Bidders and Targets Made for Each Other: Credit Ratings, Growth Opportunities and Acquisition Returns

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Abstract

This study investigates complementary acquisitions that are related with improvements in financing efficiencies and growth opportunities of bidding and target firms. Using credit rating levels as a measure of financial constraints, we find that bidders with low financial constraints and growth opportunities acquiring financially constrained target firms with high growth opportunities and information asymmetry generate higher synergy gains and bidder returns. Our results are consistent with the theoretical setting of Myers and Majluf (1984) and are robust after controlling for several factors that affect acquisition returns and potential endogeneity bias in the decision to obtain a high rating level.

JEL Classification: G14; G24; G32; G34

Keywords: Credit Ratings; Mergers and Acquisitions; Financial Constraints; Information Asymmetry

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1. Introduction

Mergers and Acquisitions (M&As) are one of the largest investments that a company might undertake in its entire corporate life, thus entailing implications for the reallocations of resources within its boundaries (Harford and Li (2007)) and the economy as a whole. In a setting of imperfect capital markets, firms are often bound down by financial constraints which lead them to pass up profitable investment opportunities (Stein (2003)). Under this state of affairs an acquisition can alleviate these constraints if the acquirer's financial condition and ability to access capital markets empower the target firm to engage in an increased number of positive net present value projects. Practitioners often support acquisition decisions under this rationale arguing that bidders can augment target's operations due to their ability to raise capital externally and fund these investments.[1] A recent study by Erel, Jang and Weisbach (2014) attempts to examine the impact of acquisitions on the reduction of target's financial constraints.[2] By using a sample of European acquisitions the authors show that target firms' financial constraints (investment rates) are reduced (increased) considerably in the post-merger period.

In an adjacent theoretical setting, Myers and Majluf (1984) propose a specific rationale for the existence of mergers that are driven by information asymmetry. In the general version of their model, information asymmetry problems prohibit firms from issuing equity when investment funding is needed due to their negative effect on firm valuation. Therefore, firms forgo positive NPV projects which might lead to underinvestment. According to the authors, maintaining financial slack is a way to mitigate the impediment on firms' investment decisions imposed by information

[1] The *Financial Times* announced that AstraZeneca and Glaxo SmithKline were looking smaller biotech firms as takeover targets during the Financial Crisis, since they were better to fund those companies' investments than likely targets could on their own (*Financial Times*, September 25, 2009).

[2] Similarly, Williamson and Yang (2013) study the effect of acquisitions on the lowering of acquirer's financial constraints.

asymmetry. In their paper "financial slack" is defined as cash and liquid assets or *the ability to issue default risk free debt*. Myers and Majluf (1984) also propose that "underinvestment" can be resolved through the conduction of an acquisition. More specifically, a complementary fit between slack rich bidders (i.e., those with close to default-risk-free debt) and slack poor target firms with growth opportunities can create value via the conduction of additional positive NPV projects by the slack rich bidder, which the slack poor target firm might pass up particularly when investors have limited information about target firm value.

To examine the value effects of the reduction in financial constraints and consequently, the impact of the complementary fit between bidders and targets requires one to measure the level of financial constraints that both bidders and target firms face before the acquisition announcement. The literature on financial constraints has argued that firms holding a (high) credit rating (better access to public debt markets) are less financially constrained than comparable firms without (low) credit ratings (Whited (1992), Gilchrist and Himmelberg (1995), Almeida, Campello and Weisbach (2004) and Campello and Chen (2010)).

Additionally, the theoretical model of John and Nachman (1985) propose that high credit ratings ameliorate the underinvestment problem.[3] Therefore, given that credit ratings have real implications on the access to debt financing, considerations regarding credit ratings should affect investment choices.

However, it is plausible that credit ratings affect acquisition returns through other dimensions. First of all, we contend that credit ratings come into play during takeovers through the relative creditworthiness of the bidder to the target. Very often business

[3] In particular John and Nachman (1985) link firms' decision to invest in high quality (high cash flows) projects, and ultimately their ability to repay their debt obligations on time with the assignment of a high credit rating. In their dynamic sequential equilibrium model, firms' reputation derived from the high quality rating at time t has a consequent beneficial effect in all the future time periods $t+n$, in which high rated firms will try to access the bond markets, in the form of low interest rates and less restrictive constraints in the bond covenants on maximal payouts or minimum investment than those of the low rated firms. Eventually, this state of affairs reduces the agency cost of debt and mitigates the underinvestment problem (Myers (1977)).

combinations are formed in which the rating level between bidders and targets varies considerably; therefore the combined rating is determined by the credit quality difference between the merging parties. To exemplify this point, we provide below excerpts from Standard and Poor's credit ratings reports in relation to several acquisitions.

Standard and Poor's (2010): "Standard & Poor's Ratings Services recently placed its 'B' corporate credit rating for Continental on CreditWatch with negative implications, and its 'B-' corporate credit rating for UAL and subsidiary United Air Lines Inc. on CreditWatch with positive implications, pending completion of the merger." and "We currently hold a 'B' rating on Continental and a 'B-' rating on United, and we expect to assign the combined entity a corporate credit rating at one of those two levels. Reflecting this, we placed the corporate credit rating for each company, along with the obligations directly linked to it such as unsecured debt and bank loans, on CreditWatch with negative implications for Continental and positive implications for United."

Standard and Poor's (2012): "On Nov. 1, 2012, Standard & Poor's Ratings Services placed its 'BBB-', corporate credit rating on New York City-based The Warnaco Group Inc. on CreditWatch with negative implications following the announcement that PVH Corp. will acquire Warnaco." and "The CreditWatch placement reflects our expectation that we will lower our rating on Warnaco following the completion of the transaction, likely to 'BB+', based on PVH's weaker credit profile. We believe the combined company's business risk profile is likely "satisfactory" and its financial risk profile is likely "significant." The combination of these risk profiles could result in a corporate credit rating of 'BB+'."

Further, credit quality, which is often measured by firm rating level (Gopalan, Song and Yerramilli (2014)), might also affect acquisition returns. It is likely that the value effects in M&As vary across the credit quality distribution, since highly rated firms face lower cost of debt capital relative to low rated ones (West (1973), Liu and Thakor (1984), Ederington, Yawitz and Roberts (1987), Ziebart and Reiter (1992) and Chen, Lesmond and Wei (2007)). Therefore, bidders with lower cost of debt can achieve higher NPV for the same expected cash flows, due to the lower discount rate that is applied in the valuation of the combined firm investment projects.

Motivated by the recent work on the impact of acquisitions on the mitigation of financial constraints (Williamson and Yang (2013) and Erel et al. (2014)), and the theoretical framework of Myers and Majluf (1984), the objective of this study is to examine the complementary impact of both bidding and target firm financial constraints and growth opportunities on acquisition returns. Specifically, we use a sample of US

public acquisitions over the period from 1996 to 2009 and measure the effect of the complementary fit in financial constraints and growth opportunities between the bidder and the target firm in different settings of information asymmetry about the value of the target firm. To this end, we firstly use the distinction between investment-grade and speculative-grade rated firms in line with Leary and Roberts (2010), De Jong, Verbeek and Verwijmeren (2011) and Williamson and Yang (2013).[4] Molina (2005) and Almeida and Philippon (2007) empirically demonstrate that default costs are considerable lower for investment-grade firms than for the speculative-grade ones. Secondly, we use the level of firm credit ratings. Firms with higher credit ratings face lower cost of debt, which, *ceteris paribus,* leads to increased debt capacity (Billett, Hribar and Liu (2011). Specifically, our prediction based on Myers and Majluf (1984) model is that when a bidder with investment-grade rating or high rating level in general (i.e., low financial constraints), and low growth opportunities acquires an unrated or low rated target firm in general (i.e., high financial constraints) with high growth opportunities and high information asymmetry, financial synergies are created. This is translated into higher synergistic gains, as well as bidder returns. With regards to target firm returns there are two competing predictions: i) if synergy gains are equally split between bidding and target firms, then we would expect an increase in target firm returns; ii) if target firms are somewhat desperate to be sold since they believe that their growth opportunities will be better exploited under another firm's management with access to the capital markets and sufficient funds to finance good investment opportunities, then they might be inclined to receive a lower premium which should not lead to an increase in target firm returns.

[4] Longstaff, Mithal and Neis (2005) and Chen et al. (2007) demonstrate that investment grade firms generate lower bond yield spreads relative to the speculative grade ones. Furthermore, due to the absence of regulation restrictions regarding allocations in securities of investment grade firms (Kisgen (2007); Kisgen and Strahan (2010)), these firms enjoy a larger clientele base and a higher demand for their debt securities lowers their cost of debt.

Overall, the empirical evidence of this paper supports our hypotheses about the beneficial complementary effect of financial constraints and growth opportunities on acquisition returns. Very briefly, the main results we demonstrate are: 1) the complementary effect is positively associated with synergy gains; 2) accordingly, the degree of complementary fit between the bidding and the target firm is positively related with bidder announcement returns; 3) the complementary fit does not appear to have a positive relationship with target firm returns; 4) the significant effect of the complementary fit on synergy gains and bidding firm returns is mainly driven by the group of target firms that operate under a high information asymmetry environment, a result which is perfectly aligned with the specific propositions of Myers and Majluf (1984); 5) our main results remain robust after testing for endogeneity bias in credit ratings.

This paper contributes to the literature on the motives for M&As and their source of gains, and the literature of credit ratings' impact on M&A decisions (Harford and Uysal (2014)). More specifically, first, it provides empirical evidence on the sources of gains that arise from the improvement of financing efficiencies. Secondly, it supports empirically the propositions of the Myers and Majluf (1984) theoretical takeover model. Third, it provides further evidence on the importance of credit ratings in the value effects of corporate investments, particularly in M&As. Fourth, our results echo the findings of Maksimovic and Phillips (2001) and Rhodes–Kropf, Robinson and Viswanathan (2005), and the literature of "who buys whom?" suggesting that wealth effects can be generated when an acquirer with low asset valuation purchases a target with high asset valuation.

