH2* are 0.220 (0.132) and 0.684 (0.152), respectively. The mean (median) value of *FV* is 0.192 (0.066). The mean values of *FVL1, FVL2*, and *FVL3* are 0.094, 0.068, and 0.023, respectively. The median value of *ROA* is 0.025, suggesting that our sample firms demonstrate normal operating performance.

Table 3 provides the correlation matrices for selected variables for our sample firms. For each pair of variables, the Pearson correlation coefficients and *p*-values[2] are provided. Table 3 reports a significant and positive relationship between total fair value intensity (*FV*) and cash holdings (*CASH1* and *CASH2*), suggesting that firms with higher fair value assets and liabilities retain more cash. This is consistent with our hypothesis (H1). Table 3 also shows a significant and positive association between Level 1 and 2 fair value assets and liabilities (*FVL1* and *FVL2*) and cash holdings (*CASH1* and *CASH2*), suggesting that firms with higher intensity of Level 1 and 2 fair value tend to hold more cash. Overall, results in Table 3 lend support to the hypothesis (H1).

Table 3 shows that many correlations are fairly small. However, Table 3 reveals that two pairs of variables (CAPX and ROA; REA and NWC) are highly correlated. Additionally, Table 3 shows that many control variables are significantly related to both cash measures (*CASH1* and *CASH2*) and fair value measures (*FV*, *FVL1*, *FVL2*, and *FVL3*), suggesting the importance of testing our research question in a multivariate setting and controlling for each of these variables in our analysis.

[2] Two-tailed.

4. Main results

Table 4 presents the main regression results of Eq. (1) and Eq. (2). Using the full sample (Obs. = 24,741), the coefficient of *FV* is 0.006 (0.073) when the dependent variable is *CASH1* (*CASH2*). Both p-values are < 0.001, indicating that the above coefficients are statistically significant. The evidence suggests that firms with higher intensity of total fair value inputs hold more cash. Table 4 also shows that, in testing Eq. (2), the coefficients of *FVL1* and *FVL2* are 0.471 and 0.004, respectively, with a p-value of < 0.001 when the dependent variable is *CASH1*. The coefficients of *FVL1* and *FVL2* are 7.853 and 0.044, respectively, with a p-value of < 0.001 when the dependent variable is *CASH2*. However, Table 4 shows an insignificant relation between *FVL3* and both cash measures (*CASH1* and *CASH2*), which is inconsistent with our prediction. We argue that this insignificant relation may be partially caused by the lower frequency and smaller magnitude of Level 3 inputs. Overall, our findings suggest a significant and positive relation between the intensity of fair value inputs and corporate cash holdings, and this relation is largely driven by Level 1 and Level 2 fair value inputs. Following prior research (e.g., Cheung, 2016), we re-run the same regression procedures after excluding two highly-regulated industries (Utilities Firms, SIC 4000–4999; Finance Firms, SIC 6000–6999), and still obtain consistent results. Results are not tabulated for the sake of brevity.

For control variables, using Eq. (1) as an example, *CASH1* is positively related to *ROA*, *NWC*, *DP*, *DIV*, and *REPUR*, and negatively related to *SIZE*, *LEV*, *CAPX*, *REA*, and *RD*. The above findings are in line with general expectations. For example, the significant negative association between *SIZE* and *CASH1* is expected because prior research finds that larger firms tend to hold less cash (e.g., Bates et al., 2009; Miller & Orr, 1966). We also check the multicollinearity concern in the main regression analysis by examining the variance inflation factor (VIF). In untabulated results, we find that the VIF values are fairly small (< 5), suggesting that our results are not sensitive to multicollinearity.

5. Additional tests

5.1. Lag measures of fair value

Based on finance literature, firms holding a high level of cash may already have existing agency problems, which include management opportunistic behavior. Watts (2003) points out that managers often engage in opportunistic behavior when they use fair value accounting. Hence, if agency problems or conflicts already exist in firms that hold more cash, then these firms tend to use more fair value inputs. To mitigate the reverse causality concerns, we rerun the primary regression for both Eq. (1) and Eq. (2) using lagged intensity values of *FV*, *FVL1*, *FVL2*, and *FVL3*. Specifically, we use the total fair value intensity in year t-1 (*LagFV*), the Level 1 fair value intensity in year t-1 (*LagFVL1*), the Level 2 fair value intensity in year t-1 (*LagFVL2*), and the Level 3 fair value intensity in year t-1 (*LagFVL3*). Table 5 reports regression results using the above lagged variables. When the dependent variable is *CASH1* (*CASH2*), the coefficient on *LagFV* is 0.326 (2.319) with a *p*-value of < 0.001 in Eq. (1). In Eq. (2), the coefficients on *LagFVL1*, *LagFVL2*, and *LagFVL3* are 0.467, 0.342, and − 0.010, respectively, when the dependent variable is *CASH1*. Both *p*-values for coefficients on *LagFVL1* and *LagFVL2* are significant (< 0.001). We still obtain similar results when the dependent variable is *CASH2*. Taken together, results from Table 5 support our primary findings that firms with high intensity of total fair value inputs hold more cash, and this evidence is mainly driven by the intensity of Level 1 and Level 2 fair value assets and liabilities.

5.2. Two-stage OLS regression analysis (2SLS)

To further mitigate the reverse causality concern, we perform a two-

Table 3
Correlation matrix.

