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## ARTICLE INFO

## Article history:

Received 1 March 2010

Received in revised form

17 December 2010

Accepted 10 January 2011

Available online 12 August 2011

## JEL classification:

G31

## Keywords:

Mergers and acquisitions

Credit lines

Cash

Asset-specificity

Financial distress

## ABSTRACT

We study the interplay between corporate liquidity and asset reallocation. Our model shows that financially distressed firms are acquired by liquid firms in their industries even in the absence of operational synergies. We call these transactions “liquidity mergers,” since their purpose is to reallocate liquidity to firms that are otherwise inefficiently terminated. We show that liquidity mergers are more likely to occur when industry-level asset-specificity is high and firm-level asset-specificity is low. We analyze firms’ liquidity policies as a function of real asset reallocation, examining the trade-offs between cash and credit lines. We verify the model’s prediction that liquidity mergers are more likely to occur in industries in which assets are industry-specific, but transferable across firms. We also show that firms are more likely to use credit lines (relative to cash) in industries in which liquidity mergers are more frequent.

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## 1. Introduction

Existing research argues investment funding is a key determinant of corporate liquidity policies (see, e.g., Opler, Pinkowitz, Stulz, and Williamson, 1999; Graham and Harvey, 2001; Almeida, Campello, and Weisbach, 2004; Denis and Sibilikov, 2010). Given that acquisitions are one of the most important forms of investment, one

would expect that the benefits and costs of asset reallocation would be an important driver of liquidity. However, this notion has been largely overlooked by the literature on corporate liquidity.

In this paper, we propose and develop a theoretical link between corporate liquidity policies and asset reallocation opportunities. Our model explains why a distressed firm might be acquired by a liquid firm in its industry even when there are no true operational synergies between the firms.<sup>1</sup> We call this type of acquisition a *liquidity merger*. The model adds to our understanding of liquidity management by showing how credit lines might dominate alternatives such as cash and ex post financing in the funding of acquisitions. In particular, it shows that

<sup>☆</sup> We thank Todd Gormley (AFA discussant), Charles Hadlock, Jerry Hoberg, Hernan Ortiz-Molina, Gordon Phillips, Michael Schill (EFA discussant), Erik Theissen, and an anonymous referee for their detailed comments and suggestions. Comments from audiences at the 2010 AFA Meetings, the 2010 EFA Meetings, ESMT-Berlin, Michigan State University, MIT, Simon Fraser University, University of British Columbia, University of Mannheim, University of Michigan, University of Utah, and Vienna University of Economics and Business Administration are also appreciated. Lifeng Gu and Fabrício D’Almeida provided excellent research assistance.

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<sup>1</sup> By “lack of true operational synergies” we mean that a merger between the firms would not increase their combined value in the absence of financial distress. We do not imply that mergers do not generate operational synergies, but simply that they might occur even in the absence of such synergies. See Maksimovic and Phillips (2001) for evidence on productivity gains arising from mergers.

credit lines can be a particularly attractive source of liquidity for high net worth, profitable firms.

The model's basic argument is as follows. Consider a firm that finds it difficult to raise credit because it cannot pledge its cash flows to investors. Limited pledgeability can arise from many sources, including moral hazard, asymmetric information, or private control benefits. In the model, firm insiders derive a non-pledgeable rent from their ability to manage assets that are industry-specific. If the firm is hit by a liquidity shock that is larger than its pledgeable value, the firm might not be able to raise the extra capital it needs even if continuation would be efficient. One option is to liquidate the distressed firm's assets at the value that can be captured by industry outsiders (sell for scrap). But if other industry players are able to operate the industry-specific assets (putting those assets to uses they were designed for), an acquisition by a healthy industry rival may dominate liquidation.<sup>2</sup> The problem with that alternative is that the acquirer itself may end up facing a similar pledgeability problem. In particular, outside investors (including those of the acquirer) might be unwilling to finance the merger since they can only capture the pledgeable portion of the gains associated with the deal.

