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The effect of stock misvaluation and investment opportunities on the method of payment in mergers

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ABSTRACT

This paper tests the effect of firms' mispricing and investment opportunities on the method of payment in mergers. Using a new proxy for investment opportunities and a sample of 1187 mergers completed between 1990 and 2005 among US publicly traded firms, I find that acquirers lead the decision on the method of payment, thus exploiting short-term market mispricing (in line with both the Rhodes-Kropf and Viswanathan, 2004 and Shleifer and Vishny, 2003 models). However, target managers believe in the quality of the merger and care about the long-term value of the merged entity's shares (as predicted by Rhodes-Kropf and Viswanathan, 2004 and contrary to Shleifer and Vishny, 2003). I also find that better investment opportunities lead to greater use of stock.

1. Introduction

Previous studies have analyzed the effects of misvaluation and investment opportunities of acquiring, as well as target firms on merger activities and payment methods (see Dong et al., 2006; Martin, 1996; Rhodes-Kropf and Viswanathan, 2004 (R-KV henceforth); Rhodes-Kropf et al., 2005; Shleifer and Vishny, 2003). However, the effect of misvaluation and investment opportunities on the method of payment in takeovers has not been fully addressed, neither from a *theoretical* nor an *empirical* point of view.

Acquirers use their overvalued stock as a method of payment in mergers to buy less overvalued targets more cheaply (see Dong et al., 2006; Rhodes-Kropf et al., 2005). Common intuition suggests that target managers should not accept a stock merger if the acquirer is more overvalued than the target; however, the evidence indicates that this is not always the case (see Andrade et al., 2001; Dong et al., 2006; Rhodes-Kropf et al., 2005).

SV and R-KV provide different explanations for this empirical puzzle. In SV, opportunistic target managers accept the overvalued stock of the acquirer because they can profit from cashing out quickly after the merger is completed, and/or because shareholders have short-term horizons. In R-KV, target shareholders have long-term horizons and the interests of target managers are aligned with the long-term objectives of their shareholders. However, target managers accept the overvalued stock of the acquirer because they overestimate takeover synergies: in the R-KV model, the error in valuing takeover synergies is correlated with the target firm's specific mispricing and with the overall industry valuation error.

This paper tests the effect of firms' mispricing and investment opportunities on the method of payment in mergers and contributes to the literature by providing i) a new measure of investment opportunities that separates the effect of mispricing

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from that of growth opportunities on the choice of payment method; ii) an explanation of the target management's objectives when accepting overvalued stock of the acquirer as the method of payment; iii) a novel measure of the price paid to acquire target firms, which is in line with the theoretical framework developed in Shleifer and Vishny (2003) (SV henceforth) and iv) new evidence with respect to financing (equity issues) and investments around mergers.

Analyzing a sample of 1187 mergers among US public firms, completed between 1990 and 2005, and using a new measure for investment opportunities that I explain below, I find that 1) high investment opportunities matter in the choice of method of payment, leading to greater use of stock; 2) target managers believe in the quality of the merger (as predicted by the R-KV model); and 3) acquirers lead the decision on the method of payment, thus exploiting stock mispricing.

Previous papers have not been able to fully disentangle the effect of stock mispricing from investment opportunities (see Dong et al., 2006). The empirical literature examines the relationship between overvaluation and the method of payment in mergers by comparing mainly Tobin's Q and other market-to-book values of the target with those of the acquirer (see Dong et al., 2006). However, the use of Tobin's Q in this context seems questionable, because any measure of price-to-book is a proxy for both misvaluation and investment opportunities (see Dong et al., 2006). Rhodes-Kropf et al. (2005) decompose the market-to-book ratio to provide an alternative measure of overvaluation and tested the R-KV model, but they did not focus on the method of payment and used a proxy for investment opportunities of the firm that did not include the synergies of the deal.[1]

I also attempt to separate misvaluation from investment opportunities, but I use an alternative measure of investment opportunities based on *post-merger investments*. One motivation behind the use of this measure is that it takes into account possible *synergies* in the merged entity. In addition, the investment opportunities of the merged entity can have a direct effect on the method of payment (Martin, 1996), as firms with high investment opportunities buy target firms using stock as method of payment to save cash or to avoid the debt overhang problem (Myers, 1977).

I use the average capital expenditures in the four years following the merger as a proxy for the investment opportunities of the combined entity. Under rational expectations, planned investments should represent an unbiased forecast of actual investments. In fact, Lamont (2000) shows that actual investments are strongly correlated with planned investments, suggesting that actual investments are a reasonable proxy for the investment opportunities of the merged entity. Furthermore, managers should know the value of the firm, i.e. their assessment of the firm's investment opportunities should not be affected by misvaluation. Finally, higher planned investments might not turn out to be good investments, but they do reveal the investment opportunities that the managers thought the firm had available.

In my sample my measure of long-term investment is positively related to the use of stock as a method of payment in mergers, suggesting that better investment opportunities are related to the use of stock.

Acquirer and target managers agree before the merger on the price to be paid to buy the target. If target managers do not care about their shareholders and are short term-oriented, they will be indifferent between cash and stock as method of payment, as they will cash out quickly after the merger. Hence, the price paid should not affect the method of payment. I show that this is not the case in my sample and that, in fact, the price paid is positively related to the use of stock, suggesting that target managers believe in the quality of the merger (in line with RK-V and contrary to SV).

On the other hand, given a certain price per unit of capital paid to acquire the target, overvalued merged entities provide less ownership for target shareholders, if stock is used as the method of payment. I show that the overpricing of the merged entity is positively related to the use of stock, suggesting that the acquirer leads the decision on the method of payment.

Results do not seem to suffer from endogeneity and reverse causality biases. They are also robust to a series of control variables (asymmetric information/uncertainty regarding the target's and acquirer's value, competition, past returns of the acquirer and target, acquirer's long term performance, different measures of mispricing based on Rhodes-Kropf et al., 2005, and market-wide movements).

Finally I investigate equity issues around mergers: a firm with high investment opportunities could choose, instead of a stock merger, a cash merger *plus* an equity issue to finance post-merger investments. Previous studies on this question argue that stock mergers are preferable to cash mergers followed by equity issues because of investor inertia (see Baker et al., 2007). I find a weak positive correlation between equity issues and cash deals followed by high level of investments. On the other hand the overvaluation of the merged entity and the perceived synergies are positively related to equity issues, indicating that acquirers might be exploiting the high valuation of their stock twice—in the merger and in the equity issue.

This paper proceeds as follows. In Section 2, I discuss the main theories on mispricing and method of payment and introduce my hypotheses. Section 3 presents my empirical analysis, while Section 4 sets forth my results. Finally, Section 5 presents my conclusions.

2. The effect of market misvaluation and investment opportunities on the method of payment: theories and empirical predictions

Two main models analyze the effect of mispricing on takeovers and the method of payment in mergers—Rhodes-Kropf and Viswanathan (2004) and Shleifer and Vishny (2003)—both of which lead to similar empirical predictions. The main difference between them is the reason why target managers accept the overvalued stock of the acquirer. Therefore, in this section, I first

[1] Other proposed measures of mispricing are based on accruals (Polk and Sapienza, 2008), dispersion of analyst forecasts of earnings (Gilchrist et al., 2005) and short term interest (Ben-David et al., 2011).