	CASH1	CASH2	FV	FVL1	FVL2	FVL3	SIZE	LEV	MTB	ROA	CFO	CAPX	NWC	REA	DP	DIV	REPUR	RD
CASH2	0.246																	
p-value	< 0.0001																	
FV	0.043	0.012																
p-value	< 0.0001	0.001																
FVL1	0.551	0.183	0.025															
p-value	< 0.0001	< 0.0001	< 0.0001															
FVL2	0.026	0.006	0.960	− 0.004														
p-value	< 0.0001	0.004	< 0.0001	0.506														
FVL3	0.005	0.002	0.279	− 0.006	− 0.001													
p-value	0.458	0.763	< 0.0001	0.374	0.914													
SIZE	− 0.373	− 0.089	− 0.072	− 0.243	− 0.037	− 0.103												
p-value	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001												
LEV	− 0.036	− 0.006	0.117	− 0.022	0.084	0.134	− 0.018											
p-value	< 0.0001	0.385	< 0.0001	0.001	< 0.0001	< 0.0001	0.004											
MTB	0.021	0.005	− 0.001	0.017	− 0.001	− 0.005	0.006	− 0.005										
p-value	0.001	0.391	0.819	0.008	0.929	0.423	0.315	0.438										
ROA	− 0.016	− 0.003	− 0.263	− 0.005	− 0.243	− 0.105	0.033	− 0.114	0.001									
p-value	0.010	0.612	< 0.0001	0.449	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.932									
CFO	− 0.071	− 0.017	− 0.440	− 0.032	− 0.409	− 0.167	0.207	− 0.553	0.006	0.509								
p-value	< 0.0001	0.008	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.372	< 0.0001								
CAPX	− 0.036	− 0.008	− 0.001	− 0.021	0.000	− 0.001	− 0.019	0.000	− 0.003	0.922	0.298							
p-value	< 0.0001	0.221	0.841	0.001	0.970	0.826	0.003	0.972	0.694	< 0.0001	< 0.0001							
NWC	− 0.017	− 0.002	− 0.352	− 0.015	− 0.337	− 0.100	0.092	− 0.122	0.002	0.224	0.310	− 0.002						
p-value	0.009	0.707	< 0.0001	0.020	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.795	< 0.0001	< 0.0001	0.726						
REA	− 0.028	− 0.005	− 0.111	− 0.024	− 0.089	− 0.091	0.106	− 0.354	0.002	0.152	0.338	− 0.029	0.910					
p-value	< 0.0001	0.423	< 0.0001	0.000	< 0.0001	< 0.0001	< 0.0001	< 0.0001	0.784	< 0.0001	< 0.0001	< 0.0001	< 0.0001					
DP	0.025	0.005	0.002	0.019	0.001	0.001	− 0.010	− 0.007	− 0.007	0.001	0.006	0.001	− 0.002	− 0.001				
p-value	0.000	0.418	0.813	0.003	0.900	0.933	0.104	0.282	0.260	0.859	0.338	0.897	0.801	0.869				
DIV	0.027	0.026	− 0.004	0.020	− 0.002	− 0.008	0.032	0.001	0.030	0.005	0.044	− 0.004	0.005	0.007	0.023			
p-value	< 0.0001	< 0.0001	0.549	0.002	0.717	0.215	< 0.0001	0.877	< 0.0001	0.419	< 0.0001	0.542	0.419	0.301	0.000			
REPUR	0.052	0.002	− 0.003	0.038	− 0.002	− 0.010	0.052	− 0.004	0.023	0.002	0.022	− 0.007	0.006	0.006	0.014	0.035		
p-value	< 0.0001	0.801	0.593	< 0.0001	0.768	0.119	< 0.0001	0.499	0.000	0.703	0.000	0.241	0.371	0.370	0.032	< 0.0001		
RD	− 0.003	− 0.001	0.001	0.011	0.000	0.001	− 0.031	− 0.002	− 0.005	− 0.004	− 0.032	− 0.001	− 0.002	− 0.001	0.001	− 0.002	− 0.002	
p-value	0.593	0.911	0.906	0.087	0.991	0.848	< 0.0001	0.797	0.435	0.490	< 0.0001	0.867	0.796	0.907	0.851	0.739	0.737	
SGR	− 0.028	− 0.014	− 0.002	− 0.013	0.000	− 0.005	0.021	0.000	0.000	0.003	0.012	0.001	0.002	0.003	0.002	− 0.003	0.005	− 0.050
p-value	< 0.0001	0.029	0.738	0.043	0.959	0.426	0.001	0.962	0.954	0.671	0.053	0.925	0.699	0.593	0.701	0.674	0.407	< 0.0001

This table reports the Pearson correlations based on the sample of 24,741 firm-year observations from 2008 to 2015, representing 5682 individual firms. For each pair of variables, the Pearson correlation coefficient and related (two-tailed) p-value are provided. All continuous variables are winsorized at the 1% and 99% percentiles before the correlation analysis. Refer to Appendix 1 for variable definition.

Table 4
Fair value accounting and corporate cash holdings main results.

Variables	Dependent variable = CASH1			Dependent variable = CASH2			Dependent variable = CASH1			Dependent variable = CASH2		
	Estimate	t value	Pr > |t|	Estimate	t value	Pr > |t|	Estimate	t value	Pr > |t|	Estimate	t value	Pr > |t|
Intercept	0.289***	19.90	< 0.0001	2.005***	6.39	< 0.0001	0.232***	18.12	< 0.0001	1.040***	4.93	< 0.0001
FV	0.006***	4.68	< 0.0001	0.073***	3.69	0.000						
FVL1							0.471***	15.43	< 0.0001	7.853***	5.18	< 0.0001
FVL2							0.004***	5.01	< 0.0001	0.044***	3.50	0.001
FVL3							0.001	0.89	0.374	0.024	1.37	0.170
SIZE	− 0.022***	− 34.55	< 0.0001	− 0.257***	− 5.62	< 0.0001	− 0.016***	− 27.30	< 0.0001	− 0.154***	− 5.32	< 0.0001
LEV	− 0.020***	− 2.61	0.009	− 0.189**	− 2.03	0.043	− 0.016***	− 2.64	0.008	− 0.120*	− 1.72	0.086
MTB	0.00004	1.65	0.100	0.0005	1.48	0.138	0.00003	1.08	0.278	0.0002	0.64	0.520
ROA	0.003***	2.88	0.004	0.055***	3.18	0.002	0.002**	2.05	0.041	0.029**	2.40	0.017
CFO	− 0.001	− 0.28	0.782	− 0.013	− 0.21	0.832	− 0.001	− 0.47	0.640	− 0.023	− 0.43	0.670
CAPX	− 0.112***	− 3.22	0.001	− 1.718***	− 3.35	0.001	− 0.060**	− 2.37	0.018	− 0.895***	− 2.60	0.009
NWC	0.003***	2.82	0.005	0.034**	2.12	0.034	0.003***	3.40	0.001	0.022**	2.12	0.034
REA	0.0004***	− 3.03	0.003	− 0.004**	− 2.32	0.020	0.000***	− 3.51	0.001	− 0.002**	− 2.17	0.030
DP	0.022*	1.93	0.053	0.256*	1.84	0.065	0.012	1.22	0.221	0.086	0.65	0.513
DIV	0.152***	4.72	< 0.0001	3.321	1.28	0.200	0.123***	4.43	< 0.0001	2.830	1.13	0.260
REPUR	0.153***	5.77	< 0.0001	0.676	0.66	0.509	0.102***	3.94	< 0.0001	− 0.186	− 0.18	0.857
RD	− 0.001***	− 8.39	< 0.0001	− 0.007***	− 4.65	< 0.0001	− 0.001***	− 2.84	0.004	− 0.010**	− 2.06	0.039
SGR	− 0.00007	− 1.15	0.251	− 0.003	− 1.02	0.306	− 0.00007	− 1.23	0.217	− 0.003	− 1.14	0.256
YEAR	Included			Included			Included			Included		
INDUSTRY	Included			Included			Included			Included		
Observations	24,741			24,741			24,741			24,741		
Adj. R^2	0.3901			0.2851			0.5107			0.4728		

