

Cash management

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1 Precautionary motive and cash holdings

Increase in cash holding Bates et al. (2009) find that the US firms hold more and more cash over time. This increase in cash could be explained by two motives: *agency problem* and *precautionary motive*.

First, firms tend to increase cash because they are less likely to pay dividends in an influential paper of Fama and French (2001). This evidence seems to consistent with the agency theory. Jensen (1986) argue that entrenched CEOs tend to hold more cash instead of paying out to shareholders when they have poor investment opportunities.

Second, this increase in cash is also consistent with some change in firm characteristics such as: firms' cash flows are more volatile, firms hold less inventories and account receivables, and they invest more in R&D relative to capital expenditure over time.

To distinguish between these two views, Bates et al. (2009) adopt two smart tests:

- First, they consider the increase in cash of firms in the top highest G-index quintile and the lowest G-index quintile. The agency predicts that firms in high G-index quintile should increase cash more but the empirical result contradicts to this prediction. In particular, all G-index quintile see the increase in cash holdings, but the increase is more pronounced among firms in the lowest G-index quintile.

- Second, if the agency motive is true, we should see the increase in cash holding is negatively associated with firm value. Again, the empirical result is contrast to the prediction. Increase in cash holding indeed has positive impact on firm value.

Cash increase and refinancing risk Harford et al. (2014) propose another reason to explain why firms hold more cash: to prevent refinancing risk for short debt maturity. If lenders give a firm a short maturity loan, firms need to hold more cash to mitigate the refinancing concern. Applying the cash-cash flows sensitivity of Almeida et al. (2004) that financial constrained firms save more cash from cash flows for future investment, Harford et al. (2014) show that firms in the top quintile of long-run debt due in 3 years save well over 5 cents per dollar of cash flows in comparison to only 3.4 cents per dollar of cash flows for an average firm. They also find a shorted debt maturity for the US firms over time, which is consistent with the time series of cash holdings in Bates et al. (2009).

With respect to value of cash holding and refinancing risk, following Faulkender and Wang (2006), Harford et al. (2014) regress firm value on change in cash reserve, refinancing risk, and their interaction. They find that the estimated coefficient of the interaction is positive, so higher cash helps to mitigate the risk of refinancing.

This evidence could relate to our work in managerial ability and bank loans. We could not find significant positive relation between loan maturity and managerial ability. In our working paper, we also find that firms with high-ability CEOs seem to have less financial constraints.

2 Agency evidence

However, we still find some supporting evidence for the long-lived agency motive. Harford et al. (2008) use high G-index and low insider ownership as measure for weak governance. They attempt to link governance and investment and payout decisions. Weak governance firms tend to hold less cash because they spend most of cash on M&A and expenditure. The interaction between governance and cash reserve suggests that the *spending effect* is stronger with the presence of excess cash.

With respect to payout decisions, firms with weak governance tend to repurchase rather than cash dividend. They also have no commitment to maintain future dividend stream.

Conflict of agency and cash holdings (or public vs. private firms' cash holding) Weak-governed firms tend to overinvest. Among public firms, weak-governed firms tend to spend excess cash in other asset forms (e.g., in M&A) and well-governed firms tend to payout or reduce leverage. However, the speed of spending of weak-governed firms are faster than the speed of payout and relax leverage of well-governed firms. Thus, weak-governed firms also set a high target level of cash to have more freedom from external monitoring. As a results, higher agency conflicts lead to a higher cash holdings of public firms compared to private firms (Gao et al., 2013). Some important findings of this paper is:

- Despite financing frictions (less access to external finance) and higher precautionary motive, private firms hold about half as much cash as public firms.
- The driver of this finding is because public firms have higher agency problems. Thus, public first set a higher target cash level than the private firms. This is because entrenched managers, who prefer more internal financial slack, appear to set higher target cash level.
- ***In terms of investment decisions*** due to this excess cash, compared to private firms, public firms tend to spend cash via investment in a myopic way and reduce firm operating performance. Thus, more severe agency cost leads public firms spend excess cash in a less efficient way.
- By increasing investment, poorly governed public firms have higher speed of adjustment away from excess cash than do well-governed public firms.