Our results have also important implications. First, to the extent that there is a complementary fit of financial constraints and growth opportunities between bidding and target firms, acquisitions reduce underinvestment along the lines of Erel et al.

(2014) and in the spirit of Myers and Majluf (1984) proposition. Additionally, our evidence on the wealth effects of the combination, where a low valuation bidder buys a high valuation target, is against the conventional wisdom of the Q theories of takeovers (Lang, Stulz and Walkling (1989), Servaes (1991), Martin (1996) and Dong, Hirshleifer, Richardson and Teoh (2006)) where the typical merger involves a high valuation bidder purchasing a low valuation target firm. On the other hand, it is reminiscent of Jensen (1986) incentives for merger activity; the author proposes that bidders with low growth prospects use acquisitions as a channel for buying growth when their market's growth expectations are saturated.

This study is related with a number of previous works. Mantecon (2008), Almeida, Campello and Hackbarth (2011), Liao (2012), Williamson and Yang (2013) and Erel et al. (2014) examine the effect of improvements in financing efficiencies. Mantecon (2008) uses a sample of private targets acquired after filing for an IPO and studies the impact of uncertainty that limits their ability to access capital markets, in explaining bidders' stock returns. Liao (2012) studies the presence of equity stake purchases in minority block acquisitions and finds that these are driven by acquisitions of financially constrained targets. In this paper we examine the impact of bidder and target firms financial constraints along with their investment opportunities on merger shareholder returns. Williamson and Yang (2013) and Erel et al. (2014) show that acquisitions mitigate financing inefficiencies through the reduction of financial constraints and the higher investment rates in the post-merger era; nevertheless, they do not study how the market perceives these acquisitions and their impact on shareholders' wealth that is the scope of our study. Furthermore, Harford and Uysal (2014) examine the effect of bidder credit rating *existence* on takeover decisions and their value effects. In our study we go one step further and study the joint impact of credit *quality* for both bidding and target firms on acquisition returns. Moreover, Bruner (1988) and Smith and Kim (1994)

attempt to investigate the theoretical implications of Myers and Majluf (1984) takeover model. Bruner (1988) focuses only on the difference in debt capacity without considering the growth opportunities aspect. Further, he uses the net debt and debt ratio as a measure of debt capacity. Smith and Kim (1994), on the other hand, take into account both the difference in debt capacity and growth opportunities, but they omit the information asymmetry element of the theory. Additionally, their evidence supports the complementary fit from the opposite side (i.e., slack poor bidder-slack rich target) originally stated by Myers and Majluf (1984), and they use as a measure of debt capacity variables related with firm income generation capability. We, instead, take into account the complementary fit in financial constraints and growth opportunities along with the information asymmetry regarding target firm value. Further, we measure financial constraints by the quality of bidder credit ratings prior to the acquisition. Hennessy (2004) and Hennessy, Levy and Whited (2007) examine how debt is related with underinvestment and show that better rated companies exhibit higher firm values than lower rated ones, as measured by the Tobin's Q. In this work, we study the effect of credit quality on bidding firm returns in acquisitions as an implied outcome of mitigation in underinvestment. Finally, the Q theory of takeovers (Lang et al. (1989), Servaes (1991), Martin (1996) and Dong et al. (2006)) documents that the combination of bidders with higher investment opportunities or better management than the targets (high buys low) create value during acquisitions, mainly because target assets are redeployed more efficiently. In our paper instead, motivated by the theoretical propositions in Myers and Majluf (1984), while considering as critical factor the information asymmetry of the firms as it was suggested by Rhodes–Kropf et al. (2005), we turn the Q theory on its head and find empirical support for value creation in deals where a "low buys high", resembling the findings in Maksimovic and Phillips (2001) and Rhodes–Kropf et al. (2005).

The remainder of the paper is organized as follows. Section 2 describes our sample and presents univariate statistics. Section 3 analyzes the methodology and presents the findings of our empirical tests. We check whether our results are biased due to endogeneity in Section 4. Finally, Section 5 concludes the paper.

2. Sample and Data

2.1 *Sample Selection Criteria*

We download a sample of US domestic acquisitions announced over the period 1996 and 2009 from the Thomson Financial SDC Mergers and Acquisitions Database. We require deals to have non-missing transaction value and payment method information. In order to have credit rating data, bidders and targets are publicly-traded firms. The original sample includes 5,079 deals. We remove from the sample all deals classified as repurchases, liquidations, restructurings, divestitures, leveraged buyouts, reverse takeovers, privatizations, bankruptcy acquisitions and going private transactions. This reduces the sample to 4,847 observations. Furthermore, to include in the sample deals that represent a transfer of control, we require that the bidder owns less than 10% of target firm shares before the announcement and seeks to acquire more than 50% after the acquisition. There are 4,151 transactions that meet these criteria. Further, we drop deals worth less than $1 million and those that account for less than 1% of bidder market value to avoid noise in the analysis. There are 3,095 transactions that satisfy these requirements. We also require the bidding and the target firm to have sufficient data in the CRSP database (CRSP share codes 10 and 11; cases with multiple classes of common stock are excluded) to calculate announcement period returns. The remaining sample is 2,585 transactions.

Finally, we require that bidders are only rated firms and that credit rating information for the bidding and the target firms should be available from COMPUSTAT;

this requirement leads to a final sample that includes 1,299 deals. Credit ratings represent the Standard & Poor's (S&P) long-term domestic issuer credit ratings. Appendix A presents the number of deals for each bidding and target firm credit rating level one month prior to the acquisition announcement. Credit ratings range from AAA (highest credit rating) to D (lowest credit rating). In our sample, the highest bidder level is AAA and the lowest is CCC. As for the target ratings, the highest level is AA+ and the lowest is CCC+. Out of the 1,299 acquisitions, 431 deals involve targets with a credit rating and 868 deals with unrated targets.

2.2 *Key variables*

We measure the complementary fit of financial constraints and growth opportunities between the bidding and the target firm with two different variables. Firstly, we create the variable *ComplFit1.* To construct this variable, we primarily calculate the difference in financial constraints by creating an indicator variable *investment-grade* taking the value of 1 for bidders rated BBB- and above, and 0 otherwise for the group of bidders that merge with targets without a rating. This variable measures the impact of bidder's financial constraints level when acquiring a financially constrained target; that is without access to public debt markets (Holmstrom and Tirole (1997) and Bolton and Freixas (2000)). According to our hypothesis the combination of "investment-grade bidder/unrated target" will create higher value as it is a more optimal blending of merging parties' financial constraints than the combination "speculative-grade bidder/unrated target". As a second step, we measure the mismatch in growth opportunities following Rhodes-Kropf and Robinson (2008) with the surrogate variable *scaled ΔB/M,* which is computed by taking the difference between bidder's and target's *Ln (B/M)* and then scale this spread by the bidder's within-industry[5] standard

[5] We define industries according to the Fama-French 48 industry classification codes, retrieved from the website of Kenneth French (http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/index.html).

deviation of *Ln (B/M)* for the fiscal year-end prior to the transaction announcement; a higher value of *scaled ΔB/M* is translated as the target having superior growth opportunities. A firm with a higher value of B/M is conceived as having lower growth opportunities.[6] We specifically use this transformed variable since, in our full sample approximately 66% of the transactions involve a bidder with a lower *Ln (B/M)* than its target,[7] and consequently this can lead to a reduced likelihood of encountering a positive value on the second part of our interaction term, thus producing biased results towards negative values. Particularly, the density distribution of the *Ln (B/M)* difference is mostly concentrated to the left hand side of the origin on the *x*-axis with a mean (median) value of -0.236 (-0.232). *ComplFit1* value is high when the source of financial synergy is high; that is the bidder has lower financial constraints while the target has superior growth opportunities (i.e., *scaled ΔB/M* carries a positive value). It is worth noting at this point that the construction of *ComplFit1* as a product of two components represents the financial synergy as a source of value. Hence, it does not capture the difference in individual components (financial constraints or growth opportunities), but their complementary relationship.

Secondly, we construct the variable *ComplFit2* based on the quality of credit rating when both bidding and target firms are rated. *ComplFit2* is similar to *ComplFit1*; it is an interaction variable between the individual components that capture the difference in financial constraints and growth opportunities. The first component *ΔRating* is calculated as the difference between bidder's and target firm's credit rating level. To construct this component we transform the credit ratings into an ordinal scale ranging from 1 to 22, where 22 represents a rating of AAA and 1 represents a rating of D,

[6] M/B is a standard empirical proxy of growth opportunities that has been used in other corporate finance contexts (Rajan and Zingales (1995) and Johnson (2003)).
[7] These findings resemble Andrade, Mitchell and Stafford (2001), who report that 66% of acquisitions involve a bidder with a higher Q than its target firm, and Rhodes-Kropf and Robinson (2008) who show that deals with these characteristics occur roughly 60% of the time.

following Liu and Malatesta (2005) and An and Chan (2008).[8] However, given that in our sample the number of target firms that hold a credit rating is very small (only 431 observations), we use an empirically modelled rating, "pseudo-rating", instead of the real rating held by target firms, in order to obtain a larger sample of rated firms that will allow to have more reliable estimations. In this way, we examine the effect of target's financial constraints as it is measured by an *implicit* credit rating. To derive the equation for calculating the pseudo-rating, we regress target firms' real ratings on factors that are thought to predict ratings. Hence, we follow Kisgen (2006) and use a surrogate model of the form:

$$PseudoRating = 4.5535 + 1.1600Log(TA) - 2.7598Leverage + 4.8821Profitability^{9} \quad (1)$$

Equation (1) has a satisfactory adjusted R^2 of 0.635, roughly similar with the results in Kisgen (2006).[10] Finally, we conduct an out-of-sample calculation for each target firm in our sample, and round up the scores in order to obtain integer values of credit rating levels. After we compute target firms' pseudo-rating levels, we calculate *ΔRating* as the difference between bidder's *real* and target firm's *pseudo* credit rating levels. A higher value of *ΔRating* implies lower financial constraints of the bidder relative to the target firm. In our sample approximately 78% of observations involve a bidder with a higher rating than the target firm. Moreover, the average difference in rating levels between the bidding and target firms is 3 notches. The second component is the *scaled ΔB/M* which is defined as above. *ComplFit2* has a high value when both components are increasing and represents our second measure of the financial synergies created by the complementary fit in financial constraints and growth opportunities

[8] See Appendix A for the correspondence between credit ratings levels and the number of deals for bidders and targets.
[9] The model also includes year- and industry- (Fama-French 48 classification) fixed effects.
[10] The high R^2 should mitigate any concerns about a potential errors-in-variables complication, since the measure for PseudoRating is measured with error.

between the merging firms. Additionally, we create an indicator variable, *Negative Dummy,* taking the value of 1 when both predictor variables in our interaction term are negative, and 0 otherwise. We construct this variable because the combination of high financial constraints bidder (negative *ΔRating*) and low growth opportunities target (negative *scaled ΔB/M*) enters with a positive sign in the interaction *ComplFit2* as by construction two negative numbers are multiplied together. The sign of the coefficient may misrepresent the real impact of our main control *ComplFit2* and therefore we aim to eliminate this bias from our tests.