The table reports the results from the clustered standard errors regression of regressing cash holdings on fair value over the period of 2008–2015 based on the following model equation: *Cash Holdings (CASH1; CASH2)* = $\beta_0 + \beta_1 \times$ *Fair Value (FV; FVL1; FVL2; FVL3)* + $\beta_x \times$ *Control Variables + Year & Industry Dummies* + ε.
The dependent variable (CASH1; CASH2) measures a firm's cash holdings. The independent variables of interest (Fair Value) include the intensity of total fair value (FV), the intensity of level 1 fair value (FVL1), the intensity of level 2 fair value (FVL2), and the intensity of level 3 fair value (FVL3). Continuous control variables are winsorized at 1% and 99% percentiles each year before entering the regression tests. *, **, and *** represent significance at the 10, 5 and 1% (two-tailed) confidence levels, respectively. Refer to Appendix 1 for variable definition.

Table 5
Fair value accounting and corporate cash holdings lag measures of fair value.

Variables	Dependent variable = CASH1			Dependent variable = CASH2			Dependent variable = CASH1			Dependent variable = CASH2		
	Estimate	t value	Pr > |t|	Estimate	t value	Pr > |t|	Estimate	t value	Pr > |t|	Estimate	t value	Pr > |t|
Intercept	0.239***	15.68	< 0.0001	0.617***	5.12	< 0.0001	0.244***	17.27	< 0.0001	0.684***	5.90	< 0.0001
LagFV	0.326***	37.81	< 0.0001	2.319***	22.39	< 0.0001						
LagFVL1							0.467***	45.35	< 0.0001	3.245***	19.50	< 0.0001
LagFVL2							0.342***	29.16	< 0.0001	2.452***	13.87	< 0.0001
LagFVL3							− 0.010	− 0.54	0.587	− 0.336	− 1.53	0.126
SIZE	− 0.015***	− 23.23	< 0.0001	− 0.056***	− 9.47	< 0.0001	− 0.015***	− 23.78	< 0.0001	− 0.054***	− 9.35	< 0.0001
LEV	− 0.183***	− 25.59	< 0.0001	− 0.780***	− 12.36	< 0.0001	− 0.168***	− 24.57	< 0.0001	− 0.676***	− 11.08	< 0.0001
MTB	0.002***	6.73	< 0.0001	0.013***	4.22	< 0.0001	0.001***	6.17	< 0.0001	0.011***	3.80	0.000
ROA	0.022***	3.00	0.003	0.248***	3.15	0.002	0.018***	2.77	0.006	0.224***	2.99	0.003
CFO	− 0.047***	− 3.49	0.001	− 0.767***	− 5.01	< 0.0001	− 0.053***	− 4.27	< 0.0001	− 0.833***	− 5.58	< 0.0001
CAPX	− 0.169***	− 7.47	< 0.0001	− 1.257***	− 6.81	< 0.0001	− 0.171***	− 7.80	< 0.0001	− 1.284***	− 7.07	< 0.0001
NWC	0.035***	5.53	< 0.0001	0.194***	2.92	0.004	0.009	1.57	0.118	− 0.003	− 0.04	0.968
REA	0.001	1.12	0.262	0.006	0.87	0.383	0.0001	0.23	0.821	0.002	0.33	0.740
DP	0.012	1.00	0.315	0.146	1.64	0.102	0.008	0.72	0.474	0.116	1.37	0.171
DIV	0.160***	3.42	0.001	− 0.330	− 0.68	0.494	0.130***	2.84	0.005	− 0.521	− 1.10	0.273
REPUR	0.159***	5.35	< 0.0001	− 1.016***	− 3.96	< 0.0001	0.124***	4.35	< 0.0001	− 1.262***	− 5.02	< 0.0001
RD	0.419***	8.30	< 0.0001	− 0.891**	− 2.15	0.032	0.404***	8.48	< 0.0001	− 0.996**	− 2.49	0.013
SGR	− 0.015***	− 4.59	< 0.0001	− 0.376***	− 6.05	< 0.0001	− 0.010***	− 3.26	0.001	− 0.339***	− 5.56	< 0.0001
YEAR	Included			Included			Included			Included		
INDUSTRY	Included			Included			Included			Included		
Observations	19,059			19,059			19,059			19,059		
Adj. R^2	0.5470			0.3417			0.5832			0.3644		

The table reports the results from the clustered standard errors regression of regressing cash holdings on lag measures of fair value over the period of 2008–2015 based on the following model equation: *Cash Holdings (CASH1; CASH2)* = $\beta_0 + \beta_1 \times$ *Lag Fair Value (Lag_FV; Lag_FVL1; Lag_FVL2; Lag_FVL3)* + $\beta_x \times$ *Control Variables + Year & Industry Dummies* + ε.
The dependent variable (CASH1; CASH2) measures a firm's cash holdings. The independent variables of interest (Lag Fair Value) include the intensity of total fair value (FV) in year (t-1), the intensity of level 1 fair value (FVL1) in year (t-1), the intensity of level 2 fair value (FVL2) in year (t-1), and the intensity of level 3 fair value (FVL3) in year (t-3). Continuous control variables are winsorized at 1% and 99% percentiles each year before entering the regression tests. *, **, and *** represent significance at the 10, 5 and 1% (two-tailed) confidence levels, respectively. Refer to Appendix 1 for variable definition.

Table 6
Fair value accounting and corporate cash holdings two-stage ols regression analysis.

