Available online at www.sciencedirect.com
ScienceDirect
Journal of Banking & Finance 32 (2008) 1209–1220
Journal of BANKING & FINANCE
www.elsevier.com/locate/jbf

Determinants of corporate cash holdings: Evidence from spin-offs ☆

Ranjan D'Mello [a,*], Sudha Krishnaswami [b], Patrick J. Larkin [c]

[a] Department of Finance, Wayne State University, Detroit, MI 48202, United States
[b] Department of Economics and Finance, University of New Orleans, New Orleans, LA 70148, United States
[c] Department of Managerial Economics and Finance, Fayetteville State University, Fayetteville, NC 28301, United States

Received 19 January 2007; accepted 10 October 2007
Available online 4 November 2007

Abstract

We study the factors that influence the cash allocation decision around a spin-off, using variables suggested by the trade-off theory, and controlling for the possible endogeneity of leverage and cash ratios. Spin-offs provide an opportunity to examine the determinants of cash allocation at the margin at the time of creation of a new entity. Our results indicate that managers allocate higher cash ratios to smaller firms, and firms with high research and development expense ratio, low net working capital ratio, and low leverage. Thus, higher cash ratios are correlated with difficulty of raising external capital and reduced availability of cash from internal sources. In addition, managers also base the cash allocation on observable immediate growth opportunities instead of on long-term possible growth. An analysis of excess cash ratios, defined as the difference between the actual and predicted cash ratios, indicate that firms are, on average, allocated less cash than suggested by trade-off models, and this deviation in allocated cash from predicted levels is explained only by concurrent profitability of the firms (a pecking order theory implication).

JEL classification: G31; G32; G34

Keywords: Cash ratio; Cash allocation decision; Trade-off theory; Spin-offs

1. Introduction

Industrial firms in the US hold a substantial portion of their total assets in cash and marketable securities. For instance, Kim et al. (1998) and Harford (1999) find that approximately 8% of a firm's total assets are comprised of cash and short term investments. Given that these assets provide only a nominal return and investors do not value them highly, why do firms hold so much cash?[1] Previous studies have put forward the trade-off and pecking order theories as two alternative, but not mutually exclusive, models for explaining firms' cash holdings. Studies by Kim et al. (1998), Harford (1999), and Opler et al. (1999) examine these alternative theories by conducting cross-sectional and time series tests of firms' cash ratios. In this study we expand on the same question by examining the factors that influence the initial cash allocation around a spin-off.

☆ This paper was reviewed and accepted while Professor Giorgio Szego was the Managing Editor of the journal, and by the past editorial board. We thank Sudip Datta, Mai-Iskander Datta, Tarun Mukherjee, Karthik Raman, Lee Pinkowitz, Oscar Varela, Gerald Whitney, seminar participants at the University of New Orleans, the 2003 Financial Management Association meetings, and two anonymous referees for their comments and suggestions. We are especially thankful to Oranee Tawatnuntachai for assistance with some variable measurements. Ranjan D'Mello acknowledges funding support from Wayne State University. All errors remain our responsibility.

* Corresponding author. Tel.: +1 313 577 7828.
E-mail addresses: rdmello@wayne.edu (R. D'Mello), skrishn1@uno.edu (S. Krishnaswami), plarkin@uncfsu.edu (P.J. Larkin).

[1] Faulkender and Wang (2006) and Pinkowitz and Williamson (2004) estimate the marginal value of a dollar of cash holdings to be approximately \$0.95, and Dittmar and Mahrt-Smith (2007) document this marginal value to be even worse (\$0.42) for poorly governed firms.

0378-4266/$ - see front matter © 2007 Elsevier B.V. All rights reserved.
doi:10.1016/j.jbankfin.2007.10.005

The setting of a spin-off allows us to focus on the determinants of cash ratios at the margin. In a spin-off, managers divest a division or a segment of a firm into a new company and divide the firm's assets and liabilities between the post-spin-off entities. Therefore, focusing on the initial cash allocation at the time of creation of independent entities, when new cash ratios are freely determined, allows us to investigate the factors that affect the cash holding decision at the margin without the confounding effects of aggregation of past decisions.[2] And, because we study the *allocation* of cash, we are able to focus on forward-looking factors[3] suggested by the trade-off theory derived from the costs and benefits of cash, and additionally incorporate recent arguments on the strategic effects and uses of cash. Thus, we can sidestep the debate in the literature about whether and the extent to which cash hoarding propensities induced by pecking order strategies may mask correlations or create spurious correlations between cash ratios and factors suggested by the trade-off theory.

