

Beyond internal capital markets: The in-house transmission of adverse sales shocks and the collateral channel[☆]

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Abstract

We study how shocks to some business segments affect investment in a firm's non-shock segments. We find that subsequent investment in the non-shock segments is significantly lower compared to segments of firms that do not experience shocks. Surprisingly, lower availability of internal funds does not account for the lower investment. We find that segment shocks propagate within the firm by decreasing the value of collateral assets and reducing the availability of external finance. Our results support the operation of an external finance collateral channel ([Kiyotaki, N., Moore, J., 1997. Credit cycles. *Journal of Political Economy* 105, 211–248.]) previously discussed in the literature.

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1. Introduction

Putting different industry segments under the same roof is likely to have real consequences – events in one segment of a firm may affect investment policies of, and resources allocated to,

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other segments. In a world of capital market imperfections, segment investment depends not only on investment opportunities in a particular segment, but also on the cash flows and asset values of the whole firm. Therefore, an unfavorable shock that decreases cash flows or asset values of a segment may reduce investment in the remaining segments. Shin and Stulz (1998) find that segment investment depends on the cash flow of the firm's other segments. Lamont (1997) reports that non-oil investment by oil companies declined following large decreases in the oil segments' cash flows.

Lamont's (1997) pioneering work was somewhat limited by the fact that the data came only from one particular industry episode, so that he could only look at 26 firms and 40 segments. Although focusing on the oil industry gave him a very clean "controlled experiment" in that the shock was unquestionably exogenous to the non-oil segments, the paucity of data meant that he could not investigate the mechanisms through which the shocks to the oil segments were transmitted to the non-oil segments. Disentangling the effects of alternative channels of transmission by utilizing the full sample of Compustat firms is one of the main contributions of this paper. We identify multi-segment firms that experience major sales declines (sales shocks) but where the decline in sales is confined to only some of the segments (the "shock" segments). We then investigate the effect of the sales shock on the subsequent investment in the segments that did not experience a contemporaneous decline in sales (the "non-shock" segments). We are especially interested in seeing whether the mechanism of transmission goes beyond the obvious cash channel — i.e., lower availability of internal funds.

We find shock firms invest less in their "non-shock" segments relative to segments of firms that do not experience sales shocks. Contrary to what might be expected, however, our results suggest that the effect of a decrease in the overall availability of internal funds is not of first-order importance in explaining the lower investment by the non-shock segments of the affected firms. While a lower availability of internal funds — *ceteris paribus* — is expected to result in lower investment in the non-shock segments of financially constrained firms, the shock is also associated with a loss of investment opportunities in the shock segments. The latter implies that more internal funds are available for investment in the non-shock segments, which should cause the non-shock segments to invest more. Indeed, our results show that for the shock firms, these two effects typically tend to offset each other.

Importantly, even after controlling for the availability of internal funds, investment by the non-shock segments is significantly lower. It follows, therefore, that the transmission mechanism of the sales shocks goes beyond internal capital markets and the availability of internal funds, and other "non-cash" channels of transmission are at work. One potential candidate is the external financing channel. The cost of external financing could increase, and the availability of external funds could decrease, subsequent to the shock. There may be several specific channels through which this happens. For example, the debt overhang problem could become more severe as the firm becomes more likely to default, making it costly to raise new junior debt. We examine one particular channel of transmission, namely the "collateral channel".¹

¹ See, for example, Irving Fisher (1933) for an early contribution of the study of how financial market imperfections can magnify an initial shock, Hubbard (1998) for a review, Kiyotaki and Moore (1997) for a recent theoretical analysis, Gan (in press), Almeida and Campello (2004) and Campello (2005) for recent empirical studies related to the collateral channel.

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