2.3 *Sample Statistics*

Table 1 presents descriptive statistics for the overall sample and for the investment-grade and speculative-grade bidders sub-samples, respectively. All variables are defined in Appendix B. Panels A and B display statistics for bidding and target firm characteristics. The mean (median) bidder *size* in our sample is \$16,209.280 (\$4,639.001) million. Investment-grade bidders are substantially larger (\$21,083.840 million) than speculative-grade ones (\$3,297.165 million). Moeller, Schlingemann and Stulz (2004) demonstrate that bidder announcement returns are negatively associated with firm size. The mean (median) target firm size is \$2,316.771 (\$443.636) million. Low financial constraints bidders acquire substantially larger firms. Schwert (2000) documents that larger target firms have lower announcement returns.

The mean bidder (target firm) *book-to-market ratio* (B/M) in our sample is 0.427 (0.549). Financially unconstrained bidders seem to have lower B/M ratios. Servaes (1991) shows that bidders with higher B/M ratios enjoy lower announcement returns. Target firms that are taken over by low financial constraints bidders appear to have lower B/M values. Dong et al. (2006) find a positive relation between target firms' B/M and their abnormal returns.

The mean bidder (target firm) *run-up* in our sample is a negative -0.3% (-1.4%). Highly rated bidders experience a lower run-up. Rosen (2006) documents a negative impact of bidder's run-up to acquirer announcement returns. Run-up does not differ significantly between different financial constraints bidders. Schwert (1996) shows that target firm run-up does not exhibit any significant relation with target firm announcement returns.

The mean bidder (target firm) *free cash flow-to-assets* is 0.06 (0.03) in our sample. Low financial constraints bidders seem to have larger mean free cash flow. The inclusion of free cash flow variable is of particular importance for the consistency of our hypotheses, as Myers and Majluf (1984) define financial slack by the amount of cash and liquid assets available to the firm or the ability to issue default risk free debt; having credit rating variables as main variables of interest, it is important to control for free cash flow in our analysis and capture better the theoretical properties of Myers and Majluf's (1984) model. Jensen (1986) argues that high free cash flow leads to empire building takeovers. Additionally, Lang, Stulz and Walkling (1991) demonstrate that bidder free cash flow is negatively related to bidder announcement returns. Smith and Kim (1994) report that target firm free cash flow is positively associated with target firm returns.

The mean bidder (target firm) leverage is 0.278 (0.248) in our sample. Highly rated bidders appear to be less leveraged than low rated ones. Masulis, Wang and Xie (2007) suggest that leverage provides incentives for firm managers to improve firm performance, though managers have to relinquish control to debtors and usually lose their jobs if their firms fall into financial distress. They find a positive link between leverage and bidder stock returns. Target firms acquired by investment-grade bidders appear to be less leveraged. Bauguess, Moeller, Schlingemann and Zutter (2009) show a negative association between target firms' leverage and their abnormal returns.

The mean (median) target firm *sigma* is 0.030 (0.026) in our sample. According to Dierkens (1991) and Moeller, Schlingemann and Stulz (2007), it measures the degree of information asymmetry regarding firm value between firms' management and the market. Highly rated bidders acquire target firms with lower levels of information asymmetry. Officer, Poulsen and Stegemoller (2009) demonstrate that bidder returns are positively associated with target firm's information asymmetry when they use stock as a method of payment.

Panel C provides statistics for deal characteristics. The mean (median) *deal value* in our sample is $3,292.157 million ($642.800 million). Transactions of investment-grade bidders are significantly larger than those of speculative-grade ones.

The mean (median) *relative size* in our sample is 0.356 (0.142). Financially unconstrained bidders acquire smaller firms relative to their size than financially constrained bidders. Fuller, Netter and Stegemoller (2002) report that bidder stock returns are negatively related with the relative size of the target firm in public deals. Officer (2003) finds that target firm stock returns decline with the relative size of the target firm in public acquisitions.

With respect to the method of payment, around 24% of the deals are *cash*-financed, approximately 38% represent *stock* deals and the remaining 38% include *mixed* means of payment. A significantly higher proportion of stock deals are conducted by highly rated bidders than low rated ones. On the other hand, investment-grade bidders make less mixed payments than speculative-grade ones. Travlos (1987) and Fuller et al. (2002) document a negative effect on bidders' announcement returns when they use stock as a method of payment. Huang and Walkling (1987) and Berkovitch and Narayanan (1990) report that target firm returns are lower in stock swap than in cash deals.

Diversifying deals constitute approximately 63% of the entire sample. This percentage does not differ significantly across the two categories of bidders. Campa and

Kedia (2002) and Villalonga (2004) show that after considering the endogenous choice of firms to diversify diversification adds value to firm returns.

Only 5.39% of total deals are *hostile*. Additionally, low financial constraints bidders engage in significantly less hostile offers than high financial constraints ones. Servaes (1991) reports a negative association between hostility and bidder announcement returns. On the other hand, Schwert (2000) documents that hostile offers have a positive effect on target firm announcement returns.

In our sample, 16.86% of the deals comprise *tender offers*. However, we do not find a significant difference between highly rated and low rated bidders. Jensen and Ruback (1983) demonstrate that tender offers have an incremental impact on bidding and target firm stock returns.

Completed deals represent 91% of the total sample. Further, investment-grade bidders appear to go through more successfully with their takeover attempts than speculative-grade ones. Bates and Lemmon (2003) and Billett, King and Mauer (2004) both document that completed deals do not affect bidder returns, however, they are associated with higher target firm returns.

The mean *number of bidders* in our total sample is 1.10. Low financial constraints bidders face a lower degree of competition for the target firm's control than high financial constraints ones. On the one hand, Bradley, Desai and Kim (1988) demonstrate that competition decreases the returns to bidders, whereas it increases the returns to target firms. On the other hand, Servaes (1991) reports an insignificant relationship with bidder returns and a positive with target firm returns.

The mean (median) takeover *premium* in our sample is 40.59% (33.07%). The difference in premiums paid between the two categories of bidding firms does not appear to be significant. The value effects of the complementary fit are measured with 5-day (-2, +2) Cumulative Abnormal Returns (*CARs*). The returns are computed using the market

model with the market model parameters estimated over the period (-240, -41) days before the announcement. The market return is the CRSP equally-weighted index return.[11] *Synergy gain* is defined, following Servaes (1991), as the total shareholder gain and it is computed as the weighted-average abnormal return of the bidder and the target in the event window (-2, +2). The returns are weighted by the market values of the respective firms 4 weeks prior to the acquisition announcement. Mean (median) synergy gain is 1.00% (0.80%) for the full sample. Mean (median) bidder CARs is a negative -1.60% (-1.10%) for the overall sample, while mean (median) target firm CARs is a positive 21.80% (18.00%) for the full sample. Synergy gains, bidder returns and target firm returns do not differ significantly between investment-grade bidders and speculative-grade bidders.

[Please Insert Table 1 About Here]

However, we cannot base our inferences solely on the results of the univariate analysis, as it does not take into account of any confounding effects. First of all, our main hypothesis regarding the financial synergies is derived from the complementary fit of financial constraints and growth opportunities between bidding and target firms, by taking also into consideration the information asymmetry regarding target firm value. Moreover, Moeller et al. (2004) show that bidders' returns are a decreasing function of their size, whereas Schwert (2000) demonstrates the same pattern for target firm returns. Additionally, Wang and Xie (2009) provide evidence that synergy gains and target firm returns are higher in tender offers. Therefore, firm and deal characteristics need to be controlled in order to reveal the net effect of the complementary fit on shareholders' wealth. This cross-sectional regression analysis is presented in the next section. The correlation matrix of the above variables is presented in Table 2. Our main variables of interest – *ComplFit1* and *ComplFit2* – do not exhibit high correlation with

[11] Our results are qualitatively similar when using the CRSP value-weighted index return.

the control variables. This should reduce econometric difficulties (such as multicollinearity concerns) in disentangling any effects of the complementary fit variables from synergy gains as well as bidder and target firm announcement returns.

[Please Insert Table 2 About Here]

3 Empirical Analysis

3.1 *Synergy Gains*

We first investigate the relationship between the complementary fit of bidding and target firms and synergy gains in the context of a multivariate OLS regression analysis by controlling for several bidder-, target-, and deal-specific characteristics. All regressions also control for year fixed effects, whose coefficients are suppressed, and heteroskedasticity-robust standard errors adjusted for bidder clustering due to the presence of repeated acquirers in the sample. Table 3 provides the results. The dependent variable is the 5-day combined firm CARs. The main variable of interest is the *ComplFit1*, which is our first measure of the complementary effect and represents the interaction variable between *investment-grade* and *scaled ΔB/M* as defined above. We also include the *investment grade*, *scaled ΔB/M,* bidder *size*, bidding and target firm *book-to-market*, bidding and target firm *run-up,* bidding and target firm *free cash flow-to-assets,* bidding and target firm *leverage, relative size*, *premium, stock* dummy*, completed* deals dummy, *diversifying* deals dummy*, hostile* deals dummy, *tender offers* dummy and *multiple bidders* dummy. In specification (1) we find a positive and significant (at the 5% level) effect of *ComplFit1* on synergy gains. The magnitude of the coefficient of *ComplFit1* suggests that the complementary fit of bidding and target firms' financial constraints and growth opportunities is associated with 1.09% higher synergy gains, *ceteris paribus*. The signs of the control variables are generally in line with the existing M&A literature.