Variables	Stage 2 of 2SLS						Stage 2 of 2SLS					
	Dependent variable = CASH1			Dependent variable = CASH2			Dependent variable = CASH1			Dependent variable = CASH2		
	Estimate	t value	Pr > |t|	Estimate	t value	Pr > |t|	Estimate	t value	Pr > |t|	Estimate	t value	Pr > |t|
Intercept	0.329***	23.56	< 0.0001	1.383***	9.72	< 0.0001	0.270***	21.45	< 0.0001	0.918***	6.85	< 0.0001
FV_Instrumented	0.001***	5.59	< 0.0001	0.008***	4.16	< 0.0001						
FVL1_Instrumented							0.445***	76.87	< 0.0001	3.483***	56.40	< 0.0001
FVL2_Instrumented							0.001***	5.13	< 0.0001	0.006***	3.51	0.001
FVL3_Instrumented							0.001	0.84	0.401	0.007	1.06	0.289
SIZE	− 0.020***	− 33.20	< 0.0001	− 0.098***	− 15.91	< 0.0001	− 0.015***	− 26.53	< 0.0001	− 0.055***	− 9.34	< 0.0001
LEV	− 0.208***	− 37.21	< 0.0001	− 1.026***	− 18.01	< 0.0001	− 0.184***	− 36.58	< 0.0001	− 0.840***	− 15.62	< 0.0001
MTB	0.002***	12.86	< 0.0001	0.018***	9.52	< 0.0001	0.002***	11.13	< 0.0001	0.014***	7.78	< 0.0001
ROA	0.036***	10.07	< 0.0001	0.311***	8.51	< 0.0001	0.024***	7.46	< 0.0001	0.217***	6.31	< 0.0001
CFO	− 0.109***	− 15.76	< 0.0001	− 1.109***	− 15.81	< 0.0001	− 0.078***	− 12.58	< 0.0001	− 0.871***	− 13.16	< 0.0001
CAPX	− 0.251***	− 11.88	< 0.0001	− 1.942***	− 9.04	< 0.0001	− 0.181***	− 9.56	< 0.0001	− 1.400***	− 6.91	< 0.0001
NWC	0.009***	3.05	0.002	− 0.003	− 0.09	0.929	0.003	1.06	0.287	− 0.050*	− 1.74	0.082
REA	0.001***	2.88	0.004	0.011***	3.95	< 0.0001	0.001***	4.21	< 0.0001	0.013***	4.95	< 0.0001
DP	0.011	0.95	0.340	0.131	1.16	0.244	0.002	0.21	0.835	0.065	0.61	0.543
DIV	0.228***	5.51	< 0.0001	0.242	0.57	0.567	0.148***	3.97	< 0.0001	− 0.388	− 0.98	0.329
REPUR	0.254***	8.74	< 0.0001	− 0.530*	− 1.79	0.074	0.190***	7.25	< 0.0001	− 1.037***	− 3.71	0.000
RD	0.489***	13.02	< 0.0001	0.026	0.07	0.947	0.471***	13.98	< 0.0001	− 0.108	− 0.30	0.763
SGR	− 0.010***	− 4.95	< 0.0001	− 0.277***	− 13.61	< 0.0001	− 0.007***	− 3.90	< 0.0001	− 0.255***	− 13.28	< 0.0001
YEAR	Included			Included			Included			Included		
INDUSTRY	Included			Included			Included			Included		
Observations	24,741			24,741			24,741			24,741		
Adj. R^2	0.4377			0.2726			0.5461			0.3554		

The table reports the results from the two-stage OLS regression (2SLS) with industry and year effects over the period of 2008–2015. In the first stage of 2SLS, we estimate the instrumented FV, FVL1, FVL2, and FVL3 using the average fair value intensity (FV_Mean, FVL1_Mean, FVL2_Mean, and FVL3_Mean, respectively) of the firms with the same SIC code. We include all of the control variables, as well as the industry and year dummy variables. In the second stage of 2SLS, we use the instrumented values of fair value intensity (FV_Instrumented, FVL1_Instrumented, FVL2_Instrumented, and FVL3_Instrumented) from the first stage and include them as independent variables in the second stage regression. We use the same control variables in the second stage regression. The above procedures are applied in previous studies (e.g., Jiraporn, Jiraporn, Boeprasert, & Chang, 2014). The industry-specific and year-specific intercepts are omitted for brevity. Continuous control variables are winsorized at 1% and 99% percentiles each year before entering the regression tests. *, **, and *** represent significance at the 10, 5 and 1% (two-tailed) confidence levels, respectively. Refer to Appendix 1 for variable definition.

stage OLS regression analysis (2SLS), in addition to using lagged measures. In the first stage of 2SLS, we estimate the instrumented variable of the intensity of fair value inputs (*FV_Instrumented*) using the average intensity of fair value inputs (*FV_Mean*) of the firms in the same industry (first two digits of SIC).[3] This instrumented variable (*FV_Instrumented*) is related to the fair value intensity of a given firm, but not related to the firm's cash holdings. In the first stage, we include all of the control variables and year/industry dummy variables from Eq. (1). The equation used in the first stage of 2SLS is as follows.

$$\begin{aligned} FV\,Instrumented = {} & \beta_0 + \beta_1 FV\,Mean + \beta_2 SIZE + \beta_3 LEV + \beta_4 MTB \\ & + \beta_5 ROA + \beta_6 CFO + \beta_7 CAPX + \beta_8 NWC + \beta_9 REA \\ & + \beta_{10} DP + \beta_{11} DIV + \beta_{12} REPUR + \beta_{13} RD + \beta_{14} SGR \\ & + Year/Industry\ Dummy\ Variables + \varepsilon \end{aligned} \quad (3)$$

In the second stage of 2SLS, we use the instrumented variable of *FV_Instrumented* from Eq. (3) as the primary independent variable of interest. The dependent variable is cash holdings. We still use the same control variables and year/industry dummy variables. The equation used in the second stage is as follows.

$$\begin{aligned} CASH = {} & \beta_0 + \beta_1 FV\,Instrumented + \beta_2 SIZE + \beta_3 LEV + \beta_4 MTB + \beta_5 ROA \\ & + \beta_6 CFO + \beta_7 CAPX + \beta_8 NWC + \beta_9 REA + \beta_{10} DP + \beta_{11} DIV \\ & + \beta_{12} REPUR + \beta_{13} RD + \beta_{14} SGR \\ & + Year/Industry\ Dummy\ Variables + \varepsilon \end{aligned} \quad (4)$$

Table 6 reports the regression results of stage 2 (Eq. (4)). The coefficients on *FV_Instrumented* are 0.001 and 0.008 with a *p*-value < 0.001 where the dependent variables are *CASH1* and *CASH2*, respectively. Thus, results from 2SLS still support our primary findings that firms with high intensity of fair value assets and liabilities tend to hold more cash.

We perform the same 2SLS procedures to Eq. (2), which includes the 3 independent variables of interest (*FVL1*, *FVL2*, and *FVL3*). In the first stage of 2SLS, we estimate the instrumented variable of the intensity of fair value assets and liabilities for the above 3 variables (*FVL1_Instrumented*, *FVL2_Instrumened*, *FVL3_Instrumened*) using the average intensity of fair value inputs (*FVL1_Mean*, *FVL2_Mean*, *FVL3_Mean*) of the firms in the same industry (first two digits of SIC).[4] In the second stage of 2SLS, we use the instrumented variables of *FVL1_Instrumented*, *FVL2_Instrumented*, and *FVL3_Instrumented* from Eqs. (5)–(7) as the primary independent variables of interest. The equation used in the second stage is as follows.

