The Performance of Acquisitions by High Default Risk Bidders

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Abstract

We investigate the takeover strategies of high default risk acquirers and their value impact. We find that these bidders select bigger, less profitable and unrelated targets, pursue transactions during recessions, and pay with shares by offering target shareholders high premiums. Their long-term buy-and-hold returns are extremely negative, and reflect fundamentally their substantial drop in profitability combined with high leverage. We show that the well-established long-run underperformance of acquiring firms is largely driven by this sub-set of acquirers. The results are similar when we use alternative measures of default risk and performance, and a global sample of non-US bidders.

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Abstract

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Keywords: Mergers and acquisitions; High default risk bidders; Long-term performance; Short-term market reaction; Agency conflicts; Distress

JEL Classification: G32, G33, G34

1. Introduction

In January 2017 Tesco, a globally diversified grocery and general merchandise retailer, launched a bid for Booker, the UK's biggest grocery wholesaler. Its chief executive asserted that the £3.7bn acquisition will be different from the 80% of corporate deals that serve only to make the acquiring shareholders poorer. He argued that the deal is part of Tesco's recovery, not a distraction from it, and it will allow the firm to grow quickly. However, this decision led to an unprecedented resignation of one non-executive director who refused to back the deal, and many shareholders revolted stating that the high price makes value destruction likely, and that Tesco should make its business simpler, not more complex (Financial Times, 2017). At the time of the deal, Tesco's Z-score was 1.52, its credit rating was cut to below investment grade, and for the last three years - since its accounting scandal - its stock price had declined by more than 70% and it had not reinstated dividends.

This anecdotal evidence is not exceptional. We find that many global mergers and acquisitions (M&As) are undertaken by similar high default risk bidders, in line with Zhang (2017) who reports that many acquisitions in the US between 2010 and 2014 came from distressed acquirers. These M&As are intriguing as they raise important questions relating to their ability to create value. While Tesco's shares are down 20% six months after the bid announcement, it is not clear whether all such bids destroy value. We address this issue by investigating the bid characteristics, post-deal operating performance, and announcement and long-term returns of high default risk acquirers. Perhaps surprisingly, this paper pioneers in studying the value creation of deals undertaken by distressed bidders. While many academics have been investigating M&A, default risk and failure prediction models, we have a limited understanding of distress-related M&A. Some studies focus on acquiring distressed targets, but literature is still in its infancy when it comes to studying M&A by acquirers who face potential economic or financial distress.

M&As are controversial. Past studies show that acquirers use estimated synergies and technological needs to justify them (e.g., Andrade, Mitchell, and Stafford, 2001; Bena and Li, 2014; Higgins and Rodriguez, 2006). However, many lead to substantial wealth destruction for the acquirer's shareholders (e.g., Morck, Shleifer, and Vishny, 1990; Moeller, Schlingemann, and Stulz, 2004; Malmendier and Tate, 2008), given the high risk and large acquisition premium paid, and the agency conflicts between managers and shareholders.[1]

M&As undertaken by high default risk firms are likely to be even more debateable. On the one hand, they will create value if they constitute a strategic turnaround option to revert past managers' failed strategy, and represent attempts to improve the firms' competitive position, or to exit a difficult environment. Previous studies on corporate restructuring support the idea that firms may use takeovers to change strategy and regain financial strength by acquiring companies that fit into their core business (Hofer, 1980; Trahms, Ndofor, and Sirmon, 2013). Lai and Sudarsanam (1997) find that, in the year of decline, 50.2% of underperforming firms undertake M&As, which is ranked third in order of importance after operational restructuring and capital expenditure. Furthermore, acquisitions may help high default risk bidders to mitigate risk by diversifying, hence decreasing asset volatility, causing a reduction in bankruptcy risk as well as gains from financial synergies (Hubbard and Palia, 1999), and incentivizing employees to innovate (Fulghieri and Sevilir, 2011; Lee, Mauer and Xu, 2018; Tate and Yang, 2015). They are also likely to be highly scrutinised by shareholders and the board of directors (ABA, 2010). These arguments suggest that M&As of high default risk bidders are value enhancing.

However, high default risk bidders are normally presumed to undertake cash conserving and/or generating strategies, such as cost rationalization, raising capital and asset sales, rather than risky cash depleting M&As (Hotchkiss, John, Mooradian, and Thorburn, 2008). Managers may recur to takeovers for private benefits reasons, principally to maintain

[1] See Andrade, Mitchell and Stafford (2001), Betton et al. (2008), and Bruner (2002) for extensive reviews.

their compensation (Arnold, 2014), and to avoid or at least delay bankruptcy, which is likely to result in personal bankruptcy costs that include forced career changes, and a loss of human and equity capital (Eckbo, Thorburn, and Wang, 2016). These managerial private benefits will induce a creation and/or protection of self-sustaining and inefficient empires at the expense of shareholder value maximization, resulting in negative returns.

We use a sample of 1,758 completed US takeovers over the period 1989-2011 to test these claims. We identify 440 high default risk bidders using Merton's (1974) distance-to-default (DD), in line with earlier studies (Hillegeist, Keating, Cram, and Lundstedt, 2004; Vassalou and Xing, 2004; Zhang, 2017).[2] While announcement returns are similar across both groups we report that the average 3-year post-bid peer-adjusted buy-and-hold returns (BHARs) of these bidders amount to -24.7% and are significantly negative, compared to +1.0% for the low default risk control group. Moreover, the Carhart (1997) four-factor model alphas are significantly negative for high default risk bidders (-0.873) whilst non-significant for the control sample. We find analogous results when we use a global sample of 2,351 completed bids from 38 non-US countries, and a large variety of alternative performance and default risk measures. In summary, the results indicate that managers of high default risk firms pursue worse acquisitions on average and support the agency problem hypothesis.

We unveil that high default risk bidders adopt unconventional M&A strategies. They are more likely to take over unrelated targets, probably to exit a troubled industry, to lower risk and generate diversification synergies, in line with previous evidence (e.g., Hubbard and Palia, 1999; Zhang, 2017). However their diversification is not necessarily beneficial, as industry relatedness is negatively related to announcement returns, in contrast to previous evidence (e.g., Harford and Uysal, 2014), yet unrelated to their long-run returns. We also

[2] Here defined as the sample's quartile with the highest distance-to-default. Because of estimation complexities, discussed below, we refer to these firms as high default risk rather than distressed. Our aim is not to assess the strategies of all high default risk firms, but to focus on only those that engaged in takeovers and assess their motivation and stock price performance relative to other bidders with relatively low default/distress risk.

find that their targets are relatively larger, more levered and have negative interest coverage ratios and a more likely to be loss making.

In addition, and in line with empirical evidence of Zhang (2017), we show that high default risk bidders are more likely to pay with shares. These results are surprising and raise a question of why target shareholders accept high default risk bidders' stock, which is likely to be undervalued. We consider the possibility that the high-default risk acquirers entice them by paying high premiums so that they are adequately compensated for the risk taken. We regress the merger premium against the interaction term between high-default risk and stock financed deals. We find that high-default risk acquirers pay higher premiums to target firms in general. Moreover, the coefficient on the interaction term is positive, suggesting that high-default risk acquirers pay more premiums to target firms for deals with a greater fraction of stock payment.[3] The results imply that high default risk bidders induce target shareholders to accept shares, probably because they are over-levered, in line with Harford, Klasa and Walcott (2009), and they do not have any other alternative to finance their deals.

The ex-post industry-adjusted ROA of the high default risk bidders declines significantly, contributing substantially to their long-term underperformance. For both groups, the BHARs are positively related to the 3 years post-bid ROA, but negatively related to leverage, in line with Malmendier et al. (2012), suggesting that the market views debt as detrimental to the long-term bidders' health. However, the marginal effects of these variables are more prominent for high default risk bidders, reflecting their dependence on excessive debt financing and their ostensible inability to generate the expected synergy gains.

We contribute to various streams of research in a number of ways. We provide a comprehensive investigation of the takeover strategies, wealth effects and post-deal operating performance of a special bidder category, namely high default risk acquirers.

[3] We thank an anonymous referee for suggesting this alternative explanation.

Importantly, we demonstrate the necessity to separately analyze these bidders as their long-term accounting and stock returns are distinct. A key finding of our paper is that the long-term underperformance of M&A should essentially not be generalized. It is mainly restricted to the subsample of deals pursued by bidders with high default risk. This commonly observed underperformance is noteworthy given that, in theory, takeovers are expected to create value. Numerous studies interpret the negative BHARs as evidence of, among others, managerial empire building and other private benefits (Jensen, 1986; Harford and Li, 2007), or CEO overconfidence (Rau and Vermaelen, 1998; Malmendier and Tate, 2008). Our results show that agency problems are relevant in explaining M&A activity of high default risk bidders.

There is only a thin body of literature indirectly related to our work. Pryshchepa, Aretz and Banerjee (2013) analyse a small number of distressed firms and obtain preliminary evidence that they engage in often questionable M&As in the years before bankruptcy. Harford and Uysal (2014) assess the impact of financial constraints on M&A activity and outcomes to find that non-rated (i.e., constrained) bidders display better announcement and long-run returns. While they do not make explicit references to high default risk firms, some of their arguments are relatively similar in nature to ours. Yet, whilst our high default risk bidders are likely to be more financially constrained than low default risk bidders, the fundamental characteristics of our high default risk group are divergent. Both groups share smaller size and higher leverage, while our high default risk bidders also have lower profitability and negative interest coverage. The fact that they find that more constrained firms do better deals while our high default bidders make worse acquisitions (driven by private benefits) provides further evidence that both groups have different attributes. The work most closely related to ours is Zhang (2017) who finds that distressed firms acquire for diversification, rather than the risk-shifting or growth opportunity reasons, but does not explore the associated return effects.

The rest of the paper is organised as follows. Section 2 provides a brief literature review and develops the hypotheses. Section 3 reports the data and methodology. Section 4 discusses the empirical results and robustness checks. The conclusions are in Section 5.

2. Literature review and hypothesis development

In strategy and corporate finance, abundant literature exists on the value effects of M&A, and its determinants. Studies identified several operational and financial objectives for corporate acquisitions like creating synergies, improving competitive power, and transferring managerial skills or technological expertise. On average, mergers and acquisitions do not result in positive returns for the acquiring firm, despite an increase in firm efficiency, operating performance and combined entity value.[4] With respect to risk implications, two strands of literature have emerged: diversification effects reducing risk (Amihud and Lev, 1981) and leverage effects raising risk (Ghosh and Jain, 2000; Harford et al., 2009). Most studies document that bidder risk, as proxied by total, systematic and idiosyncratic volatility, increases following takeovers (Langetieg et al., 1980; Geppert and Kamerschen, 2008). Ex-post, the bidders' default risk also increases as the high leverage and managerial actions outweigh the effects of asset diversification (Furfine and Rosen, 2011).

Similarly, many academic studies investigate default risk, with a particular focus on failure prediction models (Merton, 1974; Altman, 1968; Ohlson, 1980). To date, surprisingly little is known about the combination of both domains, namely 'distress-related' M&A. To our knowledge, only a few papers focus on distressed targets. These targets may present unique opportunities for potential buyers as they are often driven by synergies such as efficiency gains, higher market power and redeployment of assets to more profitable uses

[4] See for example, among others, Jensen and Ruback (1983); Agrawal et al. (1992); Healy et al. (1992); Andrade et al. (2001); Schoar (2002) ; Moeller et al. (2004); Maksimovic et al. (2011). However, Mitchell and Stafford (2000) argue that some methodological issues are likely to affect long-term underperformance measures. Using announcement returns, Alexandridis et al. (2017) show that deals in the post-2009 financial crisis period create value, even when acquiring large, public targets in stock-financed transactions.

(Jory and Madura, 2009; Almeida et al., 2011), a removal of inefficient management (Hotchkiss, 1995; Denis and Denis, 1995) and financial frictions (Erel et al., 2015), tax losses carried forward (Crawford and Lechner, 1996), and cheap valuations of distressed targets and assets (Eckbo and Thorburn, 2008). Empirical work on healthy firms taking over distressed targets usually reports findings that are similar to or better than those for acquisitions of non-troubled companies (Ang and Mauck, 2011; Meier and Servaes, 2015), but these bids are considered to be more risky (Nesvold et al., 2012).

Studies on acquisitions by distressed bidders are scarce. Zhang (2017) provides a detailed analysis of the motives behind this type of deals and shows that such acquisitions are economically important. Using a tax reform reducing debt restructuring costs and bankruptcy risk as a natural experiment, he finds that distressed firms react by decreasing diversifying acquisitions. His evidence supports the diversification hypothesis, which claims that distressed bidders acquire to lower the probability of bankruptcy, rather than the growth opportunity hypothesis, suggesting that the rationale behind such deals is to capture external growth opportunities. Compared to their healthy counterparts, distressed firms announce less acquisitions, acquire smaller targets with lower market-to-book ratios, and pay less in cash.

Harford and Uysal (2014) investigate the effects of financial constraints on M&A activity and performance by zooming in on non-rated firms, which are presumed to have constrained access to debt markets. They develop two related hypotheses to explain the relationship between having a credit rating and investment behaviour. The financial constraint hypothesis suggests that firms with constrained access to the public debt market invest less. The free cash flow hypothesis posits that firms with limited access to public debt markets have smaller borrowing capacity with less discretion on their investments. Both hypotheses predict that firms will make value-increasing and less costly investments. Empirically, they find that non-rated US firms tend to undertake less acquisitions, pay lower premiums, and generate higher announcement date and long-term returns than rated firms.