The methods in (Gao et al., 2013):

- Propensity score matching between private firms and score-matched public peers
- Transitioning sample of IPO where firms change private status but do not receive proceeds from the offering: post-IPO cash holdings increase significantly for transitioning firms relative to their matched public and private firm control samples.
- Model of cash: $\ln(CashRatio) = (+)Public$
- IV regression: using *Underwriter concentration* as IV for Public status. Underwriter concentration is the ratio of the number of IPOs underwritten by the top five investment banks in an industry to the total number of IPOs in the same industry from 1995– 2011.
- Speed of adjustment (SOA):

$$\Delta Cash = \alpha + \beta_1 Public \times (Cash^* - LaggedCash) + \beta_2 (Cash^* - LaggedCash)$$

where β_2 is SOA, and β_1 is difference in SOA between public vs private firms. The results show that $\beta_1 < 0$ and $\beta_2 > 0$. It means that the public firms have lower SOA than their private peers.

3 Diversification and cash holdings

Professor Duchin has a bunch of work relating to diversification. Some of them relate to the cash holdings.

Duchin (2010) propose the relation between cross-divisional correlation of investment opportunities and financing deficit/gap (Q-CF correlation) and cash flows could affect the diversified firms' cash holdings. If cross-divisional Q and CF correlation are lower, these firms are well-diversified and have

coinsurance effect so they have less incentive to hold cash flow precautionary motive. If Q-CF correlation is higher, firms have less financing gap, so they hold less cash.

This finding could be explained by the governance and cross-divisional transfer. In good governance and in firms with high transfer, firms hold less cash.

Duchin and Sosyura (2013) provide evidence that CEOs allocate more capital to divisional managers with high social connection to him. This finding could be explained by two hypotheses: (i) favoritism hypothesis and (ii) information hypothesis. These two hypotheses have contrasting predictions to firm value: favoritism predicts negative value and information predicts a positive effect.

In well-governed and high information asymmetric firms, divisional managers tend to give more valuable information/advice to CEOs, social connection between them gives more efficient investment and higher firm value. In contrast, at firms with poor governance, the social connection between them negatively affects investment efficiency and firm value. This paper, thus, clearly shows the both bright side and dark side of diversification.

4 Other explanations

Hold cash in risky assets Duchin et al. (2017) find a very interesting figure. Risky assets represent 40% of firms' financial portfolios, or 6% of total book assets. This effect is concentrated among financial unconstrained firms, weak governance, and are discounted by 13% to 22% compared to safe assets.

Save cash when financial constrained firms have future growth opportunities Almeida et al. (2004) propose the cash flow sensitivity of cash as a new measure of financial constraint. The idea is that financial constrained firms save cash for future projects so the cash flow sensitivity of cash will be positive for constrained firms, while non-financial constrained firms do not necessarily have the same characteristics.

Their model of cash-cash flow sensitivity Firm objective function: firms choose Cash holding, hedge strategy (e.g., future contracts), and Investment level to maximize dividend flows in three periods 0, 1, 2:

$$\max_{\{C, h, I\}} (d_0 + p d_1^H + (1-p) d_1^L + p d_2^H + (1-p) d_2^L) \text{ s.t.}$$

Non negative dividends:

$$d_0 = c_0 + B_0 - I_0 - C \geq 0$$

$$d_1^S = c_1^S + h^S + B_1^S - I_1^S + C \geq 0 \text{ for } S = H, L$$

$$d_2^S = f(I_0) + g(I_1^S) - B_0 - B_1^S \text{ for } S = H, L$$

and borrow amount is smaller than liquidation asset value:

$$B_0 \leq (1 - \tau)qI_0$$

$$B_1 \leq (1 - \tau)qI_1^S \text{ for } S = H, L$$

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