[3] Firm i is excluded in the first stage of 2SLS when we estimate the industry average.

[4] The equations are as follow.

$$\begin{aligned} FVL1Instrumented = {} & \beta_0 + \beta_1 FVL1Mean + \beta_2 SIZE + \beta_3 LEV + \beta_4 MTB + \beta_5 ROA + \beta_6 CFO \\ & + \beta_7 CAPX + \beta_8 NWC + \beta_9 REA + \beta_{10} DP + \beta_{11} DIV + \beta_{12} REPUR \\ & + \beta_{13} RD + \beta_{14} SGR + Year/Industry\ Dummy\ Variables + \varepsilon \end{aligned} \quad (5)$$

$$\begin{aligned} FVL2Instrumented = {} & \beta_0 + \beta_1 FVL2Mean + \beta_2 SIZE + \beta_3 LEV + \beta_4 MTB + \beta_5 ROA + \beta_6 CFO \\ & + \beta_7 CAPX + \beta_8 NWC + \beta_9 REA + \beta_{10} DP + \beta_{11} DIV + \beta_{12} REPUR \\ & + \beta_{13} RD + \beta_{14} SGR + Year/Industry\ Dummy\ Variables + \varepsilon \end{aligned} \quad (6)$$

$$\begin{aligned} FVL3Instrumented = {} & \beta_0 + \beta_1 FVL3Mean + \beta_2 SIZE + \beta_3 LEV + \beta_4 MTB + \beta_5 ROA + \beta_6 CFO \\ & + \beta_7 CAPX + \beta_8 NWC + \beta_9 REA + \beta_{10} DP + \beta_{11} DIV + \beta_{12} REPUR \\ & + \beta_{13} RD + \beta_{14} SGR + Year/Industry\ Dummy\ Variables + \varepsilon \end{aligned} \quad (7)$$

Table 7
Fair value accounting and corporate cash holdings changes analysis.

Variables	Dependent variable = ΔCASH1			Dependent variable = ΔCASH2			Dependent variable = ΔCASH1			Dependent variable = ΔCASH2		
	Estimate	t value	Pr > |t|	Estimate	t value	Pr > |t|	Estimate	t value	Pr > |t|	Estimate	t value	Pr > |t|
Intercept	−0.010***	−2.73	0.006	−0.077**	−2.42	0.015	−0.009***	−2.61	0.009	−0.075**	−2.36	0.0184
ΔFV	0.155***	18.36	< 0.0001	0.905***	10.77	< 0.0001						
ΔFVL1							0.365***	31.24	< 0.0001	1.785***	12.37	< 0.0001
ΔFVL2							0.186***	15.29	< 0.0001	0.870***	5.25	< 0.0001
ΔFVL3							−0.013	−0.80	0.424	0.196	1.39	0.165
ΔSIZE	−0.013***	−3.35	0.001	0.027	0.59	0.554	−0.012***	−3.31	0.001	0.031	0.69	0.490
ΔLEV	−0.028***	−3.13	0.002	−0.072	−0.91	0.363	−0.029***	−3.39	0.001	−0.072	−0.93	0.353
ΔMTB	0.0003*	1.81	0.070	0.0002	0.11	0.913	0.0003*	1.92	0.055	0.0002	0.13	0.896
ΔROA	−0.010**	−2.18	0.029	0.040	0.81	0.420	−0.012***	−2.77	0.006	0.033	0.68	0.495
ΔCFO	0.124***	14.34	< 0.0001	0.999***	9.13	< 0.0001	0.118***	14.96	< 0.0001	0.980***	9.07	< 0.0001
ΔCAPX	−0.217***	−11.76	< 0.0001	−1.102***	−8.36	< 0.0001	−0.206***	−11.79	< 0.0001	−1.068***	−8.16	< 0.0001
ΔNWC	−0.036***	−4.36	< 0.0001	−0.254***	−3.36	0.001	−0.036***	−4.64	< 0.0001	−0.261***	−3.53	0.000
ΔREA	0.005***	5.78	< 0.0001	0.042***	3.89	0.000	0.005***	5.54	< 0.0001	0.039***	3.67	0.000
ΔDIV	−0.135***	−3.63	0.000	−0.114	−0.29	0.770	−0.116***	−3.16	0.002	−0.021	−0.05	0.957
ΔREPUR	−0.095***	−4.84	< 0.0001	−0.284*	−1.80	0.071	−0.085***	−4.54	< 0.0001	−0.245	−1.58	0.115
ΔRD	0.200	1.62	0.106	1.280	1.13	0.257	0.143	1.25	0.212	0.970	0.88	0.378
ΔSGR	−0.006***	−3.26	0.001	−0.077***	−2.84	0.005	−0.006***	−3.51	0.000	−0.077***	−2.85	0.004
YEAR	Included			Included			Included			Included		
INDUSTRY	Included			Included			Included			Included		
Observations	19,059			19,059			19,059			19,059		
Adj. R^2	0.1549			0.1056			0.2256			0.1157		

The table reports the results from the clustered standard errors regression of regressing the changes in cash holdings on the changes in fair value over the period of 2008–2015 based on the following model equation: *Changes in Cash Holdings (ΔCASH1; ΔCASH2)* = β_0 + β_1 × *Changes in Fair Value (ΔFV; ΔFVL1; ΔFVL2; ΔFVL3)* + β_x × *ΔControl Variables* + *Year & Industry Dummies* + *ε*.
The dependent variable (ΔCASH1; ΔCASH2) measures the changes in a firm's cash holdings. The independent variables of interest (ΔFair Value) include the changes in the total fair value (ΔFV), level 1 fair value (ΔFVL1), level 2 fair value (ΔFVL2), and level 3 fair value (ΔFVL3). Continuous control variables are winsorized at 1% and 99% percentiles each year before entering the regression tests. *, **, and *** represent significance at the 10, 5 and 1% (two-tailed) confidence levels, respectively. Refer to Appendix 1 for variable definition.

$$\begin{aligned} CASH = {} & \beta_0 + \beta_1 FVL1Instrumented + \beta_2 FVL2Instrumented \\ & + \beta_3 FVL3Instrumented + \beta_4 SIZE + \beta_5 LEV + \beta_6 MTB + \beta_7 ROA \\ & + \beta_8 CFO + \beta_9 CAPX + \beta_{10} NWC + \beta_{11} REA + \beta_{12} DP + \beta_{13} DIV \\ & + \beta_{14} REPUR + \beta_{15} RD + \beta_{16} SGR \\ & + Year/Industry\ Dummy\ Variables + \varepsilon \end{aligned} \quad (8)$$

Table 6 reports that only *FVL1_Instrumented* and *FVL2_Instrumented* are significantly related to both cash measures, suggesting that the primary findings are largely driven by the intensity of Level 1 and Level 2 fair value inputs. Hence, reverse causality is not a major concern in our study.

