Idiosyncratic Volatility and Earnout-Financing

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Extended Abstract

Reflecting the importance of information asymmetry in Mergers and Acquisitions (M&As), there is by now an established literature illustrating its significance in shaping the uncertainty regarding the outcome of a corporate takeover (Myers and Majluf, 1984; Travlos, 1987). Chang (1998) argues that the payment method used to finance an acquisition is able to interact with the degree of asymmetric information surrounding a deal and partly resolve this issue. Similarly, Kohers and Ang (2000) demonstrate that in a risky M&A transaction, heavily characterized by adverse selection and moral hazard, earnout payments (*EC*) are able to further assist towards their resolution and increase the deal's likelihood of success[1]. This is achieved by making part of the payment contingent upon the target firm's management achieving certain pre-agreed performance-related goals during the post-acquisition period. Evidently, apart from effectively mitigating valuation disagreements, engaging in an *EC* deal also signals the willingness of the target's administration to attach itself to the merged entity's future cash flows, along with its incentives to maximize performance and receive the deterred payment. Current evidence suggests that the choice to use an earnout provision heavily relies on the degree of information asymmetry sourcing from the target side of the deal, mainly expressed as valuation risk (Kohers and Ang, 2000; Cain, Dennis and Dennis, 2011; Barobpoulos and Sudarsanam, 2012). However, as the estimation of expected synergies is subject to each firm's information set, factors influencing the latter may also originate from the acquiring side of the deal and, ultimately, lead to valuation disagreements. In order to "bridge the gap" in these disagreements, *EC*-financing has been illustrated to provide a reliable solution. In this paper, we identify the acquiring firm's idiosyncratic stock return volatility (*sigma*) as a further determinant of the choice to implement an earnout provision. As an accurate proxy of the information environment of the firm (Dierkens, 1991) and, specifically, of the uncertainty regarding its future operating performance (Campbell, Lettau, Malkiel and Xu, 2001; Pastor and Veronesi, 2003; Irvine and Pontiff, 2009) *sigma* is illustrated to be positively influencing the probability of an *EC* deal occurring.

Moreover, Lukas, Reuer and Welling (2012) demonstrate that the terms of an *EC* are determined endogenously to the deal's degree of riskiness. The first-stage payment, therefore, needs to be structured in such a way so as to be dealing with frictions generating disagreements over the deal's intrinsic value. Fishman (1989) illustrates that high-value bidders prefer the use of cash when financing an acquisition,

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[1] Kohers and Ang (2000) report a 2.2% 2-day cumulative abnormal return for earnout acquirors compared to 1.8% for cash and 1.13% for stock acquirors

though in cases of disagreement cash payments constitute a sub-optimal payment method. Evidently, implementing an *EC* with cash as the initial payment can assist towards the resolution of the implied valuation disagreement. Consequently, as a factor highly likely to lead to such disaccords, the uncertainty regarding the acquiring firm's future performance should positively influence the probability of an *EC* with an initial payment of cash occurring, relative to just cash. To this end, we illustrate that the probability of observing an *EC* deal with an initial payment of cash, relative to solely cash, increases with *sigma*.

On the other hand an *EC* deal with an initial payment in stock constitutes a highly contingent payment method as the target firm's shareholders reap equity and synergistic gains that are greatly dependent on post-merger performance. Consequently, engaging in an *EC*-financed acquisition with an initial payment in stock is expected to convey the target's confidence in the acquiring firm's future performance and the deal's expected synergy gains, the probability of realization of which is significantly enhanced due to the design of the *EC*. Consequently, we illustrate the insignificant effect of *sigma* on the probability of an *EC* deal with an initial payment of stock occurring, relative to just stock.

Nevertheless, when valuing, pre-merger, a synergy-attributed stream of cash flows, the estimation needs to be consistent with the stream's implied risk. *EC*-financing constitutes a payment method suitable for risky M&A cases exposing the acquiror to substantial valuation risk (Kohers and Ang, 2000; Barbopoulos and Sudarsanam, 2012). Increased uncertainty over the acquiring firm's future performance is, therefore, expected to contribute to the total uncertainty over the deal's outcome. The latter is highly likely to already be substantial in *EC*-financed acquisitions, due to the idiosyncratic nature of target firms dominating their frequency. Evidently, when a deal's synergy-attributed future cash flows are subject to excess uncertainty, expected synergy gains decline due to the upwards adjustment in the discount rate required to reflect the implied business risk[2]. Consequently, increased uncertainty over the acquiring firm's future performance lowers the expected synergy gain from an *EC*-financed deal which should render potential target firms' shareholders more reluctant towards engaging in such a contingent payment structure. To this end, we illustrate that an *EC*-financed deal involving a private target firm is less likely to occur under high *sigma.*