Myers and Majluf (1984) theory is based on the fundamental role of information asymmetry on firms' financing decisions and their value implications. In particular, their takeover theory assumes that financial synergies generated by the complementary fit of financial constraints and growth opportunities between the bidding and the target firms, mainly exist when the target firm operates under a high information asymmetry environment. To examine this hypothesis we split our sample into high and low information asymmetry targets by using target firm *sigma* to measure the degree of information asymmetry. We expect that the positive relation of *ComplFit1* with synergy returns should be more pronounced for the high *sigma* target firms.[12] Specification (2) contains acquisitions of target firms with higher *sigma* value than the median *sigma* of the target firm's group. Our main variable of interest *ComplFit1* continues to carry a positive and significant (at the 1% level) coefficient. In economic terms this is translated into a 1.95% increase in synergy gains all else equal. Specification (3) contains the low information asymmetry target firms' group. Our main variable of interest *ComplFit1* is insignificant at conventional levels and reinforces our hypothesis that the complementary fit of bidding and target firms should be prevalent under a high information asymmetry environment. Overall, the positive association between *ComplFit1* and synergy gains is driven by the group of acquisitions which involve high information asymmetry target firms.

[Please Insert Table 3 About Here]

Table 4 presents the same analysis as above however, in this case we are using our second measure of the complementary fit, i.e. *ComplFit2*, which is an interaction variable between *ΔRating* and *scaled ΔB/M.* We also include the *ΔRating, scaled ΔB/M, negative* dummy, bidder *size*, bidding and target firm *book-to-market*, bidding and

[12] We also use other measures of information asymmetry like the *number of analysts* following the firm, and the *bid and ask spread* and our results are qualitatively similar throughout the study.

target firm *run-up,* bidding and target firm *free cash flow-to-assets,* bidding and target firm *leverage, relative size*, *premium, stock* dummy*, completed* deals dummy, *diversifying* deals dummy*, hostile* deals dummy, *tender offers* dummy and *multiple bidders* dummy.[13] In specification (1) our main variable of interest *ComplFit2* is positive and significant at the 10% level. When we split the sample into high and low information asymmetry target firms we get significant results in model (2) where *ComplFit2* is positive and significant at the 5% level. In the low information asymmetry group (model (3)) our main variable of interest *ComplFit2* is insignificant at conventional levels, a finding that is according with our main conjectures. The signs of the control variables are generally in line with those in the existing M&A literature. In sum, our findings provide support of our hypothesis regarding the positive value effect of the complementary fit between bidding and target firms' financial constraints and growth opportunities and also that this effect is driven by acquisitions with high information asymmetry target firms.

[Please Insert Table 4 About Here]

3.2 *Bidder Returns*

To further examine the value implications of the complementary fit between the bidding and target firms in acquisitions, in this section we investigate its relationship with bidder CARs. Table 5 presents the cross-sectional regression analysis of 5-day bidder CARs on our measures of complementary fit and other control variables. In specifications (1) through (3) we run the regressions by including our first measure of the complementary effect, *ComplFit1,* whereas in specifications (4) through (6) we use our second measure, *ComplFit2*. In specifications (1) through (3) we also add the

[13] In all the regressions that include as main control variable *Complfit2*, we bootstrap the standard errors and the coefficients by running 100 replications, in order to avoid any biased inferences associated with an "generated regressor" problem (Wooldridge (2002)). Since, by construction *Complfit2* includes a generated regressor term (i.e., target firm's pseudo-rating) it can be treated like a generated regressor variable.

investment grade, *scaled ΔB/M,* bidder *size*, bidding and target firm *book-to-market*, bidding and target firm *run-up,* bidding and target firm *free cash flow-to-assets,* bidding and target firm *leverage, relative size*, *premium, stock* dummy*, completed* deals dummy, *diversifying* deals dummy*, hostile* deals dummy, *tender offers* dummy and *multiple bidders* dummy*.* In specification (1) our main variable of interest *ComplFit1* exhibits a positive and significant (at the 5% level) relationship with bidder announcement returns. The impact of *ComplFit1* on bidder returns appears to have a strong economic significance as it is related with a 1.18% increase *ceteris paribus*. The signs of the other control variables are generally in line with those in the existing M&A literature. In specifications (2) and (3) we follow the same method as in the analysis of synergy gains and split the sample into high and low information asymmetry target firm groups. In specification (2), for high information asymmetry target firms, our main variable of interest continues to have a positive and significant (at the 1% level) coefficient. In economic terms this is translated into a 1.86% increase all else equal. Nevertheless, in specification (3), for low information asymmetry target firms, we are not able to find any significant relationship at conventional levels. These results demonstrate that the positive complementary effect in the overall sample is driven by the high information asymmetry target firm, which provides further support to our story about the differential complementary impact of bidders and targets' financial constraints and growth opportunities on bidder returns for target firms with different levels of information asymmetry reinforcing the theoretical predictions of Myers and Majluf (1984).

In specifications (4) through (6) we use *ComplFit2* as our main variable of interest and also include the *investment grade*, *scaled ΔB/M*, *negative* dummy, bidder *size*, bidding and target firm *book-to-market*, bidding and target firm *run-up,* bidding and target firm *free cash flow-to-assets,* bidding and target firm *leverage, relative size*,

premium, stock dummy*, completed* deals dummy, *diversifying* deals dummy*, hostile* deals dummy, *tender offers* dummy and *multiple bidders* dummy. In specification (4) *Complfit2* carries a positive and significant coefficient at the 5% significance level. When we partition the sample into high and low information asymmetry target firm groups we find that in the high information asymmetry group (specification (5)) our main variable of interest carries a positive coefficient that is statistically significant at the 5% level. In model (6), for low information asymmetry target firms, we are not able to find any significant relation between our main variable of interest and bidder announcement returns. Furthermore, in all our models *ΔRating* carries a positive and significant coefficient, consistent with the results of Billett et al. (2004). All other control variables have generally signs in line with the M&A literature. In summary, our findings from both *Complfit1* and *Complfit2* support our main hypothesis of value creation in complementary acquisitions in terms of bidders and targets' financial constraints and growth opportunities in which the target operates in a high information asymmetry environment.

[Please Insert Table 5 About Here]

3.3 *Target Firm Returns*

Finally, in order to draw the entire picture of the value effects created by the complementary fit impact, in this section we examine its relationship with target firm CARs. Table 6 presents these results. As in the analysis of bidder returns, in specifications (1) through (3) we run the regressions by including our first measure of complementary fit, *ComplFit1* whereas in specifications (4) through (6) we use our second measure, *ComplFit2*. In none of the models (1) through (3) we are able to find any significant association of *Complfit1* with target firm returns. In our second set of regressions (models (4) through (6)), again we do not find a positive association. In fact,

we find a negative relation between *ComplFit2* and target firm returns in all these three models at conventional levels. The non-positive relationship between the complementary effect and target firms returns implies that bidders avoid overpayment.[14] This result can be attributed to the fact that these target firms have high growth opportunities and a strong potential for generation of future income; nevertheless, due to their financially constrained position, they encounter problems in accessing credit markets when they are in need to fund their future investment projects. Given this lack on investment capital, their investment opportunities might be left unexploited and their growth potential might never materialize. Hence, it comes naturally for target firms to start seeking for bidding candidates without demanding high premiums, since in this way it is likely they will be able to participate in the combined firm's future growth. Indeed, Myers and Majluf (1984) specifically comment on the options of target firms; that is to forgo the investment opportunity or to start seeking for a merger with a cash-rich firm. Collectively, our findings for synergy gains and bidding and target firm returns support Myers and Majluf (1984) theoretical propositions for the financial synergies created by the complementary effect in financial constraints and growth opportunities of bidding and target firms.

[Please Insert Table 6 About Here]

4. Robustness Checks

4.1 *Endogeneity Control*

In our main analysis we treated the *ComplFit1* variable as exogenous to our model; that is the level of the complementary effect is randomly allocated across our sample firms. However, *ComplFit1* is an interaction variable with the first term being a credit rating variable. In that respect, Liu and Malatesta (2005), and An and Chan

[14] In unreported regression results we find that both *ComplFit1* and *ComplFit2* are negatively related with the premium paid to target firm shareholders.

(2008) argue that firms determine, at least partially, whether to obtain a higher rating level after considering the benefits against the potential costs. Therefore, it is likely that the decision to have a high credit rating is based on firm specific characteristics and failure to account for that would lead to biased estimates for the effect of *ComplFit1* in our regressions, since it is rational to expect that the interaction variable would also be endogenous.

To test this hypothesis in the case of *ComplFit1*, we use an instrumental variables (2SLS) method, with two potential endogenous variables *Investment-Grade* and *ComplFit1;* the *Investment-Grade* and *ComplFit1* choice equations represent the reduced form, and the firms' returns equations represent the structural form. Although our first stage regressions represent limited dependent variables, the coefficient estimates from the first stage linear probability models that are used in the 2SLS method are still consistent and can be used to uncover any endogeneity bias in our data (Heckman (1978) and Heckman and Robb (1985)).[15]

In order to determine the probability of a bidder holding a high rating, we follow Liu and Malatesta (2005), Faulkender and Petersen (2006) and An and Chan (2008) and use variables that have been proposed to account for this probability. Specifically, it has been suggested that a firm is more likely to obtain a high rating if it has more tangible assets, it is older, and it operates in an industry with low default probabilities. Therefore, we use: the ratio of firm's property, plant and equipment to total assets as a proxy for tangibility; the number of years the firm is covered on COMPUSTAT to capture the age effect; and the average credit rating level of firms in the same 3-digit industry to control for the existence of low default risk when firms operate in high credit quality industries. Since we have two potential endogenous variables, the *investment-*

[15] We do not account for the endogeneity of *ComplFit2*, since by construction this variable already contains a generated regressor term; by trying to measure *ComplFit2* with instruments and get the fitted values from the first stage regression will introduce a multiple errors-in-variables problem, resulting in a noisy estimate.

grade and *ComplFit1* that are interrelated by construction, we use the above variables as instruments for *investment-grade*, and the same variables multiplied by *scaled ΔB/M* as instruments for *ComplFit1*.