5.3. Changes analysis

The previous tests rely on a level analysis, which regresses the level of cash holdings on the level of the intensity of fair value assets and liabilities. To mitigate omitted (correlated) variables concerns, we perform a changes analysis, which regresses the changes in cash holdings on the changes in the intensity of fair value assets and liabilities. This test provides additional evidence that the differences in cash holdings can be attributed to the differences in the intensity of fair value assets and liabilities. Specifically, we regress the changes in cash holdings from year t-1 to year t (i.e., *ΔCASH1*, and *ΔCASH2*) on the corresponding changes in the intensity of fair value inputs from year t-1 to year t (i.e., *ΔFV, ΔFVL1, ΔFVL2, and ΔFVL3*). Table 7 presents that the coefficient on *ΔFV* is 0.155 (0.905) with a *p*-value of < 0.001 when the dependent variable is *ΔCASH1* (*ΔCASH2*). The results suggest that an increase (a decrease) in the intensity of total fair value assets and liabilities can lead to an increase (a decrease) in cash holdings. In addition, Table 7 shows that the changes in the intensity of Level 1 and Level 2 fair value inputs are significantly and positively related to the changes in cash holdings, suggesting that the results are largely driven by the changes in the intensity of Level 1 and Level 2 fair value assets and liabilities.

5.4. High managerial ability firms vs. low managerial ability firms

Prior studies (e.g., Demerjian et al., 2012; Demerjian, Lewis, Lev, & McVay, 2013) suggest that more-able managers better manage their firm resources. Whether and how more-able managers influence the relation between the intensity of fair value inputs and cash holdings is an empirical question that has not been previously examined. It is difficult to make a prediction. On one hand, more-able managers may use more fair value inputs, due to their capabilities, because using fair value measures requires managers to estimate future cash flows. Hence, we would expect our results are stronger for firms with more-able managers. On the other hand, more-able managers may use less fair value measures because prior research (Demerjian et al., 2013) links higher managerial ability to a lower level of opportunistic behavior. Hence, we would expect our results are stronger for firms with less-able managers.

We use the managerial ability decile rankings in Demerjian et al. (2012) as our measure of managerial ability.[5] We merge the managerial ability dataset with our dataset and divide the merged sample into two subsamples: high managerial ability firms and low managerial ability firms. A firm with a managerial ability ranking greater than (lower than) the median is regarded as a high (low) managerial ability firm. Table 8 reports the regression results of Eq. (1) based on the two subsamples. When the dependent variable is *CASH1*, the coefficient on *FV* is 0.017 for high managerial ability firms and 0.004 for low managerial ability firms. The coefficient comparison test suggests that the difference between the two coefficients are statistically significant (F-

[5] We obtained managerial ability data from Professor Peter Demerjian. http://faculty.washington.edu/pdemerj/data.html

Table 8
Fair value accounting and corporate cash holdings firms with high managerial ability vs. firms with low managerial ability.

Variables	High managerial ability			Low managerial ability			High managerial ability			Low managerial ability		
	Dependent variable = CASH1			Dependent variable = CASH1			Dependent variable = CASH2			Dependent variable = CASH2		
	Estimate	t value	Pr > |t|	Estimate	t value	Pr > |t|	Estimate	t value	Pr > |t|	Estimate	t value	Pr > |t|
Intercept	0.420***	16.66	< 0.0001	0.300***	12.52	< 0.0001	1.543***	8.46	< 0.0001	1.212***	6.06	< 0.0001
FV	0.017**	2.27	0.023	0.004**	1.97	0.049	0.073*	1.90	0.058	0.038*	1.80	0.072
SIZE	− 0.025***	− 21.49	< 0.0001	− 0.018***	− 16.79	< 0.0001	− 0.112***	− 14.67	< 0.0001	− 0.083***	− 9.36	< 0.0001
LEV	− 0.205***	− 17.18	< 0.0001	− 0.198***	− 18.79	< 0.0001	− 0.773***	− 10.57	< 0.0001	− 1.070***	− 11.52	< 0.0001
MTB	0.002***	5.34	< 0.0001	0.003***	6.60	< 0.0001	0.013***	4.01	< 0.0001	0.024***	4.68	< 0.0001
ROA	0.059***	4.27	< 0.0001	0.044***	4.41	< 0.0001	0.498***	4.29	< 0.0001	0.383***	4.53	< 0.0001
CFO	− 0.045**	− 2.08	0.037	− 0.177***	− 10.13	< 0.0001	− 0.893***	− 4.95	< 0.0001	− 1.511***	− 7.76	< 0.0001
CAPX	− 0.314***	− 9.46	< 0.0001	− 0.254***	− 6.98	< 0.0001	− 2.018***	− 9.27	< 0.0001	− 2.003***	− 6.84	< 0.0001
NWC	− 0.023**	− 2.16	0.031	0.026***	3.10	0.002	− 0.209**	− 2.21	0.027	0.049	0.68	0.499
REA	0.002***	3.30	0.001	0.002***	2.85	0.004	0.020***	3.15	0.002	0.026***	3.48	0.001
DP	− 0.006	− 0.29	0.771	0.030*	1.69	0.091	0.026	0.19	0.853	0.065	0.41	0.684
DIV	0.269***	4.01	< 0.0001	0.104	1.01	0.312	0.010	0.02	0.983	1.251	0.99	0.321
REPUR	0.188***	4.40	< 0.0001	0.095	1.62	0.105	− 0.456	− 1.61	0.107	− 1.561***	− 3.58	0.000
RD	0.455***	5.67	< 0.0001	0.539***	6.54	< 0.0001	0.553	0.95	0.341	0.459	0.55	0.580
SGR	0.014	1.63	0.103	− 0.011***	− 2.64	0.008	− 0.119	− 1.07	0.287	− 0.197***	− 3.03	0.002
YEAR	Included			Included			Included			Included		
INDUSTRY	Included			Included			Included			Included		
Observations	8414			8774			8414			8774		
Adj. R^2	0.3851			0.5256			0.2141			0.3684		
			Coefficient comparison									
			Test of FV of high managerial ability firms = FV of low managerial ability firms									
			F-stat. = 27.97				F-stat. = 24.21					
			p-Value < 0.0001				p-Value < 0.0001					