Moreover, the acquiring firm's *sigma* has been illustrated to be interacting with an acquisition's payment method and the target firm's listing status in shaping the distribution of announcement period abnormal returns accrued to the acquiring firms' shareholders (Moeller, Schlingermann and Stulz, 2007). Evidently, high pre-merger uncertainty over the acquiring firm's future performance is expected to constitute *EC*-financing a payment method subjecting the outcome of the deals it is being implemented to excess uncertainty, lowering market participants' assessment of the expected synergy gains. To this end we illustrate that the well-documented outperformance of *EC*-financed corporate takeovers, relative to M&A transactions financed with single up-front payments, is mainly driven from low *sigma* deals. Moreover, our results suggest that relative to its most commonly used alternative risk-mitigating payment method when involving private targets (stock), *EC*-financing significantly enhances a deal's likelihood of success only under low *sigma*. In addition, when comparing differences in acquirors' short-run wealth gains between high and low *sigma,* in contrast to single up-front payment currencies, high *sigma EC*-financing is illustrated to not be significantly benefiting the acquiring firms' shareholders, relative to under low *sigma.* As financing an acquisition with an *EC* under high *sigma* results in decreases in expected synergy

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[2] Similarly, Bruner (2004) states that when estimating the appropriate discount factor to value expected synergies one "should start from the WACC and then prepare to adjust the discount rate for synergies upward or downward to reflect the analyst's judgment about the degree of risk in those synergies."

gains we argue that the above results can also be linked to Draper and Paudyal (2008) and their findings indicating that the market's reaction during M&A announcements conveys the effects information dissemination, revelation of expected synergies, or both. Nevertheless, when involving private targets high *sigma EC* deals significantly outperform their low *sigma* counterparts, further indicating that by choosing to engage in a high *sigma EC* deal, private targets' shareholders signal their confidence in high value creation post-merger, thus resulting in a more optimistic market reaction.

Considering the wealth effects of an *EC* deal's initial payment variations in cash and stock, we illustrate that *EC*-financed deals with an initial payment of cash outperform, on average, their non-contingent cash counterparts only under low *sigma*. Nevertheless, our reported differentials are insignificant, evidently due to the positive news conveyed in the announcement of cash-financed acquisitions (Fishman, 1989). Moreover, as in the general *EC* case, when comparing acquirors' short run wealth gains under high and low *sigma,* high *sigma EC* deals with an initial payment in cash only outperform their low *sigma* counterparts when involving private targets. We also conduct an analysis on the short–run wealth gains accrued to acquirors utilizing *EC*-financing with an initial payment of stock, relative to those utilizing solely stock. We report that stock *EC deals* significantly outperform their stock-only counterparts within all deals, though when examining how portfolio differences vary between high and low *sigma* all differentials are rendered insignificant. We argue that the latter further indicates the target firms' strong confidence in high value creation post-merger, by choosing to engage in such a highly contingent payment structure, which results in a positive market reaction irrespective of the uncertainty regarding the acquiring firm's future performance.

In order to account for potential self-selection concerns that may rendered biased our results from the univariate analysis as well as address the findings of Draper and Paudyal (2008) we employ Propensity Score Matching (PSM) augmented with Rosenbaum-Bounds (RB) in order to also account for potential hidden variable bias (Rosenbaum, 2002). PSM allows for an unbiased causal inference by pairing treated (*EC* -financed deals) and comparison sample units based on observable pre-treatment characteristics and examining differences in announcement period abnormal returns as the response random variable (Dehejia and Wahba, 2002). Moreover, by including *sigma* as a covariate to be taken into consideration during the matching sequence we are able to match *EC* deals to counterfactuals involving acquirors exhibiting a similar information environment. This enables us to capture the expected synergies-related component of the treatment effect of *EC*-financing on the distribution of acquirors' announcement period returns, which is also now likely to be much less exposed to potential selection bias.

Consistent with current literature on *EC*-financing, our results from matching illustrate a significant outperformance of our treated group of *EC* deals over its control group of non-*EC* payment currencies within all deals. Nevertheless, when employing PSM within solely high *sigma*, treated *EC* deals significantly underperform their control counterfactuals. Evidently, once employing PSM, and hence removing potential self-selection biases, the insignificant difference in announcement period abnormal returns between *EC*-financing and non-EC financing, under high *sigma,* is further corrected downwards illustrating the low synergy gains expected by market participants in high *sigma EC* deals. In contrast, under low *sigma,* the above observation reverses as treated *EC* deals further outperform their non-*EC* control counterfactuals. Moreover, we employ PSM within *EC* deals with an initial payment of cash and cash deals as well as within *EC* deals with an initial payment of stock and stock deals. We illustrate a significant outperformance of treated cash *EC* deals over their control cash non-*EC* control counterfactuals as well as of treated stock *EC* deals over their control stock non-*EC* control

counterfactuals. Lastly the above results are further verified within a multivariate framework, while controlling for the effect of several covariates influencing simultaneously the distribution of acquiring firms' announcement period abnormal returns.

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