Fair-Value Adjustments and Debt Contracting*

Aleksander A. Aleszczyk
Emmanuel De George
Aytekin Ertan
Florin Vasvari

First Draft: May 2017

PRELIMINARY AND INCOMPLETE
Please do not quote without permission

Abstract

An acquiring company is required to disclose the allocation of the total purchase price paid for a target to the fair value of the target's individual assets and liabilities. Using a large hand-collected sample of such disclosures provided by non-financial US acquirers, we measure fair-value adjustments (FVAs) of targets' assets and investigate whether these accounting adjustments allow acquirers to increase their debt capacity. The average corporate acquirer reports an increase of 46% (187%) in the value of target's fixed assets (total assets less cash). We document that FVAs are associated with a significant increase in debt issuance of the combined entity during the three-year period after the acquisition. This additional debt is issued at lower interest rates, has longer maturities, and is more likely to be secured. Consistent with the reporting of previously unrecognized asset values allowing acquirers to increase the value of the collateral on their balance sheet, we find that FVAs on tangible assets and positive FVAs are driving the increase in the new levels of debt during the post-acquisition period.

JEL Classifications: M41, G32, G34, G12
Keywords: fair value adjustments, debt contracting, mergers and acquisitions

* All authors are at London Business School. Contact information: London Business School, London NW1 4SA, United Kingdom. Contact emails: aaleszczyk@london.edu, edegeorge@london.edu, aertan@london.edu, and fvasvari@london.edu. We thank Hans Christensen, Chris Higson and Lakshmanan Shivakumar, and brownbag participants at the London Business School for helpful comments and suggestions. Ben Gribble has provided excellent research assistance. Financial support from the LBS RAMD Fund is gratefully acknowledged, and Aleszczyk acknowledges funding from the Economic and Social Research Council. All remaining errors are our own.

1. Introduction

We examine whether reported fair-value adjustments ("FVAs") arising from business combinations affect acquiring firms' subsequent debt issuing activity. FVAs reflect requirements of current accounting rules to record the *fair value* of a target's identifiable assets and liabilities when a merger or acquisition takes place.[1] Such requirements potentially allow the acquiring firm to reflect how the current market conditions affect the assets of the target and hence provide more timely information about these assets' value at the time of the transaction. While FVAs are commonly reported and likely increase the transparency of a target's assets, their effect on acquiring firms' debt financing activities has remained unexplored because of empirical limitations and a lack of data.[2] Our paper attempts to fill this gap by investigating FVAs' impact on the issuance and characteristics of the debt issued during the post-acquisition period.

Due to financial market imperfections that constrain borrowing, borrowing firms need to credibly pledge assets as collateral to improve their access to debt financing (Aghion and Bolton 1992; Hart and Moore 1994).[3] In the context of our setting, a target's assets reported on the balance sheet may be used to assess the availability of collateral by lenders, suggesting that FVAs recorded in acquisitions could be an important determinant of the combined entity's borrowing capacity. Given the inherent conservatism in the accounting for long term productive assets, reported net FVAs are likely to be positive, relaxing the financing constraints of the combined entity if post-acquisition reported collateralizable assets increase relative to the sum of the standalone firms'

[1] US GAAP defines fair value as the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date.
[2] FVA disclosures are included in the acquirer's 10-K after the deal. The disclosures, however, are not standardized, and a breakdown of deal details is not offered by traditional databases.
[3] Gan (2007) and Haselmann, Pistor, and Vig (2009) identify the collateral channel as a key determinant of credit supply. In addition, Cvijanovic (2014) and Campello and Larrain (2016) document that an increase in collateralizable assets translates into an increase in a firm's leverage ratio.

balance sheets. Importantly, auditors serve as monitors in these fair-value measurements, enhancing the credibility of the accounting information provided by acquirers. Consequently, we expect that positive FVAs that write up the value of the target's assets provide additional contracting space for lenders and thus expand the debt capacity of the acquiring firm.