How can the industry acquirer overcome this financing problem? To do this, the acquirer needs a source of funding that can be used at its discretion. The situation resembles the *ex ante liquidity insurance* problem of Holmstrom and Tirole (1997, 1998). In the Holmstrom-Tirole framework, the firm cannot wait to borrow after a large liquidity shock is realized because at that point external investors would be unwilling to provide funds. Instead, the firm needs to contract its financing *ex ante*. The optimal liquidity policy can be implemented either in terms of cash (the firm borrows more than its *ex ante* needs) or with an irrevocable line of credit. A similar logic follows through in the financing of a liquidity merger. The industry acquirer can overcome investors' unwillingness to finance the merger by accessing a discretionary form of financing that does not require investors' *ex post* approval. Liquidity mergers thus emerge as a link between firm financial policies and asset reallocation opportunities in an industry.<sup>3</sup>

Putting our theory in perspective, we model the link between mergers and liquidity policy by embedding the Holmstrom and Tirole (1997, 1998) liquidity demand model in an industry equilibrium framework that draws on Shleifer and Vishny (1992). Previous research suggests that a practical problem with lines of credit is that they may become unavailable precisely when the firm most needs them. However, the industry acquirer is most likely to demand liquidity for an acquisition in states in which it

does not suffer a negative liquidity shock of its own. Hence, covenants that link line of credit availability to the firm's cash flow performance need not restrict the availability of financing to acquirers. We use this insight to show that lines of credit might dominate cash in financing liquidity-driven mergers, even when those credit facilities are revocable. In order to use cash to finance future acquisitions, the acquirer would need to carry large balances from the current period to all future states of the world. In the presence of a liquidity premium, this policy is costly. Given that cash flow-based covenants do not restrict the availability of merger financing under the credit line, cash becomes less desirable as the demand for merger financing increases.<sup>4</sup> The model analysis shows how merger activity may influence whether firms use cash or credit lines in their liquidity management. The analysis is novel, among other reasons, because it helps reconcile the observed positive correlation between a firm's profitability and its use of credit lines in lieu of cash for liquidity management (see Sufi, 2009; Campello, Graham, and Harvey, 2010).

Our model has several implications that have not yet been examined in the literature. First, it predicts that liquidity mergers should be more frequent in industries with high asset-specificity, but among firms whose assets are not too firm-specific. We identify these industries empirically based on two observations. First, we conjecture that *industry-specificity* is likely to be greater for assets such as machinery and equipment than for land and buildings. Accordingly, we use the ratio of machinery and equipment to total firm assets as a proxy for industry asset-specificity (machinery intensity). Second, we conjecture that *firm-specificity* should be inversely related to the degree of activity in asset resale markets in a firm's industry—the higher the use of second-hand capital amongst firms in an industry, the less firm-specific the capital. To construct a measure of “capital salability” within an industry, we hand-collect data for used and new capital acquisitions from the Bureau of Census' *Economic Census*. These data allow us to gauge asset salability through the ratio of used-to-total (i.e., used plus new) fixed capital expenditures by firms in an industry (cf. Almeida and Campello, 2007). Combining those two observations, we construct our desired measure as the product of “machinery intensity” and “capital salability.” We call this composite proxy *Transferable assets*.

We then investigate if the ratio of liquidity mergers to the total number of mergers in an industry is related to asset-specificity (*Transferable assets*). Using a sample of 1,097 same-industry mergers drawn from the Securities Data Corporation (SDC) database between 1980 and 2006, we identify deals as potential liquidity mergers as those in which the target is arguably close to financial distress. Specifically, we attempt to isolate targets that have lower interest coverage than the average target, but at the same time have high profitability (to alleviate concerns that the

<sup>2</sup> Consistent with this notion, Ortiz-Molina and Phillips (2009) find that inside liquidity (provided by buyers inside the industry) reduces a firm's cost of capital by more than outside liquidity (provided by firms outside the industry).

<sup>3</sup> Industry peers are unique liquidity providers in the Holmstrom-Tirole setup because unlike industry outsiders (e.g., buyout groups), their management can capture non-pledgeable income associated with the assets of distressed targets.

<sup>4</sup> As we discuss below, the credit line reduces liquidity premia since it does not require the firm (nor the lender) to carry liquidity across time.

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