In this paper, we focus on the value effects of M&As undertaken by high default risk firms. A wide set of arguments leads to the hypothesis that these deals will create value. First, they are likely to be part of a wide-ranging comprehensive organizational change in governance, management, operations, assets, and capital structure, that would not have occurred when the firm is financially healthy, aimed at improving the use and efficiency of resources. Corporate restructuring studies indeed confirm the notion that acquisitions serve to revert the bidder's strategy and improve its financial health (Trahms et al., 2013). Furthermore, high leverage and distress entail some positive effects. The limited free cash flow (Jensen, 1986) prevents empire building transactions and there is a disciplining effect precluding or at least reducing the chance of making inefficient investments (Chava and Roberts, 2008).[5]According to the oversight hypothesis, M&As of high default risk bidders will create value because the investment is more likely to be a well-considered restructuring strategy, vetted scrupulously by the board, shareholders and also debtholders, since in high default risk scenarios investment decisions increasing equity value may reduce enterprise value (ABA, 2010; Hotchkiss et al., 2008).[6] In line with Alexandridis, Antypas and Travlos (2017), who find strong evidence that post 2009 financial crisis M&A creates value because of profound improvements in corporate governance quality, one may assume that distressed bidders' governance enhancements will positively impact their acquisition strategies and payoffs. The incumbent or new managers who have learned lessons from prior value-destroying investments are equally expected to engage only in value-enhancing acquisitions.

Additionally, high default risk bidders are assumed to mitigate risk by taking over unrelated targets to diversify cash flow exposure and decrease asset volatility (Billett, King, and Mauer, 2004; Zhang, 2017). Although most previous studies argue that diversification

[5] This is largely similar to Harford and Uysal (2014) who use the financial constraint and free cash flow hypothesis to explain why firms with constrained access to financing make better acquisitions.
[6] See Hotchkiss et al. (2008), Senbet and Wang (2012) and (ABA, 2010) for discussions and evidence.

destroys value, leading to as the conglomerate discount,[7] recent studies suggest that it leads to a reduction in bankruptcy risk and to significant gains from financial synergies (Hubbard and Palia, 1999). Moreover, de Andrés, de la Fuente, and Velasco (2017) report that diversification aimed at exploiting growth options rather than exercising available options is value enhancing. Diversification could as well be beneficial for high default risk bidders if it reduces information asymmetries and possible mispricing (Monk, 2017). Diversification may also be advantageous from a labour market perspective. For example, Fulghieri and Sevilir (2011) argue that despite market power benefits mergers between firms operating in similar product markets may lower employees' incentives to innovate because of decreased competition for human capital allowing for an extraction of greater employee rents. Empirically, Lee et al. (2018) show that merger payoffs are higher when firms have related human capital and do not operate in the same industries or product markets as such deals result in a greater ability to lay off low quality and/or duplicate employees. Tate and Yang (2015) find that workers in diversified firms develop skills that transfer across multiple lines of business, leading to real option benefits to redeploy labour in response to changing opportunities. These gains are probably significant for high default risk acquirers.

Overall, these assertions suggest that high default risk bidders are expected to undertake synergetic, value increasing and diversifying M&As, leading to positive announcement and long-run returns. We formalize the discussion above with the following testable hypothesis.

H1a: *The level of acquirers' default risk is positively associated with M&A gains.*

Alternatively, there are a number of reasons to believe that acquisitions by distressed bidders may destroy value. Ample empirical evidence is available for regular M&A producing disappointing outcomes. This could, for instance, be explained by Roll's (1986)

[7] See Maksimovic and Phillips (2013), and Martin and Sayrak (2003) for an extensive review.

hubris theory, which postulates that the over-confidence of an acquiring firm's management induces them to overvalue the target and/or the potential synergies, resulting in excessive premiums. This over-confidence usually extends from bidders' exceptionally strong past performance. They will oftentimes pursue publicly quoted targets, overpay and engage in contested bids.[8] Given that distressed bidders do not have a solid historical performance, we do not assume that hubris problems are a key motive for their M&A, yet we claim that agency problems are particularly relevant within the context of their bids.

Agency conflicts have been widely debated in the broad M&A literature; they include mainly empire building, compensation and career concerns. For example, Jensen (1989:66) argues that "corporate growth enhances the social prominence, public prestige, and political power of senior executives" and "managers have many incentives to expand company size beyond that which maximizes shareholder wealth. Compensation is one of the most important managerial incentives." More recently, Jenter and Lewellen (2015) find that CEOs of targets tend to accept bids only near retirement, while those with high debt-based compensation tend to engage in low-risk conservative investments to reduce their firms' default risk and thus protect their future, in line with Sundaram and Yermack (2007) and Cassell, Huang, Sanchez, and Stuart (2012).

Such agency conflicts are likely more severe for distressed bidders. Managers may diversify through acquisitions in an attempt to attain their personal goals. Jensen's (1986) free cash flow theory casts doubt on whether a firm that chooses to enter into industries where it has no demonstrated expertise acts in the best interests of shareholders. These diversification strategies generate limited synergies and are likely to aim at increasing firm size[9], which may reduce bankruptcy risk yet will especially benefit management. Managers

[8] See de Bodt, Cousin, and Roll (2018) for an extensive review of and evidence on overbidding driven by the presence of conflicts of interest and irrational bidding behaviour.
[9] See Alexandridis et al. (2013) for a review of and evidence on the negative impact of deal size and value creation.

may pursue these transactions to accomplish private goals, like conserving their salaries (Arnold, 2014), and deferring or averting insolvency, which is likely causing substantial personal bankruptcy costs including the loss of private perks, reputation, equity and specialized human and equity capital and compulsory career modifications (Eckbo, et al., 2016).[10] These managerial private benefits may lead to the creation or protection of underperforming corporate empires. Investor monitoring may be circumvented by paying for such takeover targets with shares (Jensen, 1986).

In line with agency theory predictions, Pryshchepa, Aretz and Banerjee (2013) show that distressed firms divert wealth through cash pay-outs or share repurchases and may engage in often questionable mergers and acquisitions. Graham, Harvey and Manju (2015) provide evidence that in major investment decisions, such as takeovers, CEOs are the dominant decision makers. In high default risk, we expect mangers to take into account first their career concerns and conduct acquisitions to avoid personal bankruptcy costs.

Overall, these agency-based arguments imply that M&A activity by distressed bidders typically aims at growing firm size and diversifying risk to safeguard management interests. They will presumably produce unfavourable takeover outcomes, as summarized in our competing hypothesis.[11]

H1b: *The level of acquirers' default risk is negatively associated with M&A gains.*

3. Data and methodology

3.1. Sample selection

We start with a sample of 2,827 takeovers announced in the US from 1989 to 2011 in the Thomson One Banker database. We then use the following criteria: (1) the acquiring

[10] Next to M&A, they can do so through large cash holdings (Arnold, 2014; Bates, Kahle, and Stulz, 2009), low leverage (Strebulaev and Yang, 2013), and low risk investments (Eckbo and Thorburn, 2003; Eisdorfer, 2008).

[11] Other predictions of the agency theory relate to risk-shifting and debt overhang problems (Jensen and Meckling, 1976; Myers 1977) which we do not test directly, but we present in appendix risk shifting results.

firm is a publicly quoted company with available stock price data on Thomson DataStream, (2) the acquirer has a pre-acquisition stake of less than 50% and a final stake of more than 50% in the target company, (3) accounting information of bidder and target is available from Worldscope, and (4) the sample excludes targets and acquirers from the financial industry, i.e., banks, insurance, real estate, holding and other investment companies (US SIC code 6).

We measure bidder's pre-bid default risk level using Merton's (1974) distance-to-default (DD, see Appendix 1) prior to deal announcement over the estimation window -280 to -31 days. This measure is a market-based indicator to assess the number of standard deviations that the bidder's market value of assets is away from default, which occurs when the market value of assets is lower than the book value of liabilities at maturity. It incorporates the key elements of a firm's risk-return profile: level of stock return volatility, financial debt and expected asset returns. We rank bidders into quartiles. We refer to bidders in the highest default risk quartile as High default risk while we classify all others bidders as Low default risk.[12] We winsorize our data at 1% to eliminate any outliers. The selection criteria imposed and data unavailability have limited our sample to 1,758 completed bids, split into 1,318 Low default risk and 440 High default risk bidders.

Table 1, Panel A, shows a homogeneous annual distribution of High default risk bidders except for the dotcom period (1999-2003) and the 2009 crisis. Most deals are in manufacturing and services (Panel B). Panel C reports the distribution of the distance-to-default, DD, variable. For our sample as a whole, the average DD is 7.558, in line with the results of Acharya et al. (2012) who show that, for their sample of 2,247 US firms that had at least one bond outstanding between 1996 and 2010, the average DD is 5.993. For our High risk of default sample, the average DD is 2.336, much closer to their 25% percentile of 3.375. Bharath and Shumway (2008) report an average probability of default of 10.95% for a

[12] We use various rankings, including deciles, as in, for example, Bharath and Shumway, 2008, and Garlappi et al., 2008. We also use quintiles and deciles, instead of quartiles. Our key findings remain invariant.

sample of 1,449 firm defaults covering the period 1980–2003, corresponding to an average DD of 1.2291. However, this is an approximation.[13] Overall, we do not expect any bias in our measurement of default risk yet we conduct robustness checks in subsequent sections.

[Insert Table 1 here]

3.2. Methodology

We use standard event study methodology based on the market model to calculate cumulative abnormal returns (CARs) over a -2 to +2 trading days event window, with market model parameters estimated over -280 to -31 trading days prior to bid announcement. We download from Bloomberg our proxy for the market return, the MSCI US equity index. We test for robustness by computing CARs over various event windows and find similar results.

As adequately evaluating long-term performance is challenging, we put forward a range of measures (Malmendier et al., 2012; Mitchell and Stafford, 2000).[14] Market-adjusted monthly buy-and-hold returns (BHARs) are calculated over a 3 years holding period starting the third trading day after the completion date and ending 21 trading days later. Next, we compute the widely used peer-adjusted BHARs, following Barber and Lyon (1997). The accuracy of this approach evidently depends on matching quality. Barber and Lyon (1997) argue that mean reversion may lead to the conclusion that firms which perform poorly before an event improve performance post-event, whereas performance is just reverting towards the mean. To tackle this issue, a matched peer firm is selected with similar industry (same two-digit US SIC code), size (market value of equity), market-to-book (MTB), and one year pre-acquisition buy-and-hold returns to proxy the pre-bid performance (Datta et al., 2001; Billet et al., 2011). We require that peers are not involved in takeovers for 3 years pre- and post-deal announcement. If relative target size is larger than one, we assign the target industry to

[13] The formula is pi = N(-DD), so DD = - Q(pi), where Q is the quantile function of the standard normal distribution. However, this is only approximate because of Jensen's inequality, which says that the average of a function is only equal to the function of the average if the function is linear, but N is highly non-linear.

[14] Malmendier et al. (2012) analyse bidding contests and use the loser's post-merger performance to construct the counterfactual performance of the winner had he not won the contest. While bidder and loser returns are closely aligned before the contest, winners underperform losers by 50% over the following three years.

the bidder industry, which matters for industry-adjusted performance measures and diversification. For each sample firm, we examine all non-bidding firms with size between 25% and 200% of the sample firm (Ghosh, 2001). We then sort these firms by MTB and historical stock returns. The matching criteria are all measured one month prior to bid announcement.[15]

As an additional test, we also compute the Carhart (1997) four-factor model, that extends Fama and French (1993), who show that small firms and value firms (low MTB) generate higher returns, with a momentum factor. This calendar-time approach, unlike the event-time method, controls for cross-correlation in returns. Specifically, in each month of the 3 years post-acquisition period, we form a portfolio of sample firms and rebalance it monthly by adding bidders that complete an acquisition. We form a similar portfolio of non-bidding matched peers and derive monthly abnormal returns.[16]

3.3. Research design and variable definitions

To assess whether short and long-term performance differs across our groups, we compare bidder, target and deal characteristics, and run a set of logit regressions. We then estimate a regression model on excess returns controlling for a number of determinants stemming from the M&A literature. The variable definitions are in Appendix 2.

We first control for *bidder characteristics*, including pre-bid performance, size, and financial risk. We include one year pre-bid ROA, cash to total assets,[17] and pre-bid month MTB. To account for size, we use one year pre-bid book value of assets, or market value of equity, as Moeller et al. (2004) show that announcement effects are smaller for larger

[15] The returns of 254 matched peers were partly replaced with the MSCI market return as their matched peer firm is delisted before the end of the sample holding period. This procedure does not significantly affect BHARs (Lyon et al., 1999). Our main results remain invariant when excluding those firms and their matched peers.

[16] We use Kenneth French (http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html#International) to download data. Momentum is the equal-weight average of returns for two winner portfolios for a region minus those of two loser portfolios. We do not have data to compute the five-factor model devised by Fama and French (2015).

[17] A number of previous studies show that companies hoard cash as a precautionary measure to overcome the financing frictions that prevent them from accessing external financing (Opler et al., 1999; Almeida et al., 2004; Bates et al., 2009). Acharya et al. (2012) link cash holdings to credit spread. They suggest that riskier firms have both higher cash reserves and credit spreads, and a greater long-term default probability.

acquirers, irrespective of method of payment and bidder public status. Finally, we analyse interest coverage and debt ratio, as Malmendier et al. (2012) suggests that investors may penalize high leverage. We include similar variables to account for target characteristics.

Correspondingly, we examine differences in bid characteristics. High default risk bidders may potentially offer more favourable deal terms to persuade target shareholders, resulting in lower post-bid BHARs. We define acquisition premium as the percentage difference between the final bid and target stock price four weeks before acquisition announcement.[18] We control for tender offers, which may lead to higher excess returns (Jensen and Ruback, 1983; Rau and Vermaelen, 1998). We include *Proportion of stock* to control for payment method and test for robustness using *All Stock* as a dummy variable equal to one if the transaction is fully paid in stock, which typically produces lower returns (e.g., Travlos, 1987; Loughran and Vijh, 1997). We expect higher returns for bids in the same two-digit US SIC industry, and for domestic transactions (Walker, 2000; Moeller and Schlingemann, 2005). We control for target public status as acquisitions of private targets may lead to higher excess returns (Moeller et al., 2004), and relative target size as larger deals might allow for more synergy gains and hence yield higher returns (Asquith, 1983). We incorporate dummy variables to control for time, industry and recessions, defined by the International Monetary Fund (IMF) as 1990-1993, 1998, 2001–2002 and 2008-2009.