On the other hand, FVAs may simply be irrelevant to lenders since the accounting valuation adjustments required by financial reporting standards after an acquisition do not change the underlying economics of the target's assets. Moreover, lenders with superior information processing abilities (especially banks) should have been able to lend to the target prior to the transaction by performing their own similar valuation adjustments of the target's individual assets and liabilities (Diamond, 1984; Bhattacharya and Chisea, 1995). Therefore, FVAs reported by acquirers might not bring any additional new information to lenders. In addition, given the potential subjectivity surrounding fair value determinations that often rely on unobservable inputs and model assumptions, managers may use discretion for opportunistic purposes when reporting FVAs. For instance, managers might attempt to report higher FVAs and lower goodwill on a transaction to minimize the probability of large goodwill impairment write-offs in the future which reflect acquisition mistakes and can lead to managerial dismissals. Thus, lenders may not view FVAs as credible. Overall, these arguments suggest that the implications of FVAs on the borrowing capacity and the debt issuing behavior of acquiring firms are not clear.

Because we recognize that the decision to undertake a business combination is not exogenous to debt contracting, we limit our empirical analyses only to firms that engage in acquisitions. In other words, by holding the acquisition decision constant, we compare merged entities to one another based on the magnitude of the reported FVAs. We hand-collect information on merger and acquisition transactions in the US over the period between 2001 and 2013. The

manual data collection allows us to identify precisely the FVAs pertaining to each deal as well as to break down the FVAs by each asset type.[4] We require our sample targets and acquirers to be publicly listed, non-financial entities, which results in a final sample of 506 individual deals with available information for our analysis. We measure FVAs as the difference between the reported fair value of the target's assets at the acquisition date less the most recent pre-deal reported book value of assets.[5]

To ascertain the debt contracting implications of FVAs, we first provide descriptive statistics on the magnitude of reported FVAs. We document that FVAs are economically meaningful relative to both the size of the target and to that of the combined entity. On average, FVAs represent a 46% (187%) increase in the target's fixed assets (total assets excluding cash and cash equivalents). FVAs also reflect a 29% increase in the overall asset base of the new consolidated entity. From a debt contracting perspective, such adjustments can increase the borrowing capacity and reduce the leverage ratio, as the upward asset valuation adjustments are typically not accompanied by similar adjustments in the values of the target's liabilities (i.e., there is an increase in net assets).

Our analysis of debt contracting outcomes during the post-acquisition period yields several interesting findings. First, we document that FVAs are associated with greater debt issuance in the post-deal period, consistent with acquirers utilizing the increased debt capacity facilitated by the upward valuation of the target's assets. Economically, a 10% increase in FVAs results in a 6% (2.4%) increase in the cumulative gross (net) debt issuance over the three-year period following

[4] This granularity includes goodwill, other intangible assets and tangible assets.

[5] We mitigate concerns about measurement error given book values are not measured at acquisition date by controlling for the number of days between the target's most recent pre-deal 10-Q and the acquisition date. A larger number of days potentially reflects a higher measurement error.

the deal. Larger gross debt issuance relative to net debt issuance suggests that the acquiring firms are both renegotiating existing debt and issuing additional new debt. We also find that the debt issuance effect increases gradually. While the main effects are meaningful in the fiscal year following the business combination, FVAs are associated with an even larger debt issuance two and three years after the acquisition. These results are consistent with lenders fixating on balance sheet values when establishing the collateralizable asset base of borrowers, and not necessarily contracting on economic values. However, this may not reflect naïve lending but efficient contracting, given that lender might prefer to avoid the cost of employing independent valuations of borrowers' assets. From a borrower's perspective, if borrowers were opportunistic or took advantage of a short-lived borrowing capacity improvement, we would observe a reversal in the years after the deal. However, our findings suggest that acquiring firms reporting high FVAs continue to issue additional debt relative to acquiring firms reporting low FVAs. We further investigate the extent to which lenders rely on FVA information when making lending decisions. We add an additional interaction term capturing the "quality" of the FVAs as proxied by the magnitude of the deal's goodwill. This variable is predicated on the notion that high goodwill balances may allow managers greater opportunity to strategically manage the reported FVAs. Our findings suggest that lenders do use FVA information when providing the debt. Specifically, when FVAs are of lower quality, borrowers are not able to increase net debt issuance over the two and three year period after the transaction.