Table 7 presents the results of this analysis. In specifications (1) and (2) we report the first stage regression estimates for the prediction of *investment-grade* and *ComplFit1.* In model (1) we find that from the included instruments, bidder *age* and bidder *industry level* are significant and carry coefficients with the expected sign. Moreover, the Adjusted-R^2 from the first stage regression indicates that the model can explain up to 52% of the choice in *investment-grade*. In model (2) we find that all the included instruments exhibit a significant association with our main variable of interest *ComplFit1*. Furthermore, the Adjusted-R^2 from the first stage regression indicates that the model can explain up to 79% of the choice in *ComplFit1*. In the structural regressions (3) and (5) we are not able to establish any significant relation of our main control variable with the announcement returns. In specification (4) there is a positive and significant relationship of *ComplFit1* with bidder CARs.[16]

For sensitivity reasons, in the lower part of Table 7 we present the Wu-Hausman (WH) (Wu (1974) and Hausman (1978)) test of endogeneity and its corresponding F^1 values. In fact, when we examine the WH test values, the main variable of interest *ComplFit1* seems exogenous in all of our models, and therefore we can base our inferences in the results of the OLS regressions in tables 3, 5 and 6. Finally, we also report the Sargan (1958) test for instruments validity to disentangle any concerns that our results are biased due to inappropriate instruments. From the examination of the Sargan test values, we are not able to reject the null of instruments validity in any of

[16] It is worth noting that since we employ instruments to measure *Complfit1*, by construction the coefficients of *Complfit1* in the 2SLS regressions exhibit higher standard errors (i.e., loss in efficiency) than the regressions which do not account for endogeneity. Therefore, it is likely in some cases the *Complfit1* to appear less statistically significant at conventional levels. In support to this argument, it appears that the relatively lower significance sources from the higher standard errors given that the coefficients of the main variable of interest in the structural regressions (3) and (4) have roughly similar magnitudes to the ones of our main results in Tables 3 and 5.

our structural regressions; hence, we can conclude that our results are not driven by any misspecification, since our instruments do not appear to be related with the announcement returns in our structural regressions.

[Please Insert Table 7 About Here]

5. Conclusion

This study examines the complementary impact of both bidding and target firm financial constraints and growth opportunities on acquisition returns. Our findings corroborate our hypotheses regarding the financial synergies created when information for target firms is limited, and combinations between slack rich bidders and slack poor target firms with high growth opportunities are formed. The evidence on this paper demonstrates that M&As reduce underinvestment, with a direct implication the value creation of the merging parties. We are able to show that the market values favorably the complementary acquisitions during the period surrounding their announcement as we find that both synergy gains and bidder announcement returns increase. We do not find that the complementary effect increases target firm returns, and we attribute this finding to the fact that target firms with growth opportunities are inclined to be sold to bidders with sufficient funds for investments in order to participate in the combined firm's future growth, even if the price is lower.

Additionally, our results enhance our understanding on the literature of Q theory of takeovers, by showing that the market reacts favorably on mergers where a bidder with limited growth opportunities acquires a high growth opportunities target, contrary to the conventional wisdom. Furthermore, our findings have strong economic significance and are robust even after accounting for endogeneity bias on the decision to obtain a high rating level. Finally, our results offer further insights on the role of the credit ratings on the quality of investments - specifically on acquisitions.

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Appendix A. Credit Rating Levels and Number of Deals

Credit ratings are from COMPUSTAT and represent the Standard & Poor's (S&P) long-term domestic issuer credit ratings. Number of deals is the number of acquisitions for each bidder and target real credit rating level one month prior to the acquisition announcement.

Credit Rating Level	Number of Deals (Bidders)	Number of Deals (Targets)
D	-	-
C	-	-
CC	-	-
CCC-	-	-
CCC	1	1
CCC+	5	2
B-	18	11
B	27	16
B+	75	52
BB-	99	49
BB	67	43
BB+	64	35
BBB-	119	38
BBB	181	52
BBB+	132	35
A-	149	29
A	174	33
A+	87	19
AA-	43	9
AA	33	5
AA+	5	2
AAA	20	-

Appendix B. Variable Definitions

Variable	Definition
	Panel A: Measures of Abnormal Returns
Synergy Gain (-2, +2)	Synergy gain is defined as the total shareholder gain and it is computed as the weighted-average abnormal return of the bidder and target in the event window (-2, +2). The returns are weighted by the market values of the respective firms 4 weeks prior to the announcement. CARs are computed using daily data with a market model (equally-weighted CRSP index is the benchmark). The market model is estimated over the period starting 240 days to 41 days before the announcement date.
Bidder CARs (-2, +2)	Cumulative abnormal return of bidding firm stock in the 5-day event window (-2, +2) where 0 is the announcement day. The returns are computed using the market model with the market model parameters estimated over the period (-240, -41) days before the announcement. The market returns is the CRSP equally-weighted index return.
Target CARs (-2, +2)	Cumulative abnormal return of target firm stock in the 5-day event window (-2, +2) where 0 is the announcement day. The returns are computed using the market model with the market model parameters estimated over the period (-240, -41) days before the announcement. The market returns is the CRSP equally-weighted index return.
	Panel B: Complementary Fit Variables
ComplFit1	Investment-Grade x Scaled ΔB/M.
ComplFit2	ΔRating x Scaled ΔB/M.
Investment Grade	Dummy variable: 1 for investment grade bidders (above BBB-), 0 for speculative grade bidders for deals that involve unrated targets.
ΔRating	Difference in Credit Rating Levels between the bidder and the target.
Scaled ΔB/M	Difference in Ln(B/M) between the bidder and the target divided by the standard deviation of bidder's industry Ln(B/M) at the fiscal year-end prior to the acquisition announcement. Industries are defined according to the Fama-French 48-industry classification.
	Panel C: Firm Characteristics
Size	Firm market value of equity 4 weeks prior to the acquisition announcement from CRSP in US$ million.
Book-to-Market (B/M)	Book value of equity divided by market value of equity at the fiscal year-end prior to the acquisition announcement. Book and market value of equity is from COMPUSTAT.
Run-Up	Market-adjusted buy-and-hold returns of the firm over the period starting (-205, -6) days prior to the acquisition announcement from CRSP.
Sigma	The standard deviation of the value-weighted market adjusted residuals of the target firm daily stock returns measured during the period starting 205 and ending 6 days prior to the takeover announcement from CRSP.

FCF to Assets	Income before extraordinary items plus depreciation minus dividends on common and preferred stock divided by the total assets at the fiscal year-end immediately prior to the announcement from COMPUSTAT.
Leverage	Firm total financial debt (long-term debt plus debt in current liabilities) divided by the book value of total assets in the fiscal year-end prior to the acquisition announcement from COMPUSTAT.
	Panel D: Deal Characteristics
Relative Size	The ratio of the deal value to bidder market value of equity 4 weeks prior to the acquisition announcement from CRSP in US$ million.
Cash Deals	Dummy variable: 1 for deals entirely financed with cash, 0 otherwise.
Stock Deals	Dummy variable: 1 for deals entirely financed with stock, 0 otherwise.
Mixed Deals	Dummy variable: 1 for deals where consideration is neither all-cash nor all-stock, 0 otherwise.
Diversifying Deals	Dummy variable: 1 for inter-industry transactions, 0 for intra-industry transactions. Industries are defined at the 4-digit SIC level from Thomson Financial SDC.
Hostile Deals	Dummy variable: 1 for deals defined as "hostile" or "unsolicited" by Thomson Financial SDC, 0 otherwise.
Tender Offers	Dummy variable: 1 for tender offers from Thomson Financial SDC, 0 otherwise.
Completed Deals	Dummy variable: 1 for deals that terminate successfully from Thomson Financial SDC, 0 otherwise.
Takeover Premium	The difference between the offer price and the target stock price 4 weeks prior to the takeover announcement divided by the latter from Thomson Financial SDC; values beyond the range of [0,2] are winsorized following Officer (2003).
Number of Bidders	The total number of bidders entering the contest from Thomson Financial SDC.
Multiple Bidders	Dummy variable: 1 if more than one bidders enter the contest, 0 otherwise.
	Panel E: Instrumental Variables
Tangibility	The ratio of firm's property, plant and equipment to total assets at the fiscal year-end immediately prior to the acquisition announcement from COMPUSTAT.
Age	The number of years the firm is covered in COMPUSTAT at the acquisition announcement year.
Industry Rating	The firm's 3-digit SIC industry average credit rating level at the fiscal year-end immediately prior to the acquisition announcement from COMPUSTAT.

Table 1

Sample Descriptive Statistics

The table presents descriptive statistics for a sample of US public acquisitions announced over the period between January 1, 1996 and December 31, 2009 drawn from the Thomson Financial SDC Mergers and Acquisitions Database. Panels A, B and C describe the mean, median and number of observations for bidder- target, and deal-specific characteristics, respectively, for the overall sample as well as for investment-grade and speculative-grade bidders. Credit ratings represent the Standard & Poor's (S&P) long-term domestic issuer credit ratings from COMPUSTAT. Stock price data is from CRSP, accounting data is from COMPUSTAT. All variables are defined in Appendix B. Statistical tests for differences in means and equality of medians for each characteristic of investment-grade versus speculative-grade bidders are also presented in parentheses. The symbols ***, ** and * denote statistical significance at the 1%, 5%, and 10% levels.