4. Empirical results

4.1. The short and long-run returns of acquisitions by High default risk bidders

Table 2, Panel A, reports the announcement date excess returns. High default risk bidders generate insignificant CARs of -0.9%, but a significant median of -1.6%. For the remaining bidders, both the means and medians are negative and significant. However, in

[18] Premium is mostly analysed as a dependent variable (e.g., Rossi and Volpin, 2004). Hayward and Hambrick (1997) show that greater premiums are associated with CEO hubris and lower returns. Moeller et al. (2004) show that, for big firms, larger premiums reduce abnormal returns.

line with previous evidence, the economic significance of these returns is fairly modest. Across these groups, the difference in excess returns is not significant, suggesting that the market expects comparable relatively low synergies to be generated by both sets of bidders.

Panel B reports striking results for 3 years peer-adjusted BHARs. The average (median) long-term returns of -24.7% (-23.4%) are significantly lower for High default risk bidders, compared to 1.04% (2.16%) for the remaining bidders.[19] BHARs monotonically decrease from Q4 to Q1. Even relative to Q2-Q4, Q1 generates significantly lower BHARs. The differences in means and medians between the groups are strongly significant ($p < 0.01$).

Panel C provides analogous results when using market-adjusted BHARs. While the mean (median) BHARs of the lowest default risk group are 8.2% (5.4%), they are strongly negative, amounting to -12.7% (-29.9%), for High default risk bidders. Similarly, Panel D indicates significantly negative alpha coefficients in the Carhart (1997) four-factor model of -0.87% per month for the High default risk sample, compared to an insignificant -0.11% for Q4. The alpha coefficient increases rather monotonically across the quartiles and proves significant for only Q1 and Q2. Remarkably, market risk is priced for all groups except Q4, while the size premium is not priced for Q1. The book-to-market and momentum factors do not turn out to be significant. Overall, these findings suggest that the well-established long-run underperformance of acquiring companies is largely driven by High default risk bidders.

[Insert Table 2 here]

4.2. The determinants of the announcement date returns and post-bid performance

We now assess whether the takeover strategies adopted by the different bidders affect the observed dissimilar value effects. We analyse the bidder, target and deal characteristics, and post-bid operating performance, which we afterwards relate to ex-post returns.

[19] Here defined as the sample's quartile with the highest distance-to-default, i.e. Q4. We also examine potential survivorship bias in our sample. We find a probability of delisting of 8.8% for our High default risk firms during the three years post-bid period, in line with DD values. Tracing our firms after this period is beyond the scope of our analysis.

4.2.1 Bidder, deal and target characteristics

Table 3 reports bidder, target and deal characteristics. Panel A exhibits a two way comparative analysis of the bidder and target in each group and across the High and Low default risk sub-samples. The results reveal compelling discrepancies between target and bidder characteristics. Within each group, targets are relatively smaller, have lower growth and hold more cash. However, there are some marked disparities across the two groups. In particular, High default risk bidders are significantly smaller, less profitable, and have higher leverage (in contrast to Strebulaev and Yang, 2013), than the remaining bidders. Their low MTB rules out the Rau and Vermaelen (1998) performance extrapolation hypothesis. Interestingly, High and Low default risk bidders acquire targets with divergent characteristics. As expected, targets of High default risk bidders are relatively smaller and have significantly lower profitability, interest cover and growth yet higher leverage.

In Panel B, we contrast deal characteristics. The results demonstrate that High default risk bidders are more inclined to opt for larger, domestic, and private targets. Takeover premiums are similar across both groups, in contrast to hubris theory predictions (de Bodt et al., 2018). Surprisingly, and in contrast to debt overhang theory prognostications, a larger proportion of their deals is financed with equity (55% vs. 37%, *p* difference in means and media = 0.00). We find same results when we use a dummy for all stock payment as 40 percent of the deals by High distressed bidders are financed with only stock compared to 22 percent for Low default risk bidders (*p* difference in means and media = 0.00). In line with Halford, Klasa and Walcott (2009), we suggest that since high default risk bidders have significantly higher leverage than the low default risk counterparts, they are likely to be over their target leverage level, and, consequently, they finance their targets with shares. We explore further this method of financing issue in the next section.

[Insert Table 3 here]

Table 4, Panel A, presents multivariate logit regressions in which the dependent variable takes a value of one if the bidder is High default risk and zero if it is Low default risk measured either as the remaining three quartiles (1), or the last quartile (2). Confirming the univariate findings, High default risk bidders are smaller and more levered, and have lower profitability and growth. They select relatively larger targets and display a higher propensity for unrelated transactions, deals during recessions, and reverse takeovers. We find similar results when we include interest cover.

In line with the univariate results, the regression results indicate strong preference for High default risk bidder to pay with shares as the coefficients of *Stock percentage* in equations (1) and (2) are positive and significant. We obtain similar results when we use all stock dummy. These results raise a question as to why target shareholders accept high default risk bidders' stock, which is likely to be undervalued. We assess whether High-default risk acquirers entice target shareholders to accept shares by paying more premiums to compensate them adequately for the risk they take. We test this proposition by evaluating the impact of an interaction term between high-default risk and stock financed deals on merger premium, defined as the price paid per share minus stock price of target 4 weeks before acquisition announcement, divided by the stock price of the target 4 weeks before acquisition announcement. Following prior studies such as Moeller (2005) and Fich et al., (2016), we also include target firm and deal characteristics that are related to merger premiums as additional control variables. We find that high-default risk acquirers pay higher premiums to target firms in general. Moreover, the coefficient on the interaction term is positive, suggesting that high-default risk acquirers pay more premiums to target firms for deals with a greater fraction of stock payment. These results are in Appendix 3.[20]

[20] *In addition to this suggestion by an anonymous referee, we consider also alternative explanations for our results. In line with Halford, Klasa and Walcott (2009), we suggest that, since high default risk bidders have significantly higher leverage than the low default risk counterparts, they are likely to be over their target leverage level, and, consequently, they finance their targets with shares. Moreover, consistent with Jensen's*

We note however that several of these bidder characteristics are, by construction, components of our distress measure (distance-to-default). Table 4, Panel B, reports the logit regressions in which the dependent variable takes a value of one if the firm is the bidder and zero if it is the target, to capture variance in bidder and target characteristics for each group. As expected, both sets of bidders take over smaller targets. However, the most prominent finding is that Low (High) default risk firms tend to take over more (less) profitable targets. Moreover, the targets of Low default risk bidders have lower interest coverage and leverage. In contrast, targets of High default risk bidders have lower growth (potential), but similar interest coverage, leverage and cash holdings.

Overall, these results indicate that High default risk bidders resemble zombie companies, i.e. firms with poor financial performance, that keep operating, not only because of inefficient insolvency rules as argued by McGowan, Andrews and Millot (2017), but also by taking over similar zombie targets. Given the considerable dissimilarities between the two groups in key target, bidder and deal attributes, we include a host of these variables in our multivariate analysis to explain acquisition returns.

[Insert Table 4 here]

4.2.2 Post-bid operating performance

We evaluate post-deal operating performance to assess synergy gains. We compare bidder post-bid performance (ROA) to the performance of a hypothetical portfolio assuming

(1989) arguments, stock acquisitions might be the preferred option for this type of acquisitions to avoid discipline imposed when raising external funding. Alternatively, target shareholders may want to exit the distressed target and expecting promised synergies to materialise. Eckbo, Makaew and Thorburn (2018) argue that target shareholders are more willing to accept stock payments as long as they know better/more about bidders. It is possible that the target firm is willing to accept the offer from a financial distress bidder only if it has already a better understanding of the bidder. Another measure to Eckbo et al., (2018) variables could be the distance (e.g., miles) between these two firms. Target shareholders will also benefit as the bidding firm's share price is undervalued during the financial distress period. However, since the interaction variable between default risk and stock dummy is not significant, confirming that the negative long-run returns are independent of the payment method, we consider these issues in future research.

that the takeover was simply a combination of bidder and target. Table 5, Panel A, confirms that all bidders underperform relative to the portfolio firm, suggesting that takeovers fail to deliver the expected synergy gains. The difference across the two groups is not significant. However, Panel B displays that the industry-adjusted ROA is strongly positive for Low yet negative for High default risk bidders. Remarkably, it increases for less risky acquirers. Given these results, we include post-bid operating performance in our regressions.

[Insert Table 5 here]

4.2.3 Multivariate analysis of short and long-term returns

We consider whether distinctions in excess returns between our subsamples hold after controlling for target, bidder and deal characteristics by estimating the following equation:

$$R_i = \alpha + \beta_1 Default\ \ risk_i + \beta_2 ROA_{P,i} + \beta_3 Leverage_{P,i} + \sum_{k=1}^{8} \gamma_k Control_i + \varepsilon_i$$

where *R* is for the various measures of performance, *Default risk* is a dummy equal to one for High default risk firms, while ROA_P and $Leverage_P$[21] are the 3 years post-bid average industry-adjusted ROA and total debt to total assets, respectively, and *Control* is for bidder, target and deal characteristics. We further split up ROA_P into *Profit margin*$_P$ and *Assets turnover*$_P$, following Chartier, Ferrer, Liu and Silva's (2017) arguments that cost synergies, captured by profit margin, are intuitive and tend to come quickly, while revenue synergies, which should be reflected in assets turnover, are harder to achieve and receive less attention by the management. We include industry and time dummies, and check variance inflation factors but find no strong multicollinearity between explanatory and control variables.

The first column of Table 6 reports the short-term CAR results. The coefficient of High default risk is negative but not significant, confirming our univariate results. In line with

[21] Fama and French (1993; 1996) asset pricing models include MTB, beta and size. According to these models leverage does not drive expected returns. Penman et al. (2007) find that leverage is negatively associated with future stock returns.

previous literature, we find that returns are lower for larger bidders, public targets, industry-related and stock percentage, but higher in tender offers. In un-tabulated results, we find no effect of acquisition premium and the number of acquisitions completed during the post-acquisition period.[22]

Next, we examine post-bid BHARs in the last six columns of Table 6. The results show that High default risk bidders generate significantly lower peer-adjusted and market-adjusted BHARs, even after controlling for bidder, target and bid features, thereby lending support to our Hypothesis 1b. We exclude leverage and profitability which, as emphasized above, are embedded in the classification of our High default risk sample. In Columns 3-4 and 6-7, we run separate regressions for the High and Low default risk samples. In both cases, profit margin is significant, but not the assets turnover. The coefficient for leverage is strongly significant and negative. These results suggest that bidders who efficiently manage acquisitions and succeed at realizing synergies, while not having too much leverage, generate significantly better long-run returns. However, while the effect of profitability is also more elevated, it is evident that the impact of leverage is specifically strong for High default risk bidders. The marginal effect of debt is more than double for this subsample, implying that high leverage is quite detrimental for their long-run returns.

The results also indicate that Low default risk bidders generate lower BHARs in deals financed with higher stock proportions, while High default risk bidders earn lower returns in cross-border transactions. For High default risk bidders, the payment method does not affect long-term returns, contrary to Rau and Vermaelen's (1998) performance extrapolation hypothesis. The remaining variables have no strong and consistent effects suggesting that, overall, while post-bid long run returns are significantly lower for High default risk bidders, their determinants are relatively homogeneous across the two types of bidders.

[22] Billet and Qian (2008) obtain lower returns for experienced acquirers and relate this to managerial overconfidence.

[Insert Table 6 here]

4.2.4 Alternative pre-bid distress proxies

So far, we identified High default risk bidders using the standard Merton (1974) distance-to-default model, which may lead to misclassification (Bharath and Shumway, 2008). In particular, we show that our High default risk bidders do not have lower cash balances on average and are able to issue stock for financing acquisitions despite potential debt overhang issues. Their median EBITDA is positive, although lower than that of Low default risk bidders, while leverage is higher. These findings may suggest that our sample could include firms that are highly levered but not necessarily likely to default. We test for robustness by replicating our results using a range of alternative definitions of default risk.

First, we use Altman (1968) Z-score and categorize bidders with a score lower than 1.81 as High default risk.[23] The relatively high debt of High default risk bidders could be the result of poor prior performance or raising vast amounts of debt. We consider firms with higher debt to be financially rather than economically risky and assess whether their long-run returns are distinct. We find, but not report, no significant difference; the median peer-adjusted 3-year BHARs of high default risk bidders, with low and high leverage are -9.5% and -15.3% (p = 0.863), compared to 3.0% and -2.0% (p = 0.681) for low risk bidders, respectively. We also find that 32% (25%) of our high (low) default risk bidders pay with shares (p = 0.013).

Next, we rank our sample into pre-bid DD quintiles, using an estimation window of -280 to -31 days prior to deal announcement and we classify only the highest default risk quintile as High default risk. We then re-run our regressions using both alternative distress proxies in Table 7. Overall, the results are comparable to those in Table 6. They indicate that

[23] According to Altman (1968), $Z - score = 1.2 * \frac{WC}{TA} + 1.4 * \frac{RE}{TA} + 3.3 * \frac{EBIT}{TA} + 0.6 * \frac{MV}{TL} + 0.999 * \frac{SALES}{TA}$, with WC being working capital, TA total assets, RE retained earnings, EBIT earnings before interest and taxes, MV market value of equity, TL total liabilities, and SALES turnover.

the long run returns are significantly lower for High default risk bidders and mainly driven by profit margin and leverage. In contrast, the announcement date returns are relatively similar across the two groups but more positive in tender offers. They are lower for larger bidders, and for public and stock financed deals. In unreported tables, we find similar results using 3 years pre-bid BHARs and accounting returns like EBITDA to classify High default risk bidders.