Second, consistent with our predictions we find at the improvements in debt activities post-acquisition are driven by FVAs related to tangible assets as opposed to intangible assets. These results are in line with the interpretation that accounting plays a certification role for collateral (Berger and Udell 1990), given that assets pledged in credit contracts post-acquisition become

proportionally higher when they are recognized on the balance sheet via FVAs on tangible assets.[6] Further supporting this conclusion, we document that the association between FVAs and the amount of debt issued during the post-deal period is mainly due to the reporting of positive FVAs that reflect asset write-ups and not negative FVAs which capture asset write-downs.

Third, we examine the relation between FVAs and terms of the debt contracts. If FVA-induced asset growth increases debt capacity, the relief in the leverage ratio would lead to a decline in the acquiring firm's cost of debt. We observe a significantly negative association between FVAs and the cost of debt in the post-acquisition period. Quantitatively, a 10% increase in FVAs results in an approximately 14% decline in the post-deal interest expense. In addition, we document modest evidence that acquirers with high FVAs are able to obtain debt at significantly longer maturities (three years after the business combination transaction) and are more likely to issue debt that requires collateral. This latter finding provides additional support consistent with the interpretation that reported FVAs are used to support lenders' collateral requirements.

While the evidence we provide is consistent with our predictions and interpretations, we recognize several alternative explanations and concerns. Chiefly, the assignment of mergers and acquisitions is not necessarily exogenous to debt contracting outcomes—a problem that we sidestep by limiting our attention to an acquisition-only sample. Nevertheless, even within a sample of acquirers, it is possible that high-FVA deals could be inherently different from low-FVA deals in ways that are related to debt contracting, e.g., high growth assets or acquisition synergies. We tackle this problem using a large set of control variables that account for the pre-deal borrowing and operating behavior of the target as well as the acquirer, and proxies for

[6] Note that collateral can be registered and examined by lenders independently. That is why the effect of balance-sheet recognition on lenders' views on the collateralizability of assets is not obvious ex ante.

transaction synergies and growth. We also include in our estimation models industry-year fixed effects, which take into consideration time-invariant industry characteristics, as well as sectoral and macroeconomic trends.

We contribute to the accounting literature on debt contracting by documenting how accounting measurement of assets impacts access to debt markets and shapes debt contracts, a critical economic outcome. While prior work has improved our understanding of how accounting earnings quality matters for debt contracting vis-à-vis a reduction in the agency costs of debt (e.g., Watts and Zimmerman 1978; Leftwich 1981; Biddle and Hilary, 2006; Ball, Bushman, and Vasvari 2008; Beatty, Liao, and Weber, 2008; Bharath, Sunder, and Sunder 2008), there has been relatively little research investigating how specific attributes of balance sheet reporting affects access to the debt market and debt financing.[7] Such an investigation is difficult, given that changes in the firms' balance sheet items are driven by both reporting decisions and economic activities. In our experimental setting, the recognition of FVAs arising from an acquisition transaction offers a straightforward change in the balance sheet values reported in financial statements, incremental to the underlying economics. In this respect, we provide new evidence that asset revaluations affect the amount, cost, and conditions of corporate borrowing.[8] Our findings that reported collateralizable assets containing FVAs can be credibly used in contracting are consistent with Heider and Inderst (2012), who show that, as competition increases, loan officers use only reported items in their credit approval process. Our evidence also complements the findings of Minnis and

[7] A review of the literature by Armstrong, Guay and Weber (2010) argues that there is no evidence on how attributes of the firms' financial reports influence their ability to obtain debt financing.

