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The role of risk management in mergers and merger waves ☆

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ABSTRACT

We show that merger activity and particularly waves are significantly driven by risk management considerations. Increases in cash flow uncertainty encourage firms to vertically integrate and this contributes to the start of merger waves. These effects are incremental to previously identified causes of wave activity. Our risk management hypothesis is further supported by cross-sectional differences in the likelihood that a firm vertically integrates, and by the post-acquisition characteristics of vertically integrating firms. These results are consistent with the view (from the industrial organization literature) that vertical integration is an operational hedging mechanism that reduces the cost of increased uncertainty.

1. Introduction

Mergers and acquisitions (M&A) are among the most important corporate finance events. In 2007, the aggregate deal value for acquisitions of U.S. targets (from Securities Data Company (SDC)) was $1.37 trillion. Compared to aggregate capital expenditure activity (by Compustat firms) of $1.85 trillion, this strongly suggests that acquisition activity represents a large proportion of corporate investment.[2]

Since a significant amount of acquisition activity occurs during merger waves, the literature on such waves has received renewed academic interest. Shleifer and Vishny (2003), Rhodes-Kropf, Robinson, and Viswanathan (2005), and Cai and Vijh (2007) all suggest that waves are at least associated with, if not driven by, high valuations of bidder stock. Mitchell and Mulherin (1996), Harford (2005), and Ovtchinnikov (2010) attribute waves to economic shocks.[3] Goel and Thakor (2010) argue that CEO envy combines with neoclassical shocks to generate merger waves.

This paper adds to our understanding of merger activity and particularly waves, by studying the role of risk management in them. Our research builds on the above evidence that neoclassical economic relationships have important influences on merger waves. However, recognizing that merger waves follow economic shocks leaves important questions unanswered. Do certain types of mergers (vertical, horizontal, conglomerate) predominate during a wave compared to non-wave periods? Is this (potential) merger-type variation across wave and non-wave periods related to the nature of firms' economic experiences? Do other elements such as uncertainty affect

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[2] In 2006, total M&A activity was $1.42 trillion and capital expenditures were $1.68 trillion. In 2005, M&A activity totaled $1.1 trillion while capital expenditures totaled $1.4 trillion.

[3] Harford (2005) suggests that behavioral explanations reflect the joint importance of economic shocks to the industry *and* the existence of sufficient capital liquidity to enable mergers.

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merger choices and the likelihood of a wave? Answers to these questions have implications for corporate efficiency as well as regulatory policy.

Our results strongly suggest that risk management is an important component of merger waves, general (non-wave) industry merger activity, and firm-specific merger choice. Increases in firm-level cash flow uncertainty lead to the start of merger waves. Further, these uncertainty increases are a significant determinant of both individual firm and industry-level vertical integration activity (which we show are important components of waves). All of these results are incremental to the extant evidence that economic shocks and behavioral factors influence merger activity.

While our risk management perspective is new to the merger wave literature, there are several reasons why we might expect risk management to be relevant. First, a growing area of the finance literature recognizes that operational hedging may be accomplished via mergers (Amihud and Lev, 1981; Hirshleifer, 1988; Penas and Unal, 2004; Hankins, forthcoming). To the extent that other forms of risk management carry non-trivial costs or possibly fail to provide complete hedging (especially over longer periods), an alternative response to increased uncertainty is to merge or acquire.[4]

Second, a well-established strain of the industrial organization literature identifies vertical integration as a solution to contracting problems—problems which increase during periods of uncertainty. Williamson (1971) notes that evolving technology inhibits perfect contracts and suggests that vertical integration can address such contractual incompleteness. Carlton (1979) states that vertical integration is a risk management tool for firms facing potentially uncertain availability of inputs. To the extent that vertical integration plays an important role in merger waves (as we show it does), the connection between risk management and waves should be examined.

The recent volatility in commodity prices highlights the role of uncertainty in M&A activity and anecdotal evidence suggests that firms facing higher commodity prices are vertically integrating. On August 14, 2006, a *Wall Street Journal* article noted that "a hot commodities market … was encouraging vertical integration by manufacturers." (Wall Street Journal, 2006) More recently (December 1, 2009), the *Wall Street Journal* again reported a rise in the number of vertical integrations (Wall Street Journal, 2009). In that article, steelmaker Arcelor expressly stated that its vertical acquisitions were undertaken to hedge against price uncertainty.

Our paper proceeds as follows. We start by documenting heterogeneity in merger types during waves. Vertical integration is much more common during merger waves than during non-wave periods, and we directly tie the incidence of waves to the proportion of merger activity that is vertically integrated.

We then move on to our main contribution. Given the importance of vertical integration to waves, we study why this pattern might exist. Since industrial organization theory asserts that vertical integration is a risk management response to uncertainty, we examine the effects of cash flow uncertainty on the start of merger waves. We find that merger waves are more likely to start following periods when many firms in an industry experience increasingly volatile cash flows. This evidence suggests risk management is an economically important determinant of waves.

We confirm the importance of risk management to merger activity by extending our analysis beyond waves, and examining annual industry data as well as firm-level data. At the industry-year level, we find that increased cash flow uncertainty carries significant explanatory power for the percentage of vertically related mergers. We also find that individual firms' decisions to vertically integrate (after controlling for the decision to engage in an acquisition via a Heckman model) are positively influenced by cash flow uncertainty increases. These results both suggest the link between vertical integrations and uncertainty is robust and they support the importance of viewing vertical integration as a risk management technique.

Critical to our analysis is whether vertical integration *actually* provides operational hedging. In particular, Kedia, Ravid, and Pons (2008) question whether vertical integrations provide any benefit in the presence of price uncertainty. We present several pieces of evidence that vertical integration provides hedging benefits. First, Klein, Crawford, and Alchian (1978) and Williamson (1979) suggest that vertical integration is particularly useful in risk management when asset specificity is high. We show that the tendency to vertically integrate following increased uncertainty is stronger for firms with higher asset specificity.

Further, we explore operational hedging benefits *following* vertical integration. We examine the change in our firms' cost measure (cost of goods sold (COGS)) and find a drop in COGS following vertical integration. This decreased cost indicates a potential benefit. We also recognize that numerous papers suggest that firms use slack to protect against the effects of variability in internal funds or the need for costly external financing (e.g., Kim, Mauer, and Sherman, 1998; Opler, Pinkowitz, Stulz, and Williamson, 1999; Billett and Garfinkel, 2004). Since there is a cost of carrying slack, firms that reduce uncertainty should reduce their use of it. Indeed, we find that changes in slack are negatively related to vertical integration, consistent with vertical integration providing an alternative operational hedge.

Finally, if vertical integration (*VI*) is an attempt to hedge cash flow uncertainty that has recently risen, then we should observe declines in cash flow uncertainty due to *VI*. We indeed find this. Cash flow uncertainty drops significantly more (over various time-windows) when the firm vertically integrated, than when it did not.

Overall, our results suggest that risk management considerations are an important factor contributing to merger activity and particularly influence the start of merger waves. This has implications for several strands of the M&A literature. By considering uncertainty data, we directly extend the work of Mitchell and Mulherin (1996) and

[4] Froot, Scharfstein, and Stein (1993) note that hedging via derivatives is not always possible, and when possible, may be expensive. German industrial conglomerate Metallgesellschaft is a classic example of derivatives use not being risk free. Also, derivatives tend to be shorter term, creating rollover concerns and potentially higher costs for long-term exposures.