[Insert Table 7 here]

4.2.5 Additional robustness checks

We first replicate our analysis using 2,351 completed bids undertaken by bidders from 38 non-US countries to assess whether our findings are US specific. For space considerations, we report all the results in the appendix. Appendix 4 states the countries included in the rest of the world (ROW) sample. Appendix 5, Panel A, displays a small but positive average announcement excess return of 1.1% for High default risk bidders, while the median is zero. Short-term returns for Low default risk bidders are close to zero.[24] Panel B confirms that High default risk bidders generate strongly negative average and median peer-adjusted and median market-adjusted BHARs, while those of Q4 are not negative. Overall, these results are similar to the US sample. Appendix 6 confirms our US-based key regression findings. High default risk bidders generate similar announcement but worse long-term abnormal returns. Across the two subsamples, BHARs are essentially determined by post-bid operating performance and leverage. Curiously, shareholder and creditor rights have no effects. High default risk bidders perform better than their US counterparts as they are more successful at realizing synergies. Appendix 7, Panel A, shows that post-bid performance of a portfolio of combined bidder and target returns of High default risk bidders

[24] Prior literature points out that announcement date abnormal returns in Europe tend to be zero or slightly positive as opposed to mostly negative in the US (e.g., Martynova and Renneboog, 2011).

is better than for Low default risk bidders. In line with US findings, Panel B shows that industry-adjusted ROA increases (decreases) for Low (High) default risk bidders.

We assess whether High default risk bidders engage in risky deals, which may benefit shareholders at the expense of debtholders to test the risk-shifting hypothesis. We follow Eisdorfer (2008) and assess whether High default risk bidders pursue larger acquisitions when there is more uncertainty and risk. We link relative deal size to expected market volatility for our subsamples.[25] We then regress post-bid BHARs on an interaction term between relative deal size and distress, separately for subsamples with low and high expected market volatility. The risk shifting hypothesis predicts a negative interaction variable between relative deal size and distance-to-default in the high expected market volatility subsample to imply that larger acquisitions by High default risk bidders generate lower returns than acquisitions of Low default risk bidders when uncertainty is high. Appendix 8 indicates that High default risk bidders do smaller deals in times of high uncertainty. The relation between takeover size and BHARs does not depend on the level of default risk, as the interaction term is insignificant for peer-adjusted BHARs, and positive and significant at 10% level for market-adjusted BHARs, in contrast to risk shifting theory expectations.

Previous studies report that bidder excess returns are lower for stock-financed deals, in line with both the market-driven model of Shleifer and Vishny (2003) whereby firms with overpriced shares undertake all-stock financed acquisitions to obtain the target at an effective discount before their mispricing is revealed, and the expected takeover synergy motivation whereby targets may end up accepting overpriced bidder stock (Rhodes-Kropf et al., 2005; Dong et al., 2006; Savor and Lu, 2009; Faccio and Masulis, 2005).[26] Moreover, managers

[25] In line with Eisdorfer (2008), we estimate expected market volatility with generalized autoregressive conditional heteroscedasticity (GARCH) models, introduced by Engle (1982) and developed by Bollerslev (1986). We apply a GARCH (1, 1) model to monthly returns of the MSCI US equity index. The annual expected volatility is the sum of monthly expected volatilities over a 12 month period ahead of deal announcement. We use median market volatility to build our subsamples.
[26] Andrade et al. (2001) report that the use of cash as a method of payment in corporate takeovers is time dependent, as it was prevalent during the 1980s, and over the first decade of the new century, but declined significantly during the 1990s. Karampatsas, et al. (2014) show that firms with high credit ratings are more likely to make cash acquisitions because of their low cash constraints and their ability to access debt market.

undertake value-destroying stock acquisitions when they want to maintain market mispricing (Jensen, 2004) and when they pay a higher acquisition premium (Fu et al., 2013).

However, Eckbo, Makaew and Thornburn (2013) reject the market-driven explanation. They view all stock financing deals as part of an overall capital structure optimization, implying that overleveraged firms, like our High default risk bidders, will use stock financing. Consistently, Table 4, Panel A reveals that High default risk bidders have a higher propensity to pay with shares. Table 6 reports that the percentage stock payment is negatively related to long-term returns for Low default risk bidders, but it is not significant for High default risk bidders. The use of the bidder's stock as a payment method provides a positive certification effect. We conduct an extra test to find out whether payment method drives our findings. In Appendix 9, the interaction term of default risk and payment method is not significant confirming that the negative return effect of all stock deals is independent of bidder default risk.

5. Conclusion

This paper contributes to studies on the effect of bidder financial characteristics on M&As. We focus on the extent to which the outcome of takeovers depends on pre-bid default risk level of the acquirer. We argue that M&As undertaken by High default risk bidders are more controversial as, while they may result in positive synergies, they could be undertaken to enable managers to avoid personal bankruptcy costs and loss of reputation. We find that, on average, these bidders are loss making, and tend to opt for rather risky, diversifying and stock-paid acquisitions. Their long-term returns are significantly negative, while the control groups do not underperform, implying that the well-established long-run negative returns of acquiring firms is largely driven by High default risk bidders. These results continue to hold after controlling for bidder, target and deal characteristics. We report that the ex-post industry-adjusted profit margin and leverage principally account for the poor long-term

returns, and their marginal effects are larger for High default risk bidders. Overall, our results suggest that M&As of High default bidders are likely to be size-motivated with limited synergies, in line with agency theory predictions.

Further research should highlight the extent to which our High default risk bidder M&A outcomes are affected by governance factors, such as managerial ownership (e.g. Agrawal and Mandelker, 1987), option-based managerial compensation which are likely to motivate CEOs to make risk-increasing acquisitions (Armstrong and Vashishtha, 2012; Furfine and Rosen, 2011), CEO age (Jenter and Lewellen, 2015), and improvements in bidders' quality of corporate governance in the post 2009 financial crisis period which led to positive announcement date excess returns (Alexandridis, Antypas and Travlos, 2017). These governance factors are likely to affect only low default risk bidders. We could also assess the effectiveness of M&A as a recovery strategy after collecting manually all restructuring tactics undertaken by all distressed firms. It would be interesting to explore further the method of payment. Finally, we could address further the potential endogeneity bias and reverse causality in a number of model specifications used in the study. In unreported results, we use the propensity score method to compare the announcement date and long-run returns of deals announced by high default risk bidders and low default risk bidders. We first estimate the probability of a merger deal announced by a high default risk bidder using the same independent variables as shown in columns (1), (2) and (5) of Table 6. We then re-estimate the logit regression using the matched sample. We also examine the differences in means for each observable characteristic between treatment and matched control groups. We find no distinguishable trends between the treatment and control group, suggesting that any difference in merger performance between the two groups is due to the default risk of bidders and that high default risk bidders tend to have much lower long-run post-merger returns compared to otherwise indistinguishable bidders with low default risk.

References

ABA, 2010, Insolvency and fiduciary duties: Advising directors and officers when the company cannot pay its bills. American Bar Association Annual Meeting. Available at: https://www.americanbar.org/content/dam/aba/publications/blt/2010/09/inside-buslaw-insolvency-201009.authcheckdam.pdf

Acharya, V., Davydenko, S.A. and Strebulaev, I.A., 2012, Cash holdings and credit risk, Review of Financial Studies 25, 3573-3609.

Agrawal A., Jaffe J., Mandelker G., 1992, The post-merger performance of acquiring firms: a re-examination of an anomaly, Journal of Finance 47, 1605-1621.

Agrawal A. and Mandelker, G.N., 1987, Managerial incentives and corporate Investment and Financing Decisions, Journal of Finance 42, 823-837.

Akhigbe, A., Madura, J., and Martin, A.D., 2007, Effect of fed policy actions on the default likelihood of commercial banks, Journal of Financial Services Research, Volume 30, 147–162

Alexandridis, G., Antypas, N., Travlos, N.G., 2017, Value creation from M&As: New evidence, Journal of Corporate Finance, 45, 632-650.

Alexandridis, G., Fuller, K.P., Terhaar, L., Travlos, N.G., 2013, Deal size, acquisition premia and shareholder gains, Journal of Corporate Finance, 20, 1-13.

Almeida, H., Campello, M., and Weisbach, M., 2004, The cash flow sensitivity of cash, Journal of Finance 59, 1777-1804.

Almeida, H., Campello, M. and Weisbach, M.S., 2011, Corporate financial and investment policies when future financing is not frictionless, Journal of Corporate Finance 17, 675-693.

Altman, E., 1968, Financial ratios, discriminant analysis and the prediction of corporate bankruptcy, Journal of Finance 23, 589-609.

Amihud, Y. and Lev, B., 1981, Risk reduction as managerial motive for conglomerate mergers, Bell Journal of Economics 12, 823-837.

Andrade, G., and Kaplan, S.N., 1998, How costly is financial (not economic) distress? Evidence from highly leveraged transactions that became distressed, Journal of Finance 53, 1443-1493.

Andrade, G., Mitchell, M. and Stafford, E., 2001, New evidence and perspectives on mergers, Journal of Economic Perspectives 15, 103-120.

Ang, J. and Mauck, N., 2011, Fire sale acquisitions: Myth vs. reality, Journal of Banking and Finance 35, 532-543.

Armstrong, C.S., and Vashishtha, R., 2012, Executive stock options, differential risk-taking incentives, and firm value, Journal of Financial Economics 104, 70-88.

Arnold, M., 2014, Managerial cash use, default, and corporate financial policies, Journal of Corporate Finance, 27 305–325

Asquith, P., 1983, Merger bids, uncertainty and stockholder returns, Journal of Financial Economics 11, 51-83.

Bharath, S.T. and Shumway, T., 2008, Forecasting default with the Merton distance to default model, Review of Financial Studies 21, 1339-1369.

Barber, B.M. and Lyon, J.D., 1997, Detecting long-run abnormal stock returns: The empirical power and specification of test statistics, Journal of Financial Economics 43, 341-372.

Bates, T.W., Kahle, K.M., and Stulz, R.M., 2009, Why do U.S. firms hold so much more cash than they used to?, Journal of Finance 64, 1985–2021.

Bena J., and Li, K., Corporate Innovations and Mergers and Acquisitions, Journal of Finance 69, 1923–1960.

Betton, S., Eckbo, B.E., and Thorburn, K.S., 2008, Corporate takeovers, in B.E. Eckbo (ed.) Handbook of corporate finance: Empirical corporate finance, Volume 2, Elsevier, North Holland Handbook of Finance Series, Chapter 15, 291-430.

Billet, M.T., Flannery, M.J., and Garfinkel, J.A., 2011, Frequent issuers' influence on long-run post-issuance returns, Journal of Financial Economics 99, 349-364.

Billet, M.T., Kian Y., 2008, Are overconfident CEOs born or made? Management Science 54, 1037-1051.

Billett, M.T., King, T.H.D., Mauer, D.C., 2004. Bondholder wealth effects in mergers and acquisitions: New evidence from the 1980s and 1990s. Journal of Finance 59, 107-135.

Bruner, R.F., 2002, Does M&A Pay? A survey of evidence for the decision-maker, Journal of Applied Finance 12, 48-68.

Carhart, M.M., 1997, On persistence in mutual fund performance, Journal of Finance 52, 57-82.

Cassell, C., Huang, S., Sanchez, J.M., Stuart, M.D., 2012, Seeking safety: the relation between CEO inside debt holdings and the riskiness of firm investment and financial policies, Journal of Financial Economics 103, 588–610.

Chartier, J., Ferrer, C., Liu, A., and Silva, R., 2017, Merge to grow: Realizing the full commercial potential of your merger, McKinsey and Company.

Chava, S. and Roberts, M.R., 2008, How does financing impact investment? The role of debt covenants, Journal of Finance, 63, 2085–2121

Crawford, D. and Lechner, T., 1996, The relationship between takeover premiums and the tax attributes of acquired firms, Journal of Business, Finance and Accounting 23, 807-830.

Datta, S., Iskandar-Datta, M. and Raman, K., 2001, Executive compensation and corporate acquisition decisions, Journal of Finance 56, 2299-2336.

de Andrés, P., de la Fuente, G., Velasco, P., 2017, Does it really matter how a firm diversifies? Assets-in-place diversification versus growth options diversification, Journal of Corporate Finance 43, 316–339

de Bodt, E., Cousin, J-G., and Roll, R, 2018, Empirical evidence of overbidding in M&A contests. Journal of Financial and Quantitative Analysis, 53, 1547-1579.

Denis, D.J., and Denis, D.K, 1995, Performance changes following top management dismissals, Journal of Finance 50, 1029-1057.

Dong, M., Hirshleifer, D., Richardson, S. and Teoh, S.H., 2006, Does investor misevaluation drive the takeover market? Journal of Finance 61, 725-762.

Eckbo, B.E., Thorburn, K.S., and Wang, W., 2016, How costly is corporate bankruptcy for the CEO? Journal of Financial Economics, 121, 210-229.

Eckbo, B.E., Makaew, T. and Thornburn, K.S., 2018, Are stock-financed takeovers opportunistic? Journal of Financial Economics, 128, 443–465

Eckbo, B.E., and Thorburn, K.S., 2008, Automatic bankruptcy auctions and fire-sales, Journal of Financial Economics 89, 404-422.

Eckbo, B.E, and Thorburn, K.S., 2003, Control benefits and CEO discipline in automatic bankruptcy auctions, Journal of Financial Economics 69, 227-258.

Eisdorfer, A., 2008, Empirical evidence of risk shifting in financially distressed firms, Journal of Finance 63, 609-637.