[8] This conclusion is also consistent with Balakrishnan, Core, and Verdi (2014), who show an increase in accounting quality following an exogenous decline in debt capacity.

Sutherland (2017), who find that financial statements are proactively used to monitor small commercial borrowers.

To our knowledge, we are the first to extensively collect and investigate FVAs for public companies.[9] We not only provide stylized facts as to the economic significance and details of FVAs but also show the role such valuation adjustments play in debt contracting. In particular, this investigation speaks to the literature on accounting for mergers and acquisitions (e.g., Hong, Kaplan, and Mandelker 1978; Collins and Hribar 2002), consolidated financial reporting (e.g., Ronen and Sondhi 1990), and fair value accounting (e.g., Christensen and Nikolaev 2013; Demerjian, Donovan, and Larson 2016) by documenting how the accounting treatment related to the recognition of business combinations can bring additional benefits to the acquirers.

Finally, our findings are relevant to the corporate finance literature. Researchers have shown in various settings that shocks to the set of collateralizable assets enlarge the debt contracting landscape and that borrowers respond to these developments by issuing more debt and increasing investments (Gan 2007). These effects stem from both the lender side (e.g., Haselmann, Pastor, and Vig 2010) as well as the borrower side (e.g., Campello and Larrain 2015) of loan contracting. We complement this work by presenting evidence on the fair value adjustments to balance sheets, highlighting the certifying role of accounting in debt contracting. While the prior conclusions presented in the corporate finance literature mainly apply to a specific group of small/private borrowers, our findings suggest that accounting recognition matters even for otherwise-visible public companies.[10] Our inferences also speak to the research on corporate

[9] Lys and Yehuda (2013) collect FVAs from a proprietary database and find that private targets generate higher synergies.

[10] A great deal of work on shocks to the collateral space, for internal validity reasons, focuses on specific countries (Gan 2007), small firms (Campello and Larrain 2015), or small samples/individual firms (Cvijanovic 2014).

productivity and investment efficiency. Consistent with Rampini and Viswanathan (2010), FVA-induced debt-capacity relief could bring about risk management benefits and render firms more responsive to changes in investment opportunities. Nevertheless, it is important to note that our study is distinct from the bulk of the extant literature on mergers and acquisitions, which tends to focus on the economic, rather than the accounting, aspects of business combinations. For example, in a recent study, Erel, Jang, and Weisbach (2015) argue that acquisitions relieve target firms' financial constraints, whereas our primary conclusion is that *accounting* improvements in the combined entity generate debt capacity relief and debt contracting benefits.

The remainder of the paper is organized as follows. In section 2, we discuss the institutional setting, i.e., accounting requirements for business combinations, and the relevant background literature on debt contracting and financial reporting. In section 3, we describe the data and our empirical methodology. Section 4 presents our main empirical results, and section 5 concludes.

2. Institutional setting and literature

In this section, we first discuss the accounting treatment of mergers and acquisition transactions. We then proceed with a review of the literature on debt financing and links to financial reporting.

2.1. Accounting for M&A transactions

The financial reporting rules that govern business combinations—specifically the measurement of assets purchased and liabilities assumed—were initially covered by SFAS 141 issued in June 2001. SFAS 141 was replaced by a revised standard, SFAS 141R, in December 2008, which resulted from the joint effort by the FASB and IASB to promote international

accounting convergence for business combinations. SFAS 141R is now formally known as ASC Topic 805 after the recent codification of the FASB standards.[11]