This table reports the results from the clustered standard errors regression of regressing cash holdings on fair value over the period of 2008–2015 for two subsamples: firms with high managerial ability and firms with low managerial ability based on the following model equation: *Cash Holdings (CASH1; CASH2)* $= \beta_0 + \beta_1 \times$ *Fair Value (FV)* $+ \beta_x \times$ *Control Variables + Year & Industry Dummies* $+ \varepsilon$.
The dependent variable (CASH1; CASH2) measures a firm's cash holdings. The independent variables of interest (FV) represents the intensity of total fair value. Continuous control variables are winsorized at 1% and 99% percentiles each year before entering the regression tests. *, **, and *** represent significance at the 10, 5 and 1% (two-tailed) confidence levels, respectively. Refer to Appendix 1 for variable definition.

stat. = 27.97; p-value < 0.001), suggesting that the relation between *FV* and *CASH1* is stronger for firms with more-able managers. Table 8 also reports similar results when the dependent variable is *CASH2*. Together, our results are stronger for firms with higher managerial ability.

5.5. Additional robustness checks

Table 3 reveals that two pairs of variables (*CAPX* and *ROA*; *REA* and *NWC*) are highly correlated. To further mitigate concerns about multicollinearity in our study, we remove *ROA* and *NWC* from Eqs. (1) and 2 and re-run the regression analysis. Results are reported in Panel A of Table 9. Panel A shows a significant positive relation between FV and both cash measures (*CASH1* and *CASH2*). In addition, we find the significant relation is still largely driven by Level 1 and 2 fair value inputs, consistent with our earlier findings.

Table 1 Panel B shows that our financial services firms (2 SIC: 60–67) do not represent the population (i.e., financial services firms) in the Compustat database from 2008 to 2015. We lose many observations in financial services industry due to the control variable, *NWC*, in our analysis. Financial institutions do not report current assets or current liabilities because it is difficult to determine the due dates of assets and liabilities. For example, a major component of a bank's liabilities is deposits, which can be withdrawn at any time. To ensure our financial services firms can better represent the Compustat population, we drop the control variable (*NWC*) and re-run the regression analysis. Panel B of Table 9 shows that, after dropping *NWC*, the new full sample consists of 31,237 firm-year observations, and the number of observations in financial services industry increases from 1147 to 4651. Results of Panel B show a significant positive relation between *FV* and both cash measures (*CASH1* and *CASH2*), consistent with our primary findings. In addition, we find that cash is significantly and positively related to *FVL1*, *FVL2*, and *FVL3*. The evidence suggests that our primary findings become stronger using the new sample, given that we find a significant positive relation between Level 3 inputs and cash. This might be caused by the fact that financial services firms use more fair value inputs including Level 3 inputs (Song et al., 2010).

6. Conclusion

In this study, we examine the relation between the intensity of fair value inputs and corporate cash holdings. We find that firms with high intensity of total fair value assets and liabilities tend to hold more cash. Our results are largely driven by the intensities of Level 1 and Leve 2 fair value inputs. We also find that our results are stronger for firms with more-able managers. Overall, our results suggest that increased use of fair value inputs reduces the reliability of accounting numbers and increases agency conflicts between managers and investors, leading to a high level of cash holdings.

To the best of our knowledge, this is the first study that directly examines the association between fair value inputs and corporate cash holdings. Our findings are consistent with the trade-off between relevance and reliability of accounting numbers. Our results have implications for different stakeholder groups. For example, our findings should interest

Table 9
Fair value accounting and corporate cash holdings additional robustness checks.