Erel, I., Jang, Y., and Weisbach, M.S., 2015, Do acquisitions relieve target firms' financial constraints? The Journal of Finance 70, 289–328.

Faccio, M. and Masulis, R., 2005, The choice of payment method in European mergers and acquisitions, Journal of Finance 60, 1345-1388.

Fama, E., and French, K., 1992, The cross-section of expected stock returns, Journal of Finance 47, 427–465.

Fama, E.F. and French, K.R., 1993, Common risk factors in the returns on stocks and bonds, Journal of Financial Economics 33, 3-56.

Fama, E.F. and French, K.R., 1996, Multi-factor explanations of asset pricing anomalies, Journal of Finance 51, 55-84.

Fama, E.F. and French, K.R., 2015, A five-factor asset pricing model, Journal of Financial Economics 116, 1–22.

Fich, E.M., Rice, E.M., Tran, A.L., 2016, Contractual revisions in compensation: Evidence from merger bonuses to target CEOs, Journal of Accounting and Economics 61, 338-368.

Financial Times, 2017, Two big Tesco shareholders come out against Booker takeover, 27 March.

Fulghieri, P., Sevilir, M., 2011. Mergers, spinoffs, and employee incentives. Review of Financial Studies 24, 2207-2241.

Furfine, C. and Rosen, R., 2011, Mergers increase default risk, Journal of Corporate Finance 17, 832-849.

Garlappi, L., Shu, T., and Yan, H., 2008, Default risk, shareholder advantage and stock returns, Review of Financial Studies 21, 2743-2778.

Geppert, G. and Kamerschen, D.R., 2008, The effect of mergers on implied volatility of equity options, International Review of Financial Analysis 17, 330-344.

Ghosh, A., 2001, Does operating performance really improve following corporate acquisitions, Journal of Corporate Finance 7, 151-178.

Ghosh, A. and Jain, P., 2000, Financial leverage changes associated with corporate mergers, Journal of Corporate Finance 6, 377-402.

Graham, J.R., Harvey, C.R. and Manju, P., 2015, Capital allocation and delegation of decision-making authority within firms, Journal of Financial Economics 115, 449–470.

Harford, J. and Uysal, V. P., 2014, Bond market access and investment. Journal of Financial Economics, 112, 147-163.

Harford, J., Klasa, S., and Walcott, N., 2009, Do firms have leverage targets? Evidence from acquisitions, Journal of Financial Economics 93, 1-14.

Hayward, M.L.A. and Hambrick, D.C., 1997, Explaining the premiums paid for large acquisitions: Evidence of CEO hubris, Administrative Science Quarterly 42, 103-127.

Healy, P., Palepu, K. and Ruback, R.S., 1992, Does corporate performance improve after mergers? Journal of Financial Economics 31, 135-175.

Higgins, M.J. and Rodriguez D., 2006, The outsourcing of R&D through acquisitions in the pharmaceutical industry, Journal of Financial Economics 80, 351–383.

Hillegeist, S., Keating, E., Cram, D., and Lundstedt, K., 2004, Assessing the probability of bankruptcy, Review of Accounting Studies 9, 5-34.

Hofer, C., 1980, Turnaround strategies, Journal of Business Strategy 1, 19-31.

Hotchkiss, E.S., John, K., Mooradian, R.M. and Thorburn, K.S., 2008, Bankruptcy and the resolution of financial distress, in B.E. Eckbo (ed.) Handbook of Corporate Finance: Empirical Corporate Finance, Volume 2, Elsevier, North Holland Handbook of Finance Series, Chapter 15, 235-287.

Hotchkiss, E.S., 1995, Post-bankruptcy performance and management turnover, Journal of Finance 50, 3-21.

Hubbard, R.G., Palia, D., 1999. A reexamination of the conglomerate merger wave in the 1960s: An internal capital markets view. Journal of Finance 54, 1131-1152.

Jensen, M.C., 1986, Agency costs and free cash flow, corporate finance and takeovers, American Economic Review 76, 659–665.

Jensen, M., 1989, Eclipse of public corporation, Harvard Business Review, 67 61-74

Jensen, M. and Meckling, W., 1976, Theory of the firm: Managerial behaviour, agency costs, and ownership structure, Journal of Financial Economics, 3, 305-360.

Jensen, M.C., 2004, Agency costs of overvalued equity, Journal of Financial Management 34, 5-19.

Jensen, M.C. and Ruback, R.S., 1983, The market for corporate control, Journal of Financial Economics 11, 5–50.

Jenter, D. and Lewellen, K., 2005, CEO preferences and acquisitions, Journal of Finance 70, 2813-2851.

Jory, S. and Madura, J., 2009, Acquisitions of bankrupt assets, Quarterly Review of Economics and Finance 49, 748-759.

Karampatsas, N., Petmezas, D., and Travlos, N. G., 2014, Credit ratings and the choice of payment method in mergers and acquisitions. Journal of Corporate Finance 25, 474-493.

Lai, J. and Sudarsanam, S., 1997, Corporate restructuring in response to performance decline: Impact of ownership, governance and lenders, European Finance Review 1, 197-223.

Langetieg, T., Haughen, R., and Wichern, D., 1980, Mergers and shareholders' risk, Journal of Financial and Quantitative Analysis, 689-717.

Lee, K.H., Mauer, D.C., and Xu, E.Q., 2018, Human Capital Relatedness and Mergers and Acquisitions, Journal of Financial Economics, 129, 111-135

Loughran, T. and Vijh, A., 1997, Do long-term shareholders benefit from corporate acquisitions? Journal of Finance 52, 1765-1790.

Lyon, J.D, Barber, B.M., and Tsai, C.L., 1999, Improved methods for tests of long-run abnormal stock returns, Journal of Finance 54, 165-201.

Maksimovic, V., Phillips, G., and Prabhala N.R., 2011, Post-merger restructuring and the boundaries of the firm, Journal of Financial Economics 102, 317-343.

Maksimovic, V., and Phillips, G., 2013, Conglomerate firms, internal capital markets, and the theory of the firm, Annual Review of Financial Economics 5, 225-244.

Malmendier, U. and Tate, G., 2008, Who makes acquisitions? CEO overconfidence and the market's reaction, Journal of Financial Economics 89, 20-43.

Malmendier, U., Moretti, E. and Peters, F.S., 2012, Winning by losing: Evidence on the long-run effects of mergers, NBER Working Paper No. 18024, Available at SSRN: http://ssrn.com/abstract=1787409.

Martin, J.D., Sayrak, A., 2003, Corporate diversification and shareholder value: a survey of recent literature. Journal of Corporate Finance 9, 37–57

Martynova, M. and Renneboog, L., 2011, The performance of the European market for corporate control: Evidence from the fifth takeover wave, European Financial Management 17, 208-259.

Meier, J-M.A. and Servaes, H., 2015, Distressed acquisitions, ECGI - Finance Working Paper No. 435/2014. Available at SSRN: http://ssrn.com/abstract=2473123.

Merton, R., 1974, On the pricing of corporate debt: the risk structure of interest rates, Journal of Finance 29, 449-470.

Mitchell, M.L. and Stafford, E., 2000, Managerial decisions and long-term stock price performance, Journal of Business, 73, 287-329.

Moeller, T., 2005, Let's make a deal! How shareholder control impacts merger payoffs, Journal of Financial Economics 76, 167-190.

Moeller, S. and Schlingemann, F., 2005, Global diversification and bidder gains: A comparison between cross-border and domestic acquisitions, Journal of Banking and Finance 29, 533-564.

Moeller, S., Schlingemann, F. and Stulz, R., 2004, Firm size and the gains from acquisitions, Journal of Financial Economics 73, 201-228.

Monk, D., 2017, Earnings Guidance and Corporate Diversification. Available at SSRN: https://ssrn.com/abstract=3001291

Morck, R., Shleifer, A., and Vishny, R.W., 1990, Do managerial objectives drive bad acquisitions? Journal of Finance 45, 31-48.

Myers, S., 1977, Determinants of corporate borrowing, Journal of Financial Economics 5, 147-175.

Nesvold, P., Anapolsky, J.M., and Lajoux, A.R., 2012, The art of distressed M&A: Buying, selling, and financing troubled and insolvent companies, New York: McGrawHill.

Ohlson, J., 1980, Financial ratios and the probabilistic prediction of bankruptcy, Journal of Accounting Research 18, 109–131.

Opler, T., Pinkowitz, L., Stulz, R., and Williamson, R., 1999, The determinants and implications of corporate cash holdings, Journal of Financial Economics 52, 3-46.

Penman, S.H., Richardson, S.A., and Tuna, I., 2007, The book-to-price effect in stock returns: Accounting for leverage, Journal of Accounting Research 45, 427-467.

Petersen, M.A., 2009, Estimating standard errors in Finance panel data sets: Comparing approaches, Review of Financial Studies 22, 435-480.

Pryshchepa, O., Aretz, K., and Banerjee, S., 2013, Can investor restrict managerial behavior in distressed firms? Journal of Corporate Finance 23, 222-239.

Rau, P. and Vermaelen, T., 1998, Glamour, value and the post-acquisition performance of acquiring firms, Journal of Financial Economics 49, 223-253.

Rhodes-Kropf, M., Robinson, D.T., Viswanathan, S., 2005, Valuation waves and merger activity: The empirical evidence, Journal of Financial Economics 77, 561-603.

Rossi, S. and Volpin, P.F., 2004, Cross-country determinants of mergers and acquisitions, Journal of Financial Economics 74, 277-304.

Savor, P. and Lu, Q., 2009, Do stock mergers create value for acquirers? Journal of Finance 64, 1061–1097.

Schoar, A., 2002, Effects of corporate diversification on productivity, Journal of Finance 57, 2379-2403.

Senbet, L.W. and Wang, T.Y., 2012, Corporate financial distress and bankruptcy: A survey, Foundations and Trends in Finance, Volume 5, Number 4.

Shleifer, A. and Vishny, R., 2003, Stock market driven acquisitions, Journal of Financial Economics 70, 295–311.

Strebulaev, I.A., and Yang, B., 2013, The mystery of zero-leverage firms, Journal of Financial Economics 109, 1-23.

Sundaram, R., Yermack, D., 2007, Pay me later: inside debt and its role in managerial compensation, Journal of Finance 62, 1551–1588.

Tate, G., Yang, L., 2015, The bright side of diversification: Evidence from internal labor markets. Review of Financial Studies 28, 2203-2249.

Trahms, C.A., Ndofor, H.A., Sirmon, D.G., 2013, Organizational decline and turnaround: A review and agenda for future research. Journal of Management 39, 1277-1307.

Travlos, N.G., 1987, Corporate takeover bids, methods of payment, and bidding firms' stock returns, Journal of Finance 42, 943–963.

Uysal, V. B., 2011, Deviation from the target capital structure and acquisition choices. Journal of Financial Economics, 102(3), 602-620.

Vassalou, M. and Xing, Y., 2004, Default risk in equity returns, Journal of Finance 59, 831-868.

Walker, M., 2000, Corporate takeover, strategic objectives and acquiring firm shareholder wealth, Financial Management 20, 53-66.

Zhang, Quxian (Eden), 2017, Why do distressed firms acquire? Erasmus University working paper.

Table 1: Annual and industry distribution of the sample firms

	Low default risk		High default risk	
	N	**%**	**N**	**%**
Panel A. Sample breakdown by M&A announcement year				
1989-93	67	5.08	6	1.36
1994	26	1.97	1	0.00
1995	36	2.73	3	0.68
1996	31	2.35	6	1.36
1997	75	5.69	12	2.73
1998	135	10.24	24	5.45
1999	136	10.32	52	11.82
2000	89	6.75	58	13.18
2001	66	5.01	59	13.41
2002	39	2.96	33	7.50
2003	52	3.95	36	8.18
2004	77	5.84	19	4.32
2005	83	6.30	19	4.32
2006	92	6.98	9	2.05
2007	94	7.13	9	2.05
2008	62	4.70	9	2.05
2009	46	3.49	40	9.09
2010	65	4.93	26	5.91
2011	47	3.57	19	4.32
Total	1,318	100	440	100
Panel B. Industry distribution of sample firms				
Agriculture, forestry & fishing	2	0.15	0	0.00
Mining & construction	86	6.53	43	9.77
Manufacturing	716	54.32	174	39.55
Transportation, communications & utilities	164	12.44	65	14.77
Wholesale, retail	101	7.66	33	7.50
Services	249	18.89	125	28.41
Total	1,318	100	440	100

Panel C. Distribution of distance-to-default					
		N	Mean	Median	St. Dev.
High Default Risk	Q1 Low distance-to-default	440	2.366	2.762	1.872
Low Default Risk	Q2	439	5.426	5.427	0.772
	Q3	440	8.325	8.288	0.938
	Q4 High distance-to-default	439	14.091	12.904	4.025
All		1,758	7.558	6.791	4.897

Notes. The sample includes 1,758 completed bids undertaken by US bidders over the period 1989-2011. We rank our bidders into quartiles according to their pre-bid distance-to-default, measured over the estimation window -280 to -31 days prior to deal announcement. The bidders are referred to as *High default risk* if they are classified in the quartile with the highest default risk. *Low default risk* includes all the remaining bidders. Panel C reports the distribution of distance-to-default.