SFAS 141R requires firms that engage in a business combination (i.e. a transaction in which the assets acquired and liabilities assumed constitute a business) to use the "acquisition method" accounting. Under this method the acquirer should recognize, separately from goodwill, the identifiable assets acquired, the liabilities assumed, and any non-controlling interest in the target firm at their acquisition date fair values.[12] This includes identifiable internally generated intangible assets that may not have been previously reflected in the book values of the target. The accompanying disclosures prescribed by SFAS 141R are comprehensive. They focus on providing users of the (acquirers') financial statements with sufficient information to evaluate the nature and financial effects of the business combination. As such, acquirers are required to disclose, among other things: (1) the name and a description of the target; (2) the acquisition date; (3) the percentage of voting equity interests acquired; (4) the amount of goodwill recognized (including a qualitative description of any intangible assets that do not qualify for separate recognition); (5) the acquisition-date fair value of the total consideration transferred; and (6) the amount recognized as of the acquisition date (i.e. fair value) for each major class of assets acquired and liabilities assumed. In line with these requirements, firms typically tabulate the acquisition date fair values of identifiable assets and liabilities to provide a reconciliation with the purchase price and the goodwill recognized in the transaction. We present an example of such disclosures in Appendix A.

[11] We use the terms "SFAS 141R" and "ASC Topic 805" interchangeably throughout the paper.
[12] The FASB's primary objective in adopting SAS 141R was "to improve the relevance, representational faithfulness, and comparability of the information that a reporting entity provides in its financial reports about a business combination and its effects" (FASB 2007). Note that further definitions of fair value are covered in ASC Topic 820.

Unfortunately, for our purposes, firms are not required to disclose the step-up from book value at acquisition date, i.e. the fair value adjustment (FVA). Therefore, we approximate the FVA by comparing the reported acquisition-date fair value to the most recent reported book value of the target just before the disclosure of the acquisition transaction. We provide further details on this measurement in the next section.

The switch from SFAS 141 to the "acquisition method" accounting, as defined in SFAS 141R (and ASC Topic 805), involves two significant changes in the accounting for business combinations, each of which warrants further discussion. First, while the "purchase method" accounting under SFAS 141 allocated restructuring and transaction-related costs to the target assets' fair value thus capitalizing these costs, SFAS 141R now expenses them. Consequently, reported fair values were larger pre-2008 relative to post-2008 leading potentially to inflated FVA estimates in the pre-SFAS 141R period. Second, the introduction of SFAS 141R prohibited firms from expensing in-process research and development (IP R&D) expenditures. Instead, it required the determined fair value of the acquired IP R&D to be fully recognized as an indefinite-lived intangible asset, separate from goodwill.[13] Previously, acquiring firms were required to immediately expense the fair value of IP R&D on the acquisition date. Therefore, for business combinations involving IP R&D, the reported fair values post-2008 are likely to be systemically larger than those reported pre-2008. This issue may lead to attenuated FVAs in the pre-2008 period and increases in FVAs post-2008, especially given that the target firms were not able to recognize this internally generated intangible before the business combination transaction. While these two changes have counter-balancing impacts on FVA measurements, in robustness tests we split our results into the pre-2008 and post-2008. We find qualitatively similar results.

[13] We note that Goodwill is also treated as indefinitely-lived asset and subject to impairment tests.

2.2. Literature on the use of financial reports in debt markets

Because creditors rationally anticipate shareholders' incentives to expropriate wealth and increase the riskiness of the borrowing firm's assets (e.g., Jensen and Meckling, 1976; Myers, 1977), they price-protect their debt claims to account for potential losses or monitoring costs and demand protective debt contract terms such as collateral and covenants. Ex ante, these contracting mechanisms resolve the agency conflicts between creditors and shareholders, especially if financial reports are of sufficiently high quality. Broadly speaking, financial reporting plays two major roles in debt markets: valuation and contracting.

In terms of valuation, financial reports reduce the information asymmetry between borrowers and lenders by providing information directly relevant to the pricing of debt securities. The valuation role requires accounting numbers to reflect managers' private and forward-looking information, even if it is not immediately verifiable. In contrast, under the contracting role, financial reports provide performance metrics that can aid lenders to regularly monitor and enforce debt contracts thus contributing to more efficient contracting. This role requires accounting numbers to be more reliable and independently verifiable. Reported FVAs support both the debt contracting and valuation roles of financial reports. FVAs provide updated and timely information about the performance of a target in a business combination (i.e., serve a valuation role) and impact credit metrics used as inputs in debt contracts such as leverage ratios and asset bases that are embedded in covenants and collateral requirements (i.e., serve a contracting role).