Variables	Dependent variable = CASH1			Dependent variable = CASH2			Dependent variable = CASH1			Dependent variable = CASH2		
	Estimate	t value	Pr > |t|	Estimate	t value	Pr > |t|	Estimate	t value	Pr > |t|	Estimate	t value	Pr > |t|
Panel A: Removing ROA and NWC												
Intercept	0.325***	23.22	< 0.0001	1.336***	11.39	< 0.0001	0.266***	20.67	< 0.0001	0.876***	7.66	< 0.0001
FV	0.001***	2.77	0.006	0.007**	2.18	0.029						
FVL1							0.448***	15.96	< 0.0001	3.504***	13.10	< 0.0001
FVL2							0.001***	4.90	< 0.0001	0.006***	3.62	0.000
FVL3							0.0001	0.12	0.903	0.004	0.59	0.555
SIZE	− 0.020***	− 30.98	< 0.0001	− 0.094***	− 17.00	< 0.0001	− 0.014***	− 22.78	< 0.0001	− 0.052***	− 9.40	< 0.0001
LEV	− 0.211***	− 32.28	< 0.0001	− 1.055***	− 19.33	< 0.0001	− 0.186***	− 26.12	< 0.0001	− 0.859***	− 14.05	< 0.0001
MTB	0.002***	9.81	< 0.0001	0.018***	6.80	< 0.0001	0.002***	8.47	< 0.0001	0.014***	5.56	< 0.0001
~~ROA~~												
CFO	− 0.064***	− 7.42	< 0.0001	− 0.752***	− 7.44	< 0.0001	− 0.050***	− 6.32	< 0.0001	− 0.635***	− 6.77	< 0.0001
CAPX	− 0.272***	− 14.22	< 0.0001	− 2.095***	− 14.30	< 0.0001	− 0.194***	− 10.79	< 0.0001	− 1.485***	− 10.49	< 0.0001
REA	0.002***	6.55	< 0.0001	0.020***	4.50	< 0.0001	0.002***	5.36	< 0.0001	0.017***	3.94	< 0.0001
DP	0.012	1.07	0.284	0.145*	1.67	0.095	0.003	0.32	0.750	0.075	0.91	0.362
DIV	0.219***	4.68	< 0.0001	0.186	0.40	0.689	0.142***	3.31	0.001	− 0.413	− 0.93	0.355
REPUR	0.243***	7.89	< 0.0001	− 0.597**	− 2.41	0.016	0.183***	6.89	< 0.0001	− 1.070***	− 4.82	< 0.0001
RD	0.457***	9.14	< 0.0001	− 0.190	− 0.45	0.653	0.453***	9.89	< 0.0001	− 0.225	− 0.58	0.561
SGR	− 0.010***	− 3.17	0.002	− 0.275***	− 5.22	< 0.0001	− 0.007**	− 2.36	0.018	− 0.253***	− 5.07	< 0.0001
YEAR	Included			Included			Included			Included		
INDUSTRY	Included			Included			Included			Included		
Observations	24,741			24,741			24,741			24,741		
Adj. R^2	0.4339			0.2700			0.5446			0.3543		
Panel B: Alternative Sample												
Intercept	0.210***	17.82	< 0.0001	0.458***	5.04	< 0.0001	0.239***	23.03	< 0.0001	0.676***	7.88	< 0.0001
FV	0.213***	39.03	< 0.0001	1.555***	27.91	< 0.0001						
FVL1							0.453***	51.17	< 0.0001	3.201***	28.97	< 0.0001
FVL2							0.245***	29.55	< 0.0001	1.809***	18.44	< 0.0001
FVL3							0.037***	4.43	< 0.0001	0.246***	3.22	0.001
SIZE	− 0.017***	− 31.34	< 0.0001	− 0.077***	− 18.29	< 0.0001	− 0.014***	− 28.26	< 0.0001	− 0.061***	− 14.80	< 0.0001
LEV	− 0.189***	− 34.06	< 0.0001	− 0.759***	− 18.04	< 0.0001	− 0.157***	− 29.89	< 0.0001	− 0.530***	− 13.26	< 0.0001
MTB	0.004***	15.77	< 0.0001	0.029***	10.12	< 0.0001	0.003***	13.27	< 0.0001	0.022***	8.12	< 0.0001
ROA	0.060***	8.70	< 0.0001	0.450***	6.81	< 0.0001	0.027***	4.68	< 0.0001	0.216***	3.71	0.000
CFO	− 0.085***	− 7.62	< 0.0001	− 0.993***	− 8.45	< 0.0001	− 0.074***	− 7.42	< 0.0001	− 0.919***	− 8.39	< 0.0001
CAPX	− 0.136***	− 7.44	< 0.0001	− 1.042***	− 8.33	< 0.0001	− 0.136***	− 8.13	< 0.0001	− 1.052***	− 8.96	< 0.0001
REA	0.001***	3.08	0.002	0.016***	3.07	0.002	0.0004	0.89	0.376	0.008*	1.65	0.099
DP	0.009	1.04	0.300	0.075	1.07	0.286	0.006	0.73	0.463	0.051	0.78	0.438
DIV	− 0.050	− 1.01	0.314	− 0.860**	− 2.00	0.045	0.016	0.34	0.733	− 0.355	− 0.84	0.399
REPUR	0.208***	6.78	< 0.0001	− 0.242	− 0.86	0.388	0.117***	3.93	< 0.0001	− 0.868***	− 3.22	0.001
RD	0.605***	11.89	< 0.0001	0.408	0.96	0.339	0.590***	12.93	< 0.0001	0.296	0.76	0.447
SGR	− 0.014***	− 4.49	< 0.0001	− 0.218***	− 5.40	< 0.0001	− 0.007**	− 2.56	0.010	− 0.171***	− 4.41	< 0.0001
YEAR	Included			Included			Included			Included		
INDUSTRY	Included			Included			Included			Included		
Observations	31,237			31,237			31,237			31,237		
Adj. R^2	0.5012			0.3452			0.5671			0.3990		

The table reports the results of two additional robustness checks from the clustered standard errors regression of regressing cash holdings on fair value over the period of 2008–2015 based on the following model equation: *Cash Holdings (CASH1; CASH2)* = $\beta_0 + \beta_1 \times$ *Fair Value (FV; FVL1; FVL2; FVL3)* + $\beta_x \times$ *Control Variables + Year & Industry Dummies* + ε. The dependent variable (CASH1; CASH2) measures a firm's cash holdings. The independent variables of interest (Fair Value) include the intensity of total fair value (FV), the intensity of level 1 fair value (FVL1), the intensity of level 2 fair value (FVL2), and the intensity of level 3 fair value (FVL3). Continuous control variables are winsorized at 1% and 99% percentiles each year before entering the regression tests. *, **, and *** represent significance at the 10, 5 and 1% (two-tailed) confidence levels, respectively. Refer to Appendix 1 for variable definition.

shareholders by showing that the level of utilizing fair value inputs may affect the level of cash. Our study contributes to the debate over fair value accounting by showing the impact of fair value accounting on firm-level cash holdings. One limitation of our study is that the sample period (2008–2015) coincides with the financial crisis. Readers need to exercise caution when they attempt to generalize our findings.

Data availability

Data are available from sources identified in the paper.

Appendix 1

Dependent variable		Description
CASH1	=	Cash and cash equivalents (CHE, #1) scaled by total assets (AT, #6)
CASH2	=	Cash and cash equivalents (CHE, #1) scaled by [total assets (AT, #6) – cash and cash equivalents (CHE, #1)]
Independent variable		
FV	=	Total combined value of fair value assets (AQPL1, AOL2, AUL3) and liabilities (LQPL1, LOL2, LUL3), scaled by total assets (AT)
FVL1	=	Total value of Level 1 fair value assets and liabilities (AQPL1, LQPL1), scaled by the total assets (AT)
FVL2	=	Total value of Level 2 fair value assets and liabilities (AOL2, LOL2), scaled by the total assets (AT)
FVL3	=	Total value of Level 3 fair value assets and liabilities (AUL3, LUL3), scaled by the total assets (AT)
Control variable		
SIZE	=	Natural logarithm of total assets (AT; #6)
LEV	=	Long-term liabilities (DLTT, #9) divided by total assets (AT, #6)
MTB	=	Market value of common shares (CSHO, #25) × (PRCC_F, #24) divided by total book value of common shares (CEQ, #60)
ROA	=	Income before extraordinary items (IB, #18) scaled by total assets (AT, #6)
CFO	=	Net operating cash flows (OANCF, #302), scaled by total assets (AT, $6)
CAPX	=	Capital expenditures (CAPX, #128) scaled by total assets (AT, #6)
NWC	=	Net working capital [total current assets (ACT, #4) – total current liabilities (LCT, #5) – cash and cash equivalents (CHE, #1)] scaled by total assets (AT, #6)
REA	=	Retained earnings (RE, #36) scaled by total assets (AT, #6)
DP	=	A dummy variable equals one if dividend-paying and zero otherwise
DIV	=	Dividends (DVC, #21) scaled by total assets (AT, #6)
REPUR	=	Share repurchases (PRSTKC, #115) scaled by total assets (AT, #6)
RD	=	Research and development expenditures (XRD, #46) scaled by total assets (AT, #6)
SGR	=	Annual percentage change of sales (SALE, #12)
Other variable		
MARANK	=	Decile rankings of managerial ability score in Demerjian et al. (2012)

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