Table 2: The short and long-term market reaction to M&A announcements

		N	Mean	Median
Panel A. Short-term market-adjusted CAR (-2; +2)				
High default risk	Q1 Low distance-to-default	440	-0.009	-0.016***
Low default risk	Q2	439	-0.019***	-0.013***
	Q3	440	-0.012***	-0.007***
	Q4 High distance-to-default	439	-0.005*	-0.005***
Low default risk - High default risk			***-0.7516***	***1.314***
Panel B. 3 years post-deal completion peer-adjusted BHAR				
High default risk	Q1 Low distance-to-default	385	-0.247***	-0.234***
Low default risk	Q2	426	-0.151***	-0.091***
	Q3	433	-0.058	-0.062**
	Q4 High distance-to-default	425	0.010	0.021
Low default risk - High default risk			***3.534****	***4.323****
Panel C. 3 years post-deal completion market-adjusted BHAR				
High default risk	Q1 Low distance-to-default	428	-0.127***	-0.299***
Low default risk	Q2	433	-0.002	-0.089
	Q3	438	-0.021	-0.093***
	Q4 High distance-to-default	427	0.082***	0.054
Low default risk - High default risk			***4.996****	***6.278****

Panel D. Carhart (1997) four-factor model 3 years post-deal completion peer-adjusted abnormal returns

		α	β1	β2	β3	β4
High default risk	Q1 Low distance-to-default	**-0.873*** **	0.156**	0.146	-0.052	-0.034
Low default risk	Q2	**-0.525** **	0.131**	0.148**	-0.009	-0.042
	Q3	-0.296	0.094**	-0.134**	-0.024	-0.016
	Q4 High distance-to-default	-0.111	0.019	-0.236***	0.024	0.106

Notes. The sample includes 1,758 completed bids undertaken by US bidders over the period 1989-2011. We rank our bidders into quartiles according to their pre-bid distance-to-default, measured over the estimation window -280 to -31 days prior to deal announcement. The bidders are referred to as *High default risk* if they are classified in the quartile with the highest default risk. Low default risk includes all the remaining bidders. In Panel A, the announcement date abnormal returns are based on the market model with α and β coefficients computed over the -280 to -31 days relative to the announcement date 0. In Panel B, the peer-adjusted BHARs are computed relative to two-digit US SIC industry, size, market-to-book, and one year pre-acquisition BHRs matched firms. In Panel C, the excess returns are relative to the MSCI US equity index. In Panel D, we run the following Carhart (1997) four-factor model: $R_{pt} = \alpha + \beta_1(R_M) + \beta_2 SMB_t + \beta_3 HML_t + \beta_4 Momentum_t + \varepsilon_{pt}$ and report the coefficients in percentage. ***, **, *, indicates significant at 0.01, 0.05 and 0.10 level, respectively. The t-statistics between *Low default risk* and *High default risk* bidders are in bold. We have winsorized the data at 1%.

Table 3: Bidder, target and deal characteristics

	Bidder		Target		Bidder		Target		p-value Diff-in-Diff	
	Mean	**Median**	**Mean**	**Median**	**Mean**	**Median**	**Mean**	**Median**	**Mean**	**Median**
	Low default risk				**High default risk**					
Panel A. Bidder and target characteristics										
Total assets ($m)	11,200.00	2,851.03	1,176.14***	205.83***	3,238.32[a]	423.43[a]	507.97***[a]	84.60***[a]	<0.00	<0.00
Market value equity ($m)	19,066.98	3,780.11	1,135.84***	265.35***	2,579.73[a]	389.48[a]	343.15***[a]	52.83***[a]	<0.00	<0.00
EBITDA/Total assets	0.14	0.15	0.05***	0.11***	-0.07[a]	0.07[a]	-0.11*[a]	0.06***[a]	<0.00	<0.00
Total debt/Total assets	0.21	0.19	0.23**	0.18	0.34[a]	0.30[a]	0.29***[a]	0.22**[a]	<0.00	<0.00
Interest coverage ratio	28.65	10.69	31.56	5.88***	-16.84[a]	1.04[a]	-16.23[a]	1.94[a]	<0.00	<0.00
Cash/Total assets	0.14	0.07	0.21***	0.10***	0.18[a]	0.08	0.21***	0.10**	>0.10	>0.10
Market-to-book	3.57	2.57	3.17**	2.13***	2.54[a]	1.05[a]	1.79*[a]	1.34**[a]	<0.00	<0.00
Panel B. Deal characteristics										
Industry relatedness	0.51	1			0.49	0				
Cross-border	0.14	0			0.11[c]	0[c]				
Relative target size	0.30	0.11			0.75[a]	0.34[a]				
Relative deal size	0.32	0.13			0.71[a]	0.38[a]				
Bidder's toehold	1.32	0			1.63	0				
Recession	0.31	0			0.38	0				
Stock percentage	0.37	0			0.55[a]	0.61[a]				
Target public	0.97	1			0.95[b]	1.00[b]				
Reverse takeover	0.02	0			0.07	0				
Tender offer	0.28	0			0.18[a]	0.00[a]				
Acquisition premium	47.45	38			52.27	40				

Notes. The sample includes 1,758 completed bids undertaken by US bidders over the period 1989-2011. We rank our bidders into quartiles according to their pre-bid distance-to-default, measured over the estimation window -280 to -31 days prior to deal announcement. The bidders are referred to as *High default risk* if they are classified in the quartile with the highest default risk. Low default risk includes all the remaining bidders. ***, **, * indicate that the difference between bidder and target is significant at 0.01, 0.05, and 0.10 levels, respectively. [a, b, c] indicate that *Low default risk* is statistically different from High default risk at 0.01, 0.05, and 0.10 levels, respectively.

Table 4: Logit regression of bidder, target and deal characteristics

Panel A. Determinants of bidder, target and deal characteristics		
	1 = High default risk (Q1) 0 = Low default risk (Q2-4) (1)	1 = High default risk (Q1) 0 = Low default risk (Q4) (2)
Bidder ROA	-2.483***	-6.547***
	(0.004)	(0.008)
Bidder size	-0.641***	-1.287***
	(0.000)	(0.000)
Bidder MTB	-0.074***	-0.134***
	(0.002)	(0.007)
Bidder leverage	6.509***	18.796***
	(0.000)	(0.000)
Bidder cash	0.208	2.118
	(0.740)	(0.222)
Target ROA	-0.024	0.216
	(0.940)	(0.744)
Target MTB	-0.012	-0.055
	(0.456)	(0.198)
Target leverage	0.757*	0.475
	(0.062)	(0.579)
Target cash	0.906*	0.868
	(0.080)	(0.444)
Industry-relatedness	-0.647***	-0.162
	(0.000)	(0.659)
Cross-border	-0.560*	0.027
	(0.070)	(0.962)
Relative target size	0.283**	0.668*
	(0.047)	(0.084)
Initial stake	0.023*	-0.001
	(0.055)	(0.972)
Stock percentage	0.708**	0.923**
	(0.012)	(0.023)
Tender offer	0.669***	0.997**
	(0.004)	(0.048)
Reserve takeover	0.663*	-1.022
	(0.095)	(0.223)
Recession	4.160***	0.511
	(0.000)	(0.823)
Observations	1,489	664
Pseduo R-squared	0.43	0.78
Acquisition premium	-0.001	-0.005
	(0.485)	(0.195)
Observations	1,342	664

Pseduo R-squared	0.43	0.78

Panel B. Differences between bidder and target characteristics

	Low default risk	**High default risk**
MTB	0.020	**0.029**^{**c}
	(0.197)	(0.040)
ICR	**-0.001****	0.001^{c}
	(0.032)	(0.168)
Size	**0.697*****	**0.387***^{a}
	(0.000)	(0.000)
Leverage	**-3.085*****	-0.041^{a}
	(0.000)	(0.911)
Cash	0.019	-0.603^{a}
	(0.962)	(0.158)
ROA	**1.093****	**-0.968***^{a}
	(0.020)	(0.000)
Observations	1,934	668
Pseudo R-squared	0.30	0.12

Notes. The table reports the results from logit regressions of our groups of firms on merging firms' and deal characteristics. We rank our bidders into quartiles according to their pre-bid distance-to-default, measured over the estimation window -280 to -31 days prior to deal announcement. We refer to bidders that are classified in quartile 2 to 4 as *Low default risk*, while bidders classified in the first quartile (with the highest default risk) are classified as *High default risk*. In Panel A the dependent variable is *Low default risk* = 0, *High default risk* = 1 in the first column, and in the second column the dependent variable equals zero if the bidders are classified in the fourth quartile (lowest default risk) and one if the bidders are *High default risk*. In Panel B the dependent variable is Low default risk bidder = 1, and their target = 0 in the first column, and in the second column the dependent variable is *High default risk* bidder = 1, and their target = 0. The bidders are referred to as *High default risk* if they are classified in the quartile with the highest default risk, *Low default risk* includes all the remaining bidders, and the dependent variable is equal to one for bidder and zero for target. The definition of the remaining variables is in Appendix 2. All regressions include industry and time dummies. ***, **, *, indicate significant at 0.01, 0.05 and 0.10 level, respectively. The p-values are between parentheses. To test for differences in coefficients between *High default risk* and *Low default risk* bidders in Panel B, we use Z-statistics defined as $= \frac{b1-b2}{\sqrt{(SEb_1^2+SEb_2^2)}}$. We denote by $^{a, b, c}$ when the coefficient b_1 of *Low default risk* is statistically different from b_2 of *High default risk* at 0.01, 0.05, and 0.10 levels, respectively. The data are winsorized at 1%.

Table 5: The post-bid operating performance

		N	Mean	Median
Panel A. Post-bid *less* pre-bid merged ROA				
High default risk	Q1 Low distance-to-default	360	-0.036***	-0.011**
Low default risk	Q2	374	-0.030***	-0.022***
	Q3	379	-0.041***	-0.023***
	Q4 High distance-to-default	370	-0.019***	-0.011***
Low default risk – High default risk			***0.71***	***-1.57***
Panel B. 3 years post-bid completion industry-adjusted average ROA				
High default risk	Q1 Low distance-to-default	366	-0.118***	-0.001
Low default risk	Q2	397	0.032***	0.039***
	Q3	412	0.049***	0.049***
	Q4 High distance-to-default	382	0.120***	0.103***
Low default risk – High default risk			***11.59******	***9.88*****

Notes. The table reports the descriptive statistics of operating performance across our sample firms. We rank our bidders into quartiles according to their pre-bid distance-to-default, measured over the estimation window -280 to -31 days prior to deal announcement. The bidders are referred to as *High default risk* if they are classified in the quartile with the highest default risk. *Low default risk* includes all the remaining bidders. In Panel A, we make a hypothetical portfolio of bidder and target prior to the transaction and report the difference between the actual post-acquisition and the hypothetical ROA. In Panel B, we report the average industry-adjusted ROA over the 3 years post-acquisition period. The *t*-statistics between *Low default risk* and *High default risk* bidders are in bold. The data are winsorized at 1%. ***, **, *, indicate significant at 0.01, 0.05 and 0.10 level, respectively.

Table 6: The determinants of announcement date and long-run returns

	Short-term CAR (-2, +2)	3 years post-deal completion peer-adjusted BHAR			3-years post-deal completion market-adjusted BHAR		
	All	All	Low default risk	High default risk	All	Low default risk	High default risk
High default risk	-0.001	-0.177**			-0.266***		
	(0.853)	(0.016)			(0.000)		
Assets turnover$_p$			0.034	0.215		0.056	0.089
			(0.656)	(0.117)		(0.382)	(0.294)
Profit margin$_p$			0.348***	0.729***[b]		0.191***	0.459***[b]
			(0.001)	(0.000)		(0.001)	(0.000)
Leverage$_p$			-0.207**	-0.818***[b]		-0.215**	-0.606***[b]
			(0.027)	(0.006)		(0.043)	(0.000)
Bidder size	-0.003*	0.011	0.007	-0.004	-0.012	-0.016	-0.021
	(0.062)	(0.453)	(0.589)	(0.784)	(0.185)	(0.173)	(0.278)
Bidder MTB	0.001	0.002	-0.003	0.009	-0.009**	-0.017**	-0.003[c]
	(0.908)	(0.667)	(0.614)	(0.318)	(0.043)	(0.022)	(0.318)
Industry-relatedness	-0.003*	-0.011	-0.069	0.121	-0.023	-0.035	0.061
	(0.094)	(0.723)	(0.284)	(0.301)	(0.334)	(0.345)	(0.308)
Cross-border	-0.001	-0.015	0.066	-0.401**[b]	-0.071	-0.032	-0.316**[b]
	(0.852)	(0.936)	(0.317)	(0.039)	(0.136)	(0.388)	(0.021)
Relative target size	-0.004	-0.043	0.009	-0.046	-0.036	-0.025	-0.036
	(0.278)	(0.388)	(0.592)	(0.523)	(0.224)	(0.287)	(0.177)
Target public	-0.023**	-0.055	0.098	-0.468	0.051	0.209*	-0.137
	(0.013)	(0.753)	(0.752)	(0.271)	(0.161)	(0.055)	(0.487)
Tender offer	0.012**	-0.019	-0.020	0.134	0.029	0.017	0.103
	(0.047)	(0.761)	(0.688)	(0.478)	(0.365)	(0.424)	(0.375)
Stock percentage	-0.035**	-0.075	-0.153**	0.081[c]	-0.196***	-0.253***	-0.098[c]
	(0.013)	(0.143)	(0.021)	(0.467)	(0.001)	(0.000)	(0.116)
Observations	1,630	1,427	1,117	310	1,453	1,125	328
Adj. R-squared	0.029	0.069	0.044	0.109	0.153	0.136	0.192