	All Sample (1)			Investment-Grade (2)			Speculative-Grade (3)			Difference (2)-(3)	
	Mean	Median	N	Mean	Median	N	Mean	Median	N	(p-value) Mean	(p-value) Median
Panel A: Bidder Characteristics											
Bidder Size	16,209.280	4,639.001	1,299	21,083.840	7,181.664	943	3,297.165	1,356.262	356	(0.000)	(0.000)
Bidder B/M	0.427	0.386	1,287	0.405	0.384	935	0.484	0.392	352	(0.000)	(0.695)
Bidder Run-Up	-0.003	-0.045	1,283	-0.041	-0.054	936	0.102	-0.026	347	(0.000)	(0.278)
Bidder FCF/Assets	0.060	0.057	1,258	0.063	0.055	909	0.052	0.061	349	(0.023)	(0.345)
Bidder Leverage	0.278	0.244	1,281	0.230	0.221	929	0.404	0.388	352	(0.000)	(0.000)
Panel B: Target Characteristics											
Target Size	2,316.771	443.636	1,204	2,764.505	543.195	878	1,110.913	272.105	326	(0.000)	(0.000)
Target B/M	0.549	0.473	1,153	0.533	0.469	844	0.593	0.501	309	(0.037)	(0.378)
Target Run-Up	-0.014	-0.092	1,176	0.003	-0.093	867	-0.060	-0.087	309	(0.365)	(0.643)
Target Sigma	0.030	0.026	1,204	0.028	0.024	879	0.036	0.032	325	(0.000)	(0.000)
Target FCF/Assets	0.033	0.051	1,125	0.037	0.044	821	0.021	0.062	304	(0.142)	(0.001)
Target Leverage	0.248	0.215	1,032	0.234	0.207	753	0.287	0.247	279	(0.000)	(0.141)
Panel C: Deal Characterisitcs											
Deal Value	3,292.157	642.800	1,299	3,868.946	769.303	943	1,764.314	374.401	356	(0.000)	(0.000)
Relative Size	0.356	0.142	1,299	0.272	0.100	943	0.589	0.374	356	(0.000)	(0.000)
% Cash Deals	24.403	-	1,299	24.708	-	943	23.596	-	356	(0.677)	-
% Stock Deals	37.721	-	1,299	39.554	-	943	32.865	-	356	(0.027)	-
% Mixed Deals	37.875	-	1,299	35.737	-	943	43.540	-	356	(0.010)	-
% Diversifying Deals	63.356	-	1,299	66.278	-	943	31.742	-	356	(0.166)	-
% Hostile Deals	5.389	-	1,299	4.348	-	943	8.146	-	356	(0.007)	-
% Tender Offers	16.859	-	1,299	17.285	-	943	15.730	-	356	(0.505)	-
% Completed Deals	90.685	-	1,299	93.320	-	943	83.371	-	356	(0.000)	-
% Takeover Premium	40.594	33.065	1,200	40.350	33.040	878	41.258	33.330	322	(0.675)	(0.896)
Number of Bidders	1.100	-	1,299	1.080	-	943	1.138	-	356	(0.021)	-
Synergy Gain (-2, +2)	0.010***	0.008***	1,203	0.008***	0.006***	878	0.017***	0.017***	325	(0.049)	(0.042)
Bidder CARs (-2, +2)	-0.016***	-0.010***	1,299	-0.014***	-0.009***	943	-0.022***	-0.016***	356	(0.091)	(0.220)
Target CARs (-2, +2)	0.218***	0.180***	1,203	0.230***	0.190***	878	0.188***	0.156***	325	(0.008)	(0.011)

Table 2

Variables Correlation Matrix

The table presents pair-wise correlations of the variables. The sample consists of US public acquisitions announced over the period between January 1, 1996 and December 31, 2009. All variables are defined in Appendix B.

	ComplFit1	ComplFit2	Bidder Size	Bidder B/M	Bidder Run-Up	Bidder FCF/Assets	Bidder Leverage	Target B/M	Target Run-up	Target FCF/Assets	Target Leverage	Relative Size
ComplFit1	1.000											
ComplFit2	0.762	1.000										
Bidder Size	-0.089	-0.040	1.000									
Bidder B/M	0.229	0.163	-0.313	1.000								
Bidder Run-Up	0.008	0.012	0.086	-0.108	1.000							
Bidder FCF/Assets	-0.064	-0.063	0.225	-0.036	-0.024	1.000						
Bidder Leverage	0.092	0.036	0.047	-0.043	0.003	0.002	1.000					
Target B/M	-0.406	-0.388	-0.290	0.329	-0.113	-0.120	-0.018	1.000				
Target Run-Up	-0.071	-0.027	0.064	-0.040	0.146	0.052	-0.017	-0.041	1.000			
Target FCF/Assets	-0.001	-0.024	0.195	-0.073	0.040	0.323	0.125	-0.035	0.049	1.000		
Target Leverage	0.103	0.165	0.118	0.039	-0.014	0.097	0.400	-0.082	-0.008	0.044	1.000	
Relative Size	0.180	0.123	-0.166	0.196	-0.038	-0.055	0.086	-0.001	-0.013	0.051	0.138	1.000
Stock Deals	-0.067	-0.027	0.061	-0.113	0.084	-0.102	-0.111	-0.041	-0.015	-0.074	-0.160	-0.004
Diversifying	-0.016	-0.022	-0.047	0.009	-0.009	-0.018	-0.008	-0.018	-0.049	-0.009	-0.015	-0.020
Hostile Deals	0.014	0.005	0.068	0.006	-0.017	0.028	0.053	0.032	-0.018	0.053	0.053	0.084
Tender Offers	0.005	-0.038	0.152	0.011	-0.037	0.055	0.020	0.035	0.057	0.005	0.012	0.035
Completed	-0.078	-0.086	0.046	-0.027	0.042	0.030	-0.062	-0.018	0.003	-0.005	-0.043	-0.137
Premium	-0.097	-0.144	-0.082	-0.023	0.132	-0.010	-0.068	0.141	-0.001	-0.093	-0.050	-0.045
Multiple Bidders	0.083	0.049	0.086	0.009	-0.018	0.024	0.046	0.048	0.092	0.054	0.051	0.081
Synergy Gain	0.072	0.044	-0.157	0.203	-0.134	-0.008	0.046	0.113	-0.026	0.058	0.043	0.142
Bidder CARs	0.033	0.006	-0.177	0.099	-0.052	-0.079	0.014	0.123	0.003	-0.022	0.032	0.075
Target CARs	-0.152	-0.197	0.042	-0.021	-0.015	0.030	-0.079	0.131	-0.062	-0.020	-0.067	-0.139

	Stock Deals	Diversifying	Hostile Deals	Tender Offers	Completed	Premium	Multiple Bidders	Synergy Gain	Bidder CARs	Target CARs
Stock Deals	1.000									
Diversifying	0.002	1.000								
Hostile Deals	-0.035	-0.001	1.000							
Tender Offers	-0.133	0.013	0.175	1.000						
Completed	-0.066	-0.017	-0.402	-0.054	1.000					
Premium	-0.038	0.007	0.022	0.112	0.004	1.000				
Multiple Bidders	-0.024	-0.008	0.358	0.174	-0.305	0.037	1.000			
Synergy Gain	-0.158	-0.044	0.061	0.123	-0.017	0.061	0.023	1.000		
Bidder CARs	-0.032	0.020	-0.027	-0.005	-0.008	-0.043	-0.032	0.854	1.000	
Target CARs	-0.136	0.003	0.011	0.204	0.065	0.592	-0.065	0.307	0.102	1.000

Table 3

Cross-Sectional Regression Analysis (OLS) of Synergy Gains on the Complementary Fit of Bidding and Target Firms

The table presents the results of the cross-sectional OLS regression analysis of the synergy gains on the complementary fit of debt capacity and growth opportunities between bidding and target firms and other bidder, target-, and deal- characteristics for a sample of US public acquisitions over the period 1996-2009. We also split the overall sample of acquisitions into deals that involve high and low information asymmetry targets. High (Low) information asymmetry target firms are the ones with higher (lower) *sigma* values than the median *sigma* of the target firms in the sample. See Appendix B for definitions of the variables. All regressions control for year fixed effects whose coefficients are suppressed. The symbols ***, ** and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. The t-statistics reported in parentheses are adjusted for heteroskedasticity and bidder clustering. N denotes the number of observations.

	Synergy Gains		
	All Sample	High Information Asymmetry	Low Information Asymmetry
	(1)	(2)	(3)
Constant	0.0550	0.1050**	0.0419
	(1.61)	(2.16)	(1.02)
ComplFit1	0.0109**	0.0195***	-0.0148
	(2.05)	(2.80)	(-1.07)
Investment-Grade	0.0080	0.0186	-0.0089
	(0.91)	(1.42)	(-0.66)
Scaled ΔB/M	-0.0066	-0.0065	0.0043
	(-1.23)	(-1.05)	(0.27)
Ln (Bidder Size)	-0.0055**	-0.0114***	0.0007
	(-2.08)	(-2.70)	(0.21)
Bidder B/M	0.0100	-0.0170	0.0345
	(0.63)	(-0.72)	(1.61)
Bidder Run-Up	0.0037	0.0034	0.0220
	(0.50)	(0.34)	(0.70)
Bidder FCF/Assets	-0.0059	-0.0610	0.0483
	(-0.12)	(-0.92)	(0.48)
Bidder Leverage	-0.0170	-0.0345	-0.0145
	(-0.74)	(-0.96)	(-0.34)
Target B/M	0.0024	0.0061	-0.0197
	(0.21)	(0.47)	(-0.83)
Target Run-Up	0.0018	0.0029	-0.0251
	(0.82)	(1.33)	(-1.39)
Target FCF/Assets	0.0254	0.0122	0.1481**
	(1.40)	(0.67)	(2.36)
Target Leverage	0.0172	0.0202	0.0186
	(1.10)	(0.82)	(0.89)
Premium	0.0002**	0.0002*	0.0003
	(2.02)	(1.75)	(1.33)
Relative Size	0.0221	0.0062	0.0430***
	(1.38)	(0.26)	(2.63)
Stock Dummy	-0.0190***	-0.0217**	-0.0084
	(-3.20)	(-2.35)	(-0.96)
Completed	-0.0101	-0.0065	-0.0470*
	(-0.53)	(-0.29)	(-1.86)
Diversifying Deals	-0.0026	0.0042	-0.0115
	(-0.45)	(0.48)	(-1.57)
Hostile Deals	0.0056	-0.0071	0.0064
	(0.30)	(-0.36)	(0.22)
Tender Offers	0.0168**	0.0184*	-0.0001
	(2.44)	(1.75)	(-0.01)
Multiple Bidders	-0.0158	-0.0076	-0.0314
	(-1.08)	(-0.38)	(-1.40)
Observations	560	319	241
Adjusted R^2	0.099	0.092	0.190

Table 4

Cross-Sectional Regression Analysis (OLS) of Synergy Gains on the Complementary Fit of Bidding and Target Firms

The table presents the results of the cross-sectional OLS regression analysis of the synergy gains on the complementary fit of debt capacity and growth opportunities between bidding and target firms and other bidder, target-, and deal- characteristics for a sample of US public acquisitions over the period 1996-2009. We also split the overall sample of acquisitions into deals that involve high and low information asymmetry targets. High (Low) information asymmetry target firms are the ones with higher (lower) *sigma* values than the median *sigma* of the target firms in the sample. See Appendix B for definitions of the variables. All regressions control for year fixed effects whose coefficients are suppressed. The symbols ***, ** and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. The t-statistics reported in parentheses are bootstrapped with 100 replications and are adjusted for heteroskedasticity as also bidder clustering. N denotes the number of observations.