We also incorporate an analysis of the factors that affect the difference in cash ratios between the post-spin-off entities. This analysis provides insights on whether managers base their allocation decisions on the characteristics of the independent entities, or whether they use relative characteristics for the allocation. Additionally, it eliminates any biases that may have been introduced if managers were restricted in the allocation by the level of pre-spin-off cash.

Finally, our analysis provides a methodological improvement over extant studies on cash holdings by explicitly controlling for the possible endogeneity and simultaneous determination of leverage and cash ratios. In this we are motivated by Opler et al. (1999) who recognize an important limitation in their and other extant work when they state "because the determinants of cash are so closely related to the determinants of debt in our analysis, it is important in future work to figure out, both theoretically and empirically, to what extent cash holdings and debt are two faces of the same coin." A number of studies assume cash ratios as simply residuals of the financing decision.[4] Recently, Acharya et al. (2005) develop a model where they characterize the conditions that determine the degree and nature of endogeneity between cash and debt policy.[5] Their findings imply that cash ratios may be endogenous to leverage, and any relation documented between cash ratios and firm-specific factors may simply be spurious correlations due to this endogeneity. The endogeneity also suggests that cash and debt policies may be simultaneously determined, and any analysis of cash ratios must control for this simultaneity. We achieve both objectives by analyzing the determinants of cash ratios in a simultaneous equation system with leverage.

We analyze cash ratios, defined as the ratio of cash plus marketable securities to total assets net of cash, for a sample of 154 subsidiaries spun-off by 149 firms during the period 1985–2000. We find that firm size is negatively related to cash ratios, implying that small firms that incur higher transaction costs while raising external funds, or firms that have limited access to external capital markets are allocated more cash at the spin-off. Firms that have access to highly liquid internal assets such as non-cash working capital are allocated less cash, and firms with higher research and development expenses are allocated higher cash ratios to mitigate the need for these firms prone to adverse selection problems to access external capital markets. Our evidence also shows that firms with higher sales growth are allocated more cash at the spin-off.

However, contrary to the findings in the prior literature on cash holdings, we find that market-to-book ratio and capital expenditures are not significant in determining cash allocation in a spin-off. Thus, managers rely only on immediate growth opportunities, proxied by sales growth, in allocating cash ratios in a spin-off. Finally, contrary to the extant literature, we find no evidence that financial distress costs directly affect the cash allocation, rather, it is the ability of firms to raise external capital that is directly pertinent to the allocation; we find that cash ratios are correlated negatively with leverage and positively with an indicator variable measuring absence of rated debt. These broad patterns persist even when we control for the possible endogeneity between leverage and cash ratios, indicating that the correlations documented are not spurious, and cash is not simply "negative debt."

Finally, we compare the actual allocation of cash against the cash ratio suggested by the trade-off theory, and incorporate recent theories of cash to explain any deviations. We find that the median excess cash ratio, defined as the difference between the allocated cash ratio and the ratio predicted by the trade-off model, is significantly negative for parents as well as subsidiaries at the year-end of

[2] A firm's current cash holding, which is the dependent variable in prior studies, could reflect the cumulative end product of past operating and financial performance and strategies. As Harford et al. (forthcoming) point out, even if firms do not prefer to build up large pools of cash, they may yet end up with stockpiles for extended periods of time because payout policy often does not adjust quickly. Mackie-Mason (1990) argues that a single aggregate measure like the cumulative cash ratio has low power while examining incremental effects and therefore provides limited information about the decision to hold cash at the margin.

[3] We use the term "forward-looking" to refer to independent variables that are measured at the year end or the year following the spin-off. The intention is to capture effects that managers anticipate at the time of the cash allocation.

[4] For instance, Mehrotra et al. (2003) analyze debt ratios net of cash because "cash reserves offset the effect of financial leverage." And, while they recognize the possibility, even Opler et al. (1999) fail to control for the endogeneity.

[5] They demonstrate that for financially unconstrained firms, cash can be perceived as negative debt in that holding a dollar of cash is equivalent to reducing a dollar of debt. So, for these firms, cash policy and debt policy are perfectly endogenous in that the factors that affect cash policy do so only through their effect on debt policy. Even for financially constrained firms, cash policy and debt policy are endogenously linked, though not perfectly, through their dependence on future investment opportunities and expected cash flow.