Table 7: Robustness checks – alternative definitions of pre-bid distress

	(I)							(II)						
	(1)	**(2)**			**(3)**			**(1)**	**(2)**			**(3)**		
	All	**All**	**LDR**	**HDR**	**All**	**LDR**	**HDR**	**All**	**All**	**LDR**	**HDR**	**All**	**LDR**	**HDR**
High default risk	-0.001	-0.058***			-0.173**			0.006	-0.216***			-0.186***		
	(0.811)	(0.008)			(0.011)			(0.471)	(0.009)			(0.005)		
Assets turnover$_p$			-0.012	0.388*[c]		0.052	0.195			0.054	0.071		0.118*	0.093
			(0.855)	(0.072)		(0.367)	(0.342)			(0.433)	(0.721)		(0.064)	(0.544)
Profit margin$_p$			0.519***	0.537***[b]		0.531***	0.571***[a]			0.507***	0.803***[a]		0.519***	0.697***[a]
			(0.000)	(0.001)		(0.000)	(0.000)			(0.000)	(0.000)		(0.000)	(0.000)
Leverage$_p$			-0.318*	-0.797**[c]		-0.301**	-0.952***[a]			-0.343**	-0.541**[c]		-0.429***	-0.689***[b]
			(0.059)	(0.023)		(0.032)	(0.000)			(0.043)	(0.013)		(0.003)	(0.000)
Bidder size	-0.003**	-0.008	-0.006	-0.012	-0.007	-0.056**	-0.041	-0.002*	0.003	-0.014	-0.032	-0.013	-0.028**	-0.058*
	(0.034)	(0.565)	(0.690)	(0.748)	(0.553)	(0.012)	(0.122)	(0.090)	(0.816)	(0.322)	(0.406)	(0.274)	(0.036)	(0.093)
Bidder MTB	0.001	0.002	-0.002	0.009	-0.008*	-0.008*	0.001	0.001	-0.001	0.001	0.005	-0.007*	-0.007*	0.008
	(0.772)	(0.775)	(0.611)	(0.500)	(0.091)	(0.051)	(0.953)	(0.878)	(0.396)	(0.879)	(0.708)	(0.085)	(0.085)	(0.366)
Industry-relatedness	-0.003	0.008	-0.066	0.158	0.045	-0.009	0.133	-0.003	0.012	-0.091*	0.416**[b]	0.031	-0.027	0.121
	(0.132)	(0.878)	(0.192)	(0.253)	(0.252)	(0.819)	(0.197)	(0.188)	(0.808)	(0.052)	(0.016)	(0.421)	(0.505)	(0.287)
Cross-border	-0.006	0.029	0.041	-0.085	-0.068	-0.037	-0.183	-0.001	-0.008	0.065	-0.524**[b]	-0.053	-0.005	-0.076
	(0.344)	(0.673)	(0.566)	(0.629)	(0.252)	(0.563)	(0.217)	(0.867)	(0.690)	(0.328)	(0.044)	(0.418)	(0.945)	(0.673)
Relative target size	-0.009*	-0.028	0.003	-0.127	-0.047	-0.021	-0.075	-0.005	-0.051	0.002	-0.121*[c]	-0.047	0.017	-0.144***[c]
	(0.080)	(0.543)	(0.942)	(0.164)	(0.201)	(0.616)	(0.218)	(0.262)	(0.308)	(0.575)	(0.088)	(0.191)	(0.784)	(0.001)
Target public	-0.027*	-0.009	0.113	-1.222[c]	0.132	0.214*	-0.113	-0.023*	0.036	-0.029	-0.082	0.103	0.069	-0.015
	(0.069)	(0.969)	(0.473)	(0.103)	(0.292)	(0.089)	(0.780)	(0.093)	(0.851)	(0.856)	(0.463)	(0.489)	(0.620)	(0.967)
Tender offer	0.011**	-0.004	-0.026	0.165	0.058	-0.019	0.026	0.009*	0.021	-0.030	0.095	-0.002	-0.015	-0.167

	(0.032)	(0.951)	(0.696)	(0.392)	(0.216)	(0.723)	(0.846)	(0.074)	(0.751)	(0.623)	(0.664)	(0.967)	(0.794)	(0.265)
Stcok percentage	-0.035**	-0.072*	-0.087*	-0.197	-0.192***	-0.207***	-0.259**[c]	-0.036***	-0.114*	-0.187***	0.217	-0.261***	-0.244***	-0.329**[c]
	(0.042)	(0.053)	(0.091)	(0.266)	(0.000)	(0.000)	(0.017)	(0.000)	(0.089)	(0.003)	(0.252)	(0.000)	(0.000)	(0.033)
Observations	1,560	1,365	1,128	237	1,388	1,137	251	1,630	1,427	1,188	239	1,453	1,196	257
Adj. R-squared	0.032	0.062	0.048	0.119	0.159	0.148	0.256	0.039	0.057	0.044	0.129	0.171	0.157	0.230

Appendix 1: Merton's distance-to-default model

Merton's distance-to-default (DD) on day t is expressed as follows (Hillegeist et al., 2004; Vassalou and Xing, 2004; Akhigbe et al., 2007):

$$DD_t = \frac{ln(V_{A,t}/L_t) \; + \; (r_f \; - \; \sigma_{A,t}^2/2)\, T}{\sigma_{A,t}\, T^{0.5}}$$

Where,

$V_{A,t}$ = market value of assets

L_t = book value of 100 % short-term debt and 50 % long-term debt

r_f = risk-free rate

$\sigma_{A,t}$ = annualized standard deviation of asset returns

T = time to maturity

The following input parameters are aggregated. The market value of equity and book value of financial debt are collected from Thomson DataStream. Further, we download the yield on the US government debt as a proxy for the risk-free interest rate. Time to maturity is commonly set to one year. The values of $V_{A,t}$ and $\sigma_{A,t}$ can be inferred through an iterative process based on the Black-Scholes-Merton pricing model. We employ as starting values for the asset volatility the historical volatility of equity computed daily on the basis of a 250-day rolling window. The following non-linear equations need to be solved:

$$V_{E,t} = V_{A,t} N(d_{1,t}) - X_t e^{-r_{ft} T} N(d_{2,t})$$

$$\sigma_{E,t} = \frac{V_{A,t} N(d_{1,t}) \sigma_{A,t}}{V_{E,t}}$$

Appendix 2: Variable definitions

Variables	Description
	Bidder and target firm-specific characteristics
ROA	EBITDA to total assets one year prior to acquisition
ICR	EBITDA to interest expense on debt one year prior to acquisition
Size	Log of total assets one year prior to acquisition
MTB	Market value of equity one month prior to acquisition divided by the book value of common equity one year prior to acquisition
Leverage	Total debt to total assets one year prior to acquisition
$Leverage_P$	Average industry-adjusted total debt to total assets 3 years after acquisition
Cash	Cash and cash equivalents one year prior to acquisition
$Assets\ turnover_P$	Average industry-adjusted Sales to total assets 3 years after acquisition
$Profit\ margin_P$	Average industry-adjusted EBITDA to sales 3 years after acquisition
	Deal characteristics
Industry-relatedness	Dummy variable equal to one if acquirer and target share the same three-digit US SIC code
Cross-border	Dummy variable equal to one if acquirer and target are located in a different country
Relative target size	Ratio of target total assets to acquirer total assets one year prior to acquisition
Relative deal size	Ratio of transaction value to acquirer total assets one year prior to acquisition
Bidder's toehold	Percentage of bidder's stake in target four weeks prior to acquisition
All stock	Dummy variable equal to one if transaction is fully paid in stock
Stock percentage	Proportion of shares used to finance the takeover
Tender offer	Dummy variable equal to one if transaction is a tender offer
Reverse takeover	Dummy variable equal to one if transaction is a reverse takeover
Target public	Dummy variable equal to one if target is a quoted company
Acquisition premium	Price paid per share minus stock price of target 4 weeks before acquisition announcement, divided by the stock price of the target 4 weeks before acquisition announcement
Recession	Dummy variable that equals one if deal is closed in a global economic slowdown. According to the International Monetary Fund (IMF), this covers 4 periods: 1990–1993, 1998, 2001–2002 and 2008–2009

Appendix 3. High-default risk acquirers and merger premiums

	Merger premiums	
	(1)	(2)
High default risk	0.068**	-0.082
	(0.045)	(0.149)
High default risk×Stock percentage		0.177**
		(0.036)
Target ROA	-0.203***	-0.271***
	(0.007)	(0.000)
Target MTB	-0.007***	-0.008***
	(0.002)	(0.005)
Target leverage	0.097	0.094
	(0.197)	(0.181)
Target cash	0.126*	0.132*
	(0.087)	(0.070)
Industry-relatedness	-0.023	-0.034
	(0.349)	(0.168)
Cross-border	0.041	0.054
	(0.404)	(0.208)
Relative target size	-0.004	0.008
	(0.391)	(0.442)
Initial stake	0.002	0.001
	(0.740)	(0.709)
Tender offer	0.102**	0.076**
	(0.012)	(0.023)
Stock percentage	0.051	0.022
	(0.178)	(0.256)
Reverse takeover	0.112	-0.022
	(0.233)	(0.457)
Observations	1,296	1,296
Adj. R-squared	0.071	0.086

Notes. The table reports the result of high-default risk acquirers and merger premiums. We rank our bidders into quartiles according to their pre-bid distance-to-default, measured over the estimation window -280 to -31 days prior to deal announcement. The bidders are referred to as High default risk if they are classified in the quartile with the highest default risk. The dependent variable is merger premiums are calculated as the price paid per share minus stock price of target 4 weeks before acquisition announcement, divided by the stock price of the target 4 weeks before acquisition accnouncement. Target ROA is the EBITDA to total assets one year prior to acquisition for target firms. Target MTB is the market value of equity one month prior to acquisition divided by the book value of common equity one year prior to acquisition for target firms. Target leverage is the total debt to total assets one year prior to acquisition for target firms. Target cash is the ratio of cash and cash equivalents and total assets one year prior to acquisition for target firms. Industry-relatedness is a dummy variable equal to one if acquirer and target share the same three-digit US SIC code, and zero otherwise. Cross-border is a dummy variable equal to one if acquirer and target are located in a different country, and zero otherwise. Relative target size is the ratio of target total assets to acquirer total assets one year prior to acquisition. Initial stake is the percentage of target stocks held by acquirer before the merger announcement. Tender offer is a dummy variable equal to one if transaction is a tender offer, and zero otherwise. Stock percentage is the percentage of stock used as the method of deal payment. Reverse takeover is a dummy variable equal to one if transaction is a reverse takeover, and zero otherwise. All our regressions include time and industry effects and intercepts whose coefficients are not reported. The p-values in parentheses are based on cluster adjusted robust standard errors (Petersen, 2009). ***, **, * indicate significant at 0.01, 0.05, and 0.10 level, respectively. The variables are winsorized at 1%.

Appendix 4: Distribution of rest of the world (ROW) sample firms by country of origin

Acquirer country	CR	SR	Low default risk		High default risk	
			N	%	N	%
Argentina	1	3	4	0.23	0	0.00
Australia	3	4	135	7.66	37	6.29
Austria	3	4	9	0.51	3	0.51
Belgium	2	2	13	0.74	6	1.02
Brazil	1	5	11	0.62	9	1.53
Canada	1	4	180	10.21	70	11.90
Chile	2	5	4	0.23	0	0.00
Colombia	2	4	1	0.06	1	0.17
Denmark	3	4	14	0.79	2	0.34
Egypt	2	4	2	0.11	0	0.00
Finland	1	4	19	1.08	8	1.36
France	0	5	123	6.98	17	2.89
Germany	3	4	79	4.48	21	3.57
Greece	1	3	11	0.62	3	0.51
Hong Kong	4	4	20	1.13	10	1.70
India	2	4	25	1.42	19	3.23
Ireland	1	4	2	0.11	4	0.68
Israel	3	4	8	0.45	2	0.34
Italy	2	4	29	1.64	10	1.70
Japan	2	5	331	18.77	197	33.50
Malaysia	3	4	14	0.79	8	1.36
Mexico	0	3	7	0.40	4	0.68
Netherlands	3	4	63	3.57	11	1.87
New Zealand	4	5	9	0.51	1	0.17
Norway	2	4	20	1.13	10	1.70
Peru	0	5	3	0.17	0	0.00
Philippines	1	5	5	0.28	3	0.51
Portugal	1	4	1	0.06	1	0.17
Singapore	3	4	22	1.25	9	1.53
South Africa	3	5	24	1.36	4	0.68
South Korea	3	6	18	1.02	39	6.63
Spain	2	6	37	2.10	1	0.17
Sweden	1	4	51	2.89	15	2.55
Switzerland	1	3	43	2.44	4	0.68
Taiwan	2	5	17	0.96	9	1.53
Thailand	2	4	11	0.62	9	1.53
Turkey	2	4	1	0.06	1	0.17
United Kingdom	4	5	397	22.52	40	6.80
Total			1,763	100	588	100

Notes. The sample includes 2,351 completed bids undertaken by bidders from 38 non-US (ROW) countries over the period 1989-2011. We rank our bidders into quartiles according to their pre-bid distance-to-default, measured over the estimation window -280 to -31 days prior to deal announcement. The bidders are referred to as *High default risk* if they are classified in the quartile with the highest default risk. *Low default risk* includes all the remaining bidders. CR is for creditors' rights and SR is for shareholders' rights, based on Djankov et al. (2008) and Spamann (2010). The higher these values the better the creditors and shareholders rights.