	Synergy Gains		
	All Sample	High Information Asymmetry	Low Information Asymmetry
	(1)	(2)	(3)
Constant	0.0420	0.0075	0.0985***
	(1.57)	(0.20)	(3.08)
ComplFit2	0.0012*	0.0019**	-0.0004
	(1.73)	(1.98)	(-0.29)
ΔRating	0.0005	0.0011	0.0006
	(0.50)	(0.66)	(0.41)
Scaled ΔB/M	-0.0040	-0.0053	-0.0055
	(-0.80)	(-0.58)	(-0.55)
Negative Dummy	-0.0007	-0.0260	0.0360**
	(-0.06)	(-1.37)	(2.47)
Ln (Bidder Size)	-0.0037*	-0.0032	-0.0075***
	(-1.92)	(-1.01)	(-3.31)
Bidder B/M	0.0123	0.0025	0.0327
	(0.79)	(0.12)	(1.63)
Bidder Run-Up	-0.0052	-0.0063	0.0109
	(-0.66)	(-0.66)	(0.63)
Bidder FCF/Assets	0.0221	0.0013	0.0298
	(0.54)	(0.03)	(0.47)
Bidder Leverage	-0.0043	-0.0034	0.0048
	(-0.23)	(-0.13)	(0.16)
Target B/M	0.0051	0.0110	-0.0301
	(0.50)	(0.93)	(-1.26)
Target Run-Up	0.0005	0.0010	-0.0272**
	(0.16)	(0.28)	(-2.05)
Target FCF/Assets	0.0392**	0.0378	0.0774
	(2.17)	(1.43)	(1.58)
Target Leverage	0.0059	0.0091	0.0007
	(0.47)	(0.43)	(0.04)
Premium	0.0002**	0.0002*	0.0003*
	(2.23)	(1.83)	(1.83)
Relative Size	0.0138*	0.0176	0.0058
	(1.91)	(1.40)	(0.74)
Stock Dummy	-0.0089**	-0.0032	-0.0083
	(-2.05)	(-0.36)	(-1.18)
Completed	-0.0114	-0.0001	-0.0237**
	(-1.07)	(-0.01)	(-2.24)
Diversifying Deals	-0.0037	0.0071	-0.0137**
	(-0.79)	(0.91)	(-2.53)
Hostile Deals	0.0006	-0.0020	-0.0067
	(0.05)	(-0.09)	(-0.50)
Tender Offers	0.0264***	0.0303***	0.0196**
	(4.68)	(3.55)	(2.44)
Multiple Bidders	-0.0178**	-0.0132	-0.0207*
	(-2.13)	(-0.86)	(-1.95)
Observations	885	426	459
Adjusted R^2	0.087	0.052	0.145

Table 5

Cross-Sectional Regression Analysis (OLS) of Bidder CARs on the Complementary Fit of Bidding and Target Firms

The table presents the results of the cross-sectional OLS regression analysis of the bidder firm 5-day CARs on the complementary fit of debt capacity and growth opportunities between bidding and target firms and other bidder, target-, and deal- characteristics for a sample of US public acquisitions over the period 1996-2009. We also split the overall sample of acquisitions into deals that involve high and low information asymmetry targets. High (Low) information asymmetry target firms are the ones with higher (lower) *sigma* values than the median *sigma* of the target firms in the sample. See Appendix B for definitions of the variables. All regressions control for year fixed effects whose coefficients are suppressed. The symbols ***, ** and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. The t-statistics reported in parentheses are adjusted for heteroskedasticity and bidder clustering. N denotes the number of observations.

	Bidder CARs			Bidder CARs		
	All Sample	High Information Asymmetry	Low Information Asymmetry	All Sample	High Information Asymmetry	Low Information Asymmetry
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	0.0460	0.0874*	0.0049	0.0190	-0.0108	0.0703*
	(1.31)	(1.81)	(0.09)	(0.70)	(-0.32)	(1.95)
ComplFit1	0.0118**	0.0186***	-0.0156			
	(2.28)	(2.74)	(-0.93)			
Investment-Grade	0.0156*	0.0222*	0.0049			
	(1.73)	(1.73)	(0.32)			
ComplFit2				0.0015**	0.0023**	-0.0007
				(2.19)	(2.18)	(-0.45)
ΔRating				0.0041***	0.0038**	0.0050***
				(3.45)	(2.09)	(2.84)
Negative Dummy				-0.0023	-0.0098	0.0110
				(-0.43)	(-0.94)	(0.84)
Scaled ΔB/M	-0.0020	-0.0075	0.0313	-0.0034	-0.0296	0.0385**
	(-0.39)	(-1.26)	(1.35)	(-0.29)	(-1.49)	(2.09)
Ln (Bidder Size)	-0.0046	-0.0096**	0.0030	-0.0039*	-0.0030	-0.0066**
	(-1.61)	(-2.17)	(0.83)	(-1.74)	(-1.02)	(-2.53)
Bidder B/M	-0.0071	-0.0121	-0.0240	-0.0016	0.0087	-0.0076
	(-0.60)	(-0.50)	(-0.87)	(-0.12)	(0.36)	(-0.27)
Bidder Run-Up	0.0095	0.0069	0.0371	0.0015	0.0005	0.0114
	(1.23)	(0.76)	(0.92)	(0.18)	(0.05)	(0.52)
Bidder FCF/Assets	-0.0109	-0.0443	0.0290	-0.0083	0.0052	-0.0142
	(-0.23)	(-0.65)	(0.25)	(-0.19)	(0.10)	(-0.19)
Bidder Leverage	-0.0028	-0.0275	0.0225	0.0251	0.0084	0.0415
	(-0.10)	(-0.74)	(0.41)	(1.09)	(0.29)	(1.12)
Target B/M	0.0158	0.0074	0.0501*	0.0144	0.0099	0.0131
	(1.55)	(0.60)	(1.66)	(1.60)	(0.83)	(0.48)
Target Run-Up	0.0026	0.0037*	-0.0204	0.0026	0.0025	-0.0046
	(1.27)	(1.76)	(-0.93)	(0.75)	(0.53)	(-0.31)
Target FCF/Assets	0.0049	-0.0027	0.0858	0.0268	0.0329	0.0133
	(0.26)	(-0.15)	(1.18)	(1.39)	(1.18)	(0.25)
Target Leverage	0.0155	0.0285	-0.0047	-0.0056	0.0019	-0.0145
	(0.98)	(1.15)	(-0.21)	(-0.42)	(0.09)	(-0.74)
Premium	0.0000	0.0000	-0.0003	-0.0001	-0.0000	-0.0004**
	(0.11)	(0.44)	(-1.59)	(-1.25)	(-0.31)	(-2.33)
Relative Size	-0.0318**	-0.0452**	-0.0109	-0.0123	-0.0153	-0.0136
	(-2.18)	(-2.16)	(-0.56)	(-1.53)	(-1.09)	(-1.44)
Stock Dummy	-0.0197***	-0.0269***	-0.0053	-0.0084*	-0.0093	-0.0036
	(-3.27)	(-2.86)	(-0.53)	(-1.82)	(-0.95)	(-0.49)
Completed	-0.0170	-0.0110	-0.0492	-0.0118	0.0019	-0.0287**
	(-0.88)	(-0.48)	(-1.28)	(-1.08)	(0.13)	(-2.26)
Diversifying Deals	-0.0002	0.0058	-0.0066	-0.0005	0.0076	-0.0103*
	(-0.03)	(0.64)	(-0.81)	(-0.11)	(0.92)	(-1.69)
Hostile Deals	-0.0066	-0.0098	0.0008	-0.0069	-0.0109	-0.0076
	(-0.35)	(-0.45)	(0.02)	(-0.64)	(-0.46)	(-0.52)
Tender Offers	0.0154**	0.0146	0.0118	0.0201***	0.0212**	0.0178**
	(2.32)	(1.39)	(1.12)	(3.47)	(2.37)	(2.25)
Multiple Bidders	-0.0085	-0.0014	-0.0241	-0.0142	0.0008	-0.0228**
	(-0.55)	(-0.06)	(-1.13)	(-1.54)	(0.04)	(-2.20)
Observations	560	319	241	885	426	459
Adjusted R^2	0.065	0.109	-0.015	0.081	0.082	0.071

Table 6

Cross-Sectional Regression Analysis (OLS) of Target CARs on the Complementary Fit of Bidding and Target Firms

The table presents the results of the cross-sectional OLS regression analysis of the target firm 5-day CARs on the complementary fit of debt capacity and growth opportunities between bidding and target firms and other bidder, target-, and deal- characteristics for a sample of US public acquisitions over the period 1996-2009. We also split the overall sample of acquisitions into deals that involve high and low information asymmetry targets. High (Low) information asymmetry target firms are the ones with higher (lower) *sigma* values than the median *sigma* of the target firms in the sample. See Appendix B for definitions of the variables. All regressions control for year fixed effects whose coefficients are suppressed. The symbols ***, ** and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. The t-statistics reported in parentheses are adjusted for heteroskedasticity and bidder clustering. N denotes the number of observations.