A large stream of prior research has identified several attributes of financial reporting associated with the amount of debt issued and its cost. Regarding debt issuance, Bharath, Sunder, and Sunder (2008) examine the choice of public debt versus private bank debt and find that firms with lower earnings quality are more likely to borrow from banks, suggesting that banks are able

to reduce adverse selection costs and lend to firms with lower accounting quality because they have access to private information and superior information processing abilities. Similarly, Florou and Kosi (2015) document firms' preference for public over private debt when accounting quality improves because of the mandated adoption of IFRS. In addition, Ball, Hail and Vasvari (2017) find that non-U.S. firms are more likely to issue public bonds and bonds abroad after cross-listing their equity on a U.S. stock exchange. Their findings are consistent with the notion that listing within in the U.S. offers debt-contracting improvements in terms of transparency and monitoring. Our paper adds to this literature by investigating the role of balance sheet valuation updates via FVAs on debt issuance. We also add to the empirical literature showing that collateral requirements play an important role in credit allocation given that collateral availability is used to select borrowers, ex ante (Jiménez et al., 2006; Berger et al., 2011). In this respect, we examine whether increases in available collateral facilitated by the accounting for business combinations contribute to increased debt financing. Therefore, our empirical evidence ties to the theoretical literature on the availability of collateral and decreases in credit rationing (e.g., Bester, 1985; Chan and Kanatas, 1985; Besanko and Thakor, 1987).

Research examining the link between accounting attributes and the cost of debt is more developed. For instance, extant literature has shown that interest paid by borrowers is negatively related to disclosure quality (Sengupta 1998), accounting quality (Francis et al. 2005; Bharath et al. 2008) and conservatism (Ahmed et al. 2002; Zhang, 2008). The lack of financial statements (Baber and Gore, 2008) or the provision of unaudited financial statements (Minnis 2011) also tends to increase a firm's cost of debt. Our paper is most closely related to the stream of literature that examines the role of *fair value* accounting in debt contracting. While several papers investigate this matter in the context of IFRS (e.g., see De George et al. 2016 for a review), relatively few

studies tackle the issue in the US setting. An exception is Demerjian, Donovan, and Larson (2016), who explore the use of accounting-based covenants in debt contracts following the introduction of SFAS 159, which enabled financial assets and financial liabilities to be fair valued. Utilizing this setting, Demerjian et al. (2016) examine the arguments that fair value estimates lack reliable measurement and have the potential to induce managerial opportunism. The authors find no evidence of a reduction in covenant usage following the introduction of SFAS 159; however, additional analyses reveal that 14.5% of loans *modify* covenant definitions to remove the effects of fair values. Interestingly, and of relevance to the current study, the modifications are effectively isolated to the measurement of liabilities, i.e. the fair value measurement of assets is not something that lenders seem to want to undo.[14] Our efforts complement this work—we examine whether the fair valuation of assets on the balance sheet via business combinations increases the acquirers' borrowing capacity and improves debt terms. Our analysis goes beyond the definition of fair value for financial assets and liabilities by incorporating core tangible and intangible assets that lenders are likely to use as collateral.

3. Research Design and Data

3.1 Research Design

To conduct our analysis of debt contracting outcomes during the post-acquisition period we employ the following regressions framework:

$$Debt\_Outcome_j = \alpha + \beta \times FVA_j + \mathbf{\Gamma} \times Controls + \Sigma \times \text{Ind\_Yr FE}_{kt} + \varepsilon_j \qquad (1)$$

[14] Demerjian et al.'s (2016) inferences are conditional on using contracts including a covenant. Along these lines, Ertan and Karolyi (2017) provide evidence for financial borrowers that balance-sheet covenants that would have based on fair values virtually disappeared from the contracting space.

at the deal level (indexed by *j*), where *Debt_Outcome* is one of the following four debt market outcomes. First, we examine debt issuance, which we define as both gross issuance (*Gross_issuance*) being the amount, in millions of USD, of long-debt issued by the combined entity in the post-acquisition period, and net issuance (*Net_issuance*) measured as the *Gross_issuance* less any repayments of debt during the relevant period. We scale both gross and net debt issuance by total asset base (*TAB*), defined as the sum of target's assets and acquirer's assets as of the quarter immediately preceding the M&A deal. We measure debt issuance over several different time-horizons, e.g., one, two, and three fiscal years following the business combination.