Appendix 5: ROW: The short and long-term market reaction to M&A announcements

		N	Means	Medians
Panel A. Short-term market-adjusted CAR (-2; +2)				
High default risk	Q1 Low distance-to-default	576	0.011**	0.000
Low default risk	Q2	567	-0.001	-0.002
	Q3	555	0.005	0.002
	Q4 High distance-to-default	582	0.002	0.001
Low default risk - High default risk			***-2.208****	***0.444***
Panel B. 3 years post-deal completion peer-adjusted BHAR				
High default risk	Q1 Low distance-to-default	412	-0.154***	-0.098***
Low default risk	Q2	431	-0.077*	-0.051*
	Q3	423	-0.017	-0.017
	Q4 High distance-to-default	432	-0.018	0.009
Low default risk - High default risk			***2.370****	***2.509****
Panel C. 3 years post-deal completion market-adjusted BHAR				
High default risk	Q1 Low distance-to-default	412	0.051	-0.155*
Low default risk	Q2	431	0.032	-0.074
	Q3	423	0.047	-0.04
	Q4 High distance-to-default	432	0.068**	-0.003
Low default risk - High default risk			***-0.035***	***2.382****

Panel D. Carhart (1997) four-factor model 3 years post-deal completion peer-adjusted abnormal returns

		A	β1	β2	β3	β4
High default risk	Q1 Low distance-to-default	-0.047	0.211***	0.185	0.116	-0.091
Low default risk	Q2	**-0.391****	0.194***	0.338***	0.080	-0.105**
	Q3	-0.201	0.134***	-0.010	0.054	-0.102**
	Q4 High distance-to-default	-0.253	0.012	-0.165**	-0.016	0.047

Notes. The sample includes completed bids undertaken by ROW (rest of the world) bidders over the period 1989-2011. We rank our bidders into quartiles according to their pre-bid distance-to-default, measured over the estimation window -280 to -31 days prior to deal announcement. The bidders are referred to as *High default risk* if they are classified in the quartile with the highest default risk. *Low default risk* includes all the remaining bidders. In Panel A, the announcement date abnormal returns are based on the market model with α and β coefficients computed over the -280 to -31 days relative to the announcement date 0. In Panel B, the peer-adjusted BHARs are computed relative to the bidder's geographical region, two-digit US SIC industry, size, market-to-book and one year pre-acquisition BHRs matched firms. In Panel C, the excess returns are relative to the MSCI US equity index. ***, **, *, indicates significant at 0.01, 0.05 and 0.10 level, respectively. The t-statistics between *Low default risk* and *High default risk* bidders are in bold. We have winsorized the data at 1%. In Panel D, we run the following Carhart (1997) four-factor model: $R_{pt} = \alpha + \beta_1(R_M) + \beta_2 SMB_t + \beta_3 HML_t + \beta_4 Momentum_t + \varepsilon_{pt}$ and report the coefficients in percentage. ***, **, *, indicates significant at 0.01, 0.05 and 0.10 level, respectively. The t-statistics between *Low default risk* and *High default risk* bidders are in bold. We have winsorized the data at 1%.

Appendix 6: ROW – The determinants of announcement date and long-run returns

	Short-term CAR (-2;+2)	3 years post-deal peer-adjusted BHAR			3 years post-deal market-adjusted BHAR		
	All	**All**	**LDR**	**HDR**	**All**	**LDR**	**HDR**
High default risk	0.004	**-0.197*****			**-0.118*****		
	(0.482)	(0.000)			(0.000)		
Assets turnover$_P$			0.094	0.144		**0.089****	**0.200**^{**a}
			(0.166)	(0.392)		(0.045)	(0.035)
Profit margin$_P$			**0.427*****	**0.582**^{***a}		**0.392*****	**0.255**^{***b}
			(0.000)	(0.001)		(0.000)	(0.008)
Leverage$_P$			**-0.566*****	**-0.708**^{*a}		**-0.306*****	**-0.630**^{***a}
			(0.002)	(0.059)		(0.006)	(0.001)
Bidder size	**-0.003****	0.0174	-0.006	**0.115**^{***a}	**0.022*****	0.0123	**0.055**^{***b}
	(0.027)	(0.234)	(0.689)	(0.007)	(0.008)	(0.175)	(0.006)
Bidder MTB	-0.001	0.003	0.002	-0.001	**-0.011*****	**-0.014*****	-0.004^{b}
	(0.352)	(0.572)	(0.777)	(0.936)	(0.007)	(0.001)	(0.552)
Industry-relatedness	0.003	0.0481	0.062	-0.019^{b}	0.015	-0.027	**0.161**^{**b}
	(0.426)	(0.340)	(0.241)	(0.882)	(0.619)	(0.393)	(0.028)
Cross-border	**0.008****	**-0.096***	-0.068	-0.214	-0.044	-0.035	-0.011
	(0.043)	(0.094)	(0.266)	(0.239)	(0.181)	(0.338)	(0.885)
Relative target size	-0.004	0.012	-0.023	**0.145**^{**a}	-0.028	-0.027	-0.013
	(0.216)	(0.695)	(0.580)	(0.031)	(0.154)	(0.304)	(0.666)
Target public	-0.018	-0.153	-0.217	-0.146	-0.043	-0.286	0.076^{b}
	(0.295)	(0.510)	(0.482)	(0.686)	(0.737)	(0.153)	(0.583)
Tender offer	-0.003	0.016	0.003	0.103	0.032	0.037	0.033
	(0.439)	(0.771)	(0.958)	(0.467)	(0.321)	(0.277)	(0.661)
All stock	-0.001	-0.073	**-0.131***	0.120^{a}	**-0.077****	**-0.112*****	-0.004^{a}
	(0.728)	(0.252)	(0.057)	(0.430)	(0.037)	(0.008)	(0.962)
Creditor rights	-0.002	-0.027	-0.014	-0.110^{c}	**-0.023****	-0.014	**-0.077**^{**c}
	(0.183)	(0.187)	(0.508)	(0.132)	(0.049)	(0.246)	(0.037)
Shareholder rights	0.002	0.019	0.053	-0.083^{b}	0.028	0.025	0.019
	(0.486)	(0.662)	(0.262)	(0.442)	(0.254)	(0.334)	(0.752)
Observations	1,932	1,287	981	306	1,659	1,263	396
Adj. R-squared	0.015	0.030	0.023	0.007	0.130	0.122	0.200

Notes. The dependent variables are announcement date, the 3 years post-deal completion peer-adjusted BHAR (matched by two-digit industry, size, MTB and pre-acquisition BHR), and market-adjusted BHAR. L(H)DR is for Low (High) default risk bidders. Bidders are ranked into quartiles according to their pre-bid distance-to-default, measured over the estimation window -280 to -31 days prior to deal announcement. *High (Low) default risk* are bidders in the highest default risk quartile (remaining bidders). The remaining variables are as defined in Appendix 2. All our regressions include time and industry effects. The p-values in parentheses are based on cluster adjusted robust standard errors (Petersen, 2009). ***, **, *, indicate significant at 0.01, 0.05 and 0.10 level, respectively. The differences in coefficients between *High* and *Low default risk* bidders are tested using Z-statistics defined as: $= \frac{b1-b2}{\sqrt{(SEb_1^2+SEb_2^2)}}$. We denote by $^{a, b, c}$ when the coefficient b_1 of *Low default risk* is statistically different from b_2 of *High default risk* at 0.01, 0.05, and 0.10 levels, respectively. The variables are winsorized at 1%.

Appendix 7: ROW – The post-bid operating performance

		N	Mean	Median
Panel A. Post-bid *less* pre-bid merged ROA				
High default risk	Q1 Low distance-to-default	482	-0.003	-0.002
Low default risk	Q2	510	-0.021***	-0.008***
	Q3	495	-0.019***	-0.013***
	Q4 High distance-to-default	500	-0.022***	-0.015***
Low default risk – High default risk			***-2.855******	***-3.576*****
Panel B. 3 years post-bid completion industry-adjusted average ROA				
High default risk	Q1 Low distance-to- default	508	-0.02***	-0.012***
Low default risk	Q2	524	0.001	0.003
	Q3	521	0.019***	0.014***
	Q4 High distance-to-default	534	0.024***	0.022**
Low default risk – High default risk			***6.739*****	***7.944*****

Notes. The table reports the descriptive statistics results of operating performance across our sample firms in ROW (rest of the world). We rank our bidders into quartiles according to their pre-bid distance-to-default, measured over the estimation window -280 to -31 days prior to deal announcement. The bidders are referred to as *High default risk* if they are classified in the quartile with the highest default risk. *Low default risk* includes all the remaining bidders. In Panel A, we make a hypothetical portfolio of bidder and target prior to the transaction and report the difference between the actual post-acquisition and the hypothetical ROA. In Panel B, we report the average industry-adjusted ROA over the three year post-acquisition period. The *t*-statistics between *Low default risk* and *High default risk* bidders are in bold. The data are winsorized at 1%. ***, **, *, indicate significant at 0.01, 0.05 and 0.10 level, respectively.

Appendix 8: Test of risk-shifting behaviour

	(1)		(2)			
	Relative deal size		**3 years post-deal completion peer-adjusted BHAR**		**3 years post-deal completion market-adjusted BHAR**	
	Low default risk	**High default risk**	**Low**	**High**	**Low**	**High**
Expected market volatility	-1.288	**-9.375****				
	(0.456)	(0.040)				
Relative deal size			0.195	0.032	0.093	-0.110
			(0.155)	(0.777)	(0.378)	(0.126)
Distress			-0.180	-0.050	-0.043	-0.007
			(0.386)	(0.654)	(0.794)	(0.925)
Distance-to-default			-0.009	0.013	-0.001	0.002
			(0.332)	(0.297)	(0.991)	(0.794)
Rel. deal size*Distance-to-default			**-0.023***	0.007	-0.006	**0.029***
			(0.075)	(0.736)	(0.439)	(0.053)
Bidder leverage$_p$			**-0.749*****	-0.278	**-0.617*****	**-0.433*****
			(0.001)	(0.269)	(0.001)	(0.007)
Bidder size	-0.064***	-0.106***	0.026	0.034*	0.033**	-0.001
	(0.000)	(0.000)	(0.231)	(0.097)	(0.024)	(0.995)
Bidder MTB	-0.013***	-0.022***	0.004	-0.001	-0.004	-0.013***
	(0.000)	(0.000)	(0.505)	(0.840)	(0.316)	(0.003)
Bidder leverage	0.513***	0.205				
	(0.000)	(0.372)				
Industry-relatedness	0.047*	0.256***	-0.039	0.035	0.002	0.038
	(0.068)	(0.004)	(0.563)	(0.634)	(0.974)	(0.478)
Cross-border	-0.090***	-0.260*	-0.110	0.122	-0.188**	-0.007
	(0.002)	(0.086)	(0.284)	(0.239)	(0.017)	(0.930)
Target public	0.139**	-0.780**	-0.150	0.036	-0.175	0.054
	(0.016)	(0.029)	(0.681)	(0.863)	(0.543)	(0.766)
Tender offer	-0.109***	0.070	0.026	-0.026	0.127*	0.014
	(0.000)	(0.596)	(0.777)	(0.771)	(0.068)	(0.827)
All stock	-0.028	-0.002	-0.077	-0.150*	-0.105	-0.276***
	(0.461)	(0.978)	(0.430)	(0.091)	(0.153)	(0.000)
Observations	1,222	384	769	670	780	685
Adj. R-squared	0.162	0.231	0.022	0.016	0.109	0.110

Notes. The table reports the results for the risk-shifting behaviour test in the acquisition decision of *High default risk* firms in line with Eisdorfer (2008). We rank our bidders into quartiles according to their pre-bid distance-to-default, measured over the estimation window -280 to -31 days prior to deal announcement. The bidders are referred to as *High default risk* if they are classified in the quartile with the highest default risk. *Low default risk* includes all the remaining bidders. In (1) we report the regressions of relative deal size on expected annual market volatility for *Low default risk* and *High default risk* bidders. The independent variables are the 12 month ahead forecasted market volatility estimated using a GARCH (1,1) model and a set of control variables defined in Appendix 2. In (2) we report the regressions of post-bid returns on an interaction variable between relative deal size and distress in periods of low and high expected market volatility. The dependent variables are the 3 years peer-adjusted BHAR and 3 years market-adjusted BHAR.

Appendix 9: Interaction variable between High default risk and Method of payment

	Short-term CAR (-2;+2)	3 years post-deal completion peer-adjusted BHAR	3 years post-deal completion market-adjusted BHAR
High default risk	-0.006	-0.0300	0.052
	(0.446)	(0.745)	(0.456)
All stock*High default risk	0.016	0.235	-0.028
	(0.289)	(0.107)	(0.790)
Assets turnover$_P$		0.0667	0.095*
		(0.340)	(0.058)
Profit margin$_P$		**0.565*** **	**0.513*** **
		(0.000)	(0.000)
Leverage$_P$		**-0.424*** **	**-0.505*** **
		(0.006)	(0.000)
Bidder size	-0.004**	0.001	-0.012
	(0.013)	(0.934)	(0.242)
Bidder MTB	0.001	0.002	-0.007**
	(0.944)	(0.583)	(0.025)
Industry-relatedness	-0.009**	-0.035	-0.001
	(0.044)	(0.477)	(0.960)
Cross-border	-0.001	-0.020	-0.080
	(0.978)	(0.769)	(0.134)
Relative target size	-0.009	-0.034	-0.045
	(0.102)	(0.458)	(0.124)
Target public	-0.033**	-0.047	0.043
	(0.015)	(0.823)	(0.762)
Tender offer	0.020***	-0.017	0.052
	(0.000)	(0.781)	(0.265)
All stock	**-0.017*** **	**-0.122***	**-0.164*** **
	(0.008)	(0.077)	(0.002)
Observations	1,630	1,427	1,453
Adj. R-squared	0.020	0.065	0.157

Notes. The table reports the results of the regression of the announcement date, the three-year post-deal completion peer-adjusted BHAR (matched by two-digit industry, size, MTB and pre-acquisition BHR) and market-adjusted BHAR. We rank our bidders into quartiles according to their pre-bid distance-to-default, measured over the estimation window -280 to -31 days prior to deal announcement. The bidders are referred to as *High default risk* if they are classified in the quartile with the highest default risk. *Low default risk* includes all the remaining bidders. The remaining variables are as defined in Appendix 2. All our regressions include time and industry effects and intercepts whose coefficients are not reported. The p-values in parentheses are based on cluster adjusted robust standard errors (Petersen, 2009). ***, **, *, indicate significant at 0.01, 0.05 and 0.10 level, respectively. The variables are winsorized at 1%.