	Target CARs			Target CARs		
	All Sample	High Information Asymmetry	Low Information Asymmetry	All Sample	High Information Asymmetry	Low Information Asymmetry
	(1)	(2)	(3)	(4)	(5)	(6)
Constant	0.1460	0.2510	0.1578	0.2090**	0.1839	0.2201***
	(1.01)	(1.21)	(1.31)	(2.37)	(1.57)	(3.19)
ComplFit1	-0.0344	-0.0519	-0.0163			
	(-1.44)	(-1.56)	(-0.47)			
Investment-Grade	0.0305	0.1009*	0.0072			
	(0.87)	(1.87)	(0.21)			
ComplFit2				-0.0071**	-0.0067*	-0.0060**
				(-2.57)	(-1.66)	(-2.36)
ΔRating				0.0158***	0.0222***	0.0096***
				(4.70)	(4.70)	(2.66)
Negative Dummy				0.0409	0.0482	-0.0304
				(1.60)	(1.25)	(-1.32)
Scaled ΔB/M	0.0328	0.0480	-0.0692	0.0784**	0.0558	0.0748**
	(0.95)	(1.19)	(-1.63)	(2.27)	(1.07)	(2.42)
Ln (Bidder Size)	-0.0050	-0.0225	0.0176*	-0.0080	-0.0109	-0.0020
	(-0.38)	(-1.05)	(1.74)	(-1.16)	(-0.95)	(-0.44)
Bidder B/M	-0.1084	-0.1710*	0.1194**	-0.1011	-0.1453	0.0755
	(-1.48)	(-1.69)	(2.04)	(-1.62)	(-1.64)	(1.63)
Bidder Run-Up	0.0258	0.0370	0.0312	0.0163	0.0271	0.0413
	(0.97)	(1.16)	(0.53)	(0.67)	(0.89)	(1.13)
Bidder FCF/Assets	0.0936	-0.0216	-0.1383	0.0725	-0.0628	0.0962
	(0.46)	(-0.08)	(-0.57)	(0.47)	(-0.29)	(0.71)
Bidder Leverage	-0.0046	0.0694	-0.0964	-0.0306	0.0504	-0.0618
	(-0.05)	(0.51)	(-1.18)	(-0.45)	(0.49)	(-0.97)
Target B/M	0.1580	0.1789	-0.1552*	0.1324*	0.1575*	-0.1013*
	(1.58)	(1.52)	(-1.83)	(1.91)	(1.84)	(-1.67)
Target Run-Up	-0.0152	-0.0148	-0.1305**	-0.0200	-0.0172	-0.1439***
	(-1.39)	(-1.34)	(-2.58)	(-0.76)	(-0.86)	(-4.89)
Target FCF/Assets	0.0454	0.0729	0.1453	0.1064	0.1948**	0.1149
	(0.64)	(0.86)	(1.18)	(1.33)	(1.97)	(1.02)
Target Leverage	0.0075	-0.0093	0.0792	-0.0145	-0.0395	0.0470
	(0.12)	(-0.10)	(1.23)	(-0.29)	(-0.40)	(0.96)
Relative Size	-0.0533	-0.0652	0.0225	-0.0358***	-0.0402	-0.0313**
	(-1.55)	(-1.22)	(0.52)	(-2.65)	(-1.44)	(-2.22)
Stock Dummy	-0.0506**	-0.0361	-0.0518*	-0.0233	-0.0018	-0.0381**
	(-2.00)	(-0.86)	(-1.89)	(-1.46)	(-0.06)	(-2.17)
Completed	0.0535	0.0845	-0.1112	0.0026	0.0118	-0.0111
	(1.22)	(1.49)	(-1.56)	(0.09)	(0.28)	(-0.41)
Diversifying Deals	-0.0090	-0.0281	-0.0045	-0.0128	-0.0162	-0.0150
	(-0.38)	(-0.73)	(-0.18)	(-0.89)	(-0.57)	(-0.91)
Hostile Deals	0.1005	0.0598	0.0015	0.0311	0.0154	-0.0178
	(1.55)	(0.74)	(0.01)	(1.03)	(0.31)	(-0.55)
Tender Offers	0.0722**	0.0894	0.0705*	0.1043***	0.1368***	0.0680**
	(2.12)	(1.65)	(1.79)	(3.78)	(2.97)	(2.54)
Multiple Bidders	-0.0617	-0.0737	-0.0802*	-0.0664***	-0.0980**	-0.0502*
	(-1.58)	(-1.18)	(-1.77)	(-2.77)	(-2.07)	(-1.69)
Observations	577	330	247	908	439	469
Adjusted R^2	0.090	0.093	0.134	0.157	0.154	0.187

Table 7

Endogeneity Control for Credit Rating

The table presents the results of the instrumental variables regression procedure to control for potential endogeneity of ComplFit1 for a sample of US public acquisitions over the period 1996-2009. Specifications (1) and (2) are the reduced regressions. Specification (3) is the structural regression for synergy gains. Specification (4) is the structural regression for bidder CARs. Specification (5) is the structural regression for target CARs. See Appendix B for definitions of the variables. All regressions control for year fixed effects whose coefficients are suppressed. The symbols ***, ** and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. The t-statistics reported in parentheses are adjusted for heteroskedasticity. N denotes the number of observations. The lower part of the table shows the F-test of the WH test for endogeneity, and the χ^2 of the Sargan test for instruments validity with their corresponding p-values in parentheses.

	Reduced	Reduced	Structural	Structural	Structural
	Investment-Grade	ComplFit1	Synergy Gains	Bidder CARs	Target CARs
	(1)	(2)	(3)	(4)	(5)
Constant	-0.6359***	0.5478**	0.0667**	0.0605*	0.1185
	(3.20)	(2.40)	(1.99)	(1.73)	(0.80)
ComplFit1			0.0081	0.0108*	-0.0155
			(1.23)	(1.78)	(-0.66)
Investment-Grade			0.0102	0.0280	-0.0790
			(0.46)	(1.32)	(-0.93)
Scaled ΔB/M	0.1513*	-0.3522	-0.0066	-0.0026	0.0170
	(1.66)	(-1.60)	(-1.19)	(-0.50)	(0.59)
Ln (Bidder Size)	0.0996***	-0.0390**	-0.0066*	-0.0071*	0.0084
	(7.77)	(-2.30)	(-1.79)	(-1.81)	(0.46)
Bidder B/M	-0.0340	-0.2726***	0.0115	-0.0064	-0.0972
	(-0.55)	(-2.76)	(0.74)	(-0.54)	(-1.44)
Bidder Run-Up	-0.1352***	0.0208	0.0046	0.0126	0.0060
	(-3.92)	(0.44)	(0.56)	(1.44)	(0.21)
Bidder FCF/Assets	-0.0226	-0.6036**	-0.0145	-0.0110	0.0535
	(-0.10)	(-2.57)	(-0.30)	(-0.23)	(0.27)
Bidder Leverage	-0.5688***	0.3146***	-0.0153	0.0058	-0.0937
	(-5.01)	(2.69)	(-0.54)	(0.18)	(-0.78)
Target B/M	0.0422	-0.0470	-0.0013	0.0120	0.1581
	(0.92)	(-0.53)	(-0.11)	(1.19)	(1.55)
Target Run-Up	0.0026	-0.0264	0.0019	0.0028	-0.0143
	(0.50)	(-1.63)	(0.91)	(1.47)	(-1.29)
Target FCF/Assets	-0.0127	0.1485	0.0286	0.0080	0.0431
	(-0.13)	(0.89)	(1.62)	(0.44)	(0.63)
Target Leverage	0.0005	0.0385	0.0173	0.0130	0.0363
	(0.44)	(0.37)	(1.14)	(0.84)	(0.59)
Premium	0.0005	-0.0001	0.0002**	0.0000	
	(1.36)	(-0.22)	(2.19)	(0.25)	
Relative Size	-0.1689***	-0.0027	0.0208	-0.0319**	-0.0667*
	(-3.35)	(-0.03)	(1.30)	(-2.21)	(-1.92)
Stock Dummy	-0.0104	0.0659*	-0.0202***	-0.0204***	-0.0467*
	(-0.31)	(1.84)	(-3.42)	(-3.41)	(-1.83)
Completed	-0.0142	0.0212	-0.0143	-0.0220	0.0702*
	(-0.20)	(0.28)	(-0.75)	(-1.13)	(1.72)
Diversifying Deals	0.0112	-0.0286	-0.0019	0.0002	-0.0051
	(0.35)	(-0.87)	(-0.34)	(0.04)	(-0.21)
Hostile Deals	-0.0504	-0.1902	0.0012	-0.0095	0.0975
	(-0.59)	(-0.16)	(0.06)	(-0.52)	(1.55)
Tender Offers	0.0291	-0.0069	0.0174**	0.0163**	0.0842**
	(0.72)	(-0.16)	(2.55)	(2.46)	(2.44)
Multiple Bidders	-0.0809	0.2154***	-0.0166	-0.0089	-0.0729*
	(-1.28)	(2.68)	(-1.16)	(-0.59)	(-1.80)
Bidder Tangibility	-0.0847	-0.3161***			
	(-0.90)	(-3.11)			
Bidder Age	0.0049***	0.0046***			
	(4.45)	(3.42)			
Bidder Industry Rating	0.0469***	-0.0187*			
	(6.21)	(-1.95)			
Bidder Tangibility * Scaled ΔB/M	-0.1165*	-0.6084***			
	(-1.76)	(-4.44)			
Bidder Age *Scaled ΔB/M	-0.0007	0.0141***			
	(-0.86)	(8.15)			
Bidder Industry Rating * Scaled ΔB/M	-0.0078	0.0577**			
	(-1.48)	(2.40)			
N	543	543	543	543	559
Adjusted R^2	0.523	0.790	0.103	0.067	0.067
F-test			0.38	0.29	1.69
WH Test			(0.685)	(0.745)	(0.186)
χ^2			3.98	1.84	2.76
Sargan Test			(0.409)	(0.765)	(0.599)