Second, we examine the change in cost of debt, as captured by the change in the implicit interest rate charged on long-term debt from the pre-acquisition period to post-acquisition period (*Change_in_interest*). Specifically, we measure the implicit interest rate as the ratio of interest expense reported for a given fiscal year scaled by beginning-of-year long-term debt. We measure changes in implicit interest rates over several different horizons, i.e., one, two and three fiscal years following the deal.

Third, we capture the nature of new borrowing by the extent of collateralized debt, defined as the change in secured debt for a given time horizon scaled by *total asset base (TAB)*, i.e. the sum of target's assets and acquirer's assets as of the quarter immediately preceding the M&A deal. We measure the change in secured debt over several different horizons in the post-acquisition period, i.e. one, two and three fiscal years following the deal, relative to secured debt at t=0. Note that we include the contemporaneous change in unsecured debt as a control variable when running this analysis. We obtain data on secured and unsecured debt from Capital IQ; we further detail our data sources in Section 3.2.

Our last dependent variable is debt maturity, measured as the change in long-term debt for a given time horizon post-deal, scaled by *total asset base (TAB).* Consistent with other debt outcomes we examine, we measure change in debt maturities over several different post-acquisition time periods, i.e. one, two, and three fiscal years following from the deal relative to t=0. We also include the contemporaneous change in short-term debt as a control variable when we perform this analysis.

We define all dependent variables in detail in Appendix B, while Appendix C provides a timeline indicating when our variables are measured relative to the business combination transaction. All dependent variables enter our regression after winsorization and log transformation to mitigate the effect of outliers.

Our main variable of interest, *FVA,* captures the fair value adjustments made to the target firm's assets and liabilities at the acquisition date for the purposes of consolidating the accounts of the target and the acquiring firm. To accurately compute this amount we would need to observe both the acquisition-date fair values and book values of assets and liabilities. While we are able to collect fair value amounts from the business combination disclosures provided by the acquiring firm, the acquisition-date asset and liability book values of the target remain unobservable. We therefore approximate the acquisition-date book values by relying on the most recent quarterly financial statements released by targets preceding the acquisition. For example, if an acquisition occurs on say April 25, 2009, we take the book value of target's assets and liabilities as at March 31, 2009. Consequently, the FVA computations are then simply the acquisition-date fair values of the target's identifiable assets less the book value of the assets reported by the target in the most

recent preceding fiscal quarter.[15] We employ the FVA on non-cash assets in our main specifications, but also run several sensitivity tests with variants of FVA to isolate the impact of goodwill (e.g., FVA net of goodwill) or pecific asset classes (FVAs related to tangible versus intangible assets).

To isolate the impact of FVAs on our specified debt contracting outcomes, our empirical analysis is limited to a sample of M&A firms only. However, we recognize that several important borrower, deal, and target characteristics may be associated with both FVAs and any changes in the post-acquisition contracting outcomes. Therefore, we include a vector of control variables, $\boldsymbol{\Gamma}$, that account for the borrowing and operating behavior of the target as well as the acquirer, and the economics of the combined entity. Specifically, we include: borrower size (*sales*) measured as total revenue for the fiscal year in which the business combination occurred—i.e., year t=0—which effectively captures total revenue for the combined entity; the book-to-market ratio (*BM*) measured as the ratio of total shareholders' equity to market value for fiscal year t=0; profitability (*profitability*) measured as the ratio of net income to total revenue for year t=0; cash holdings and liquidity (*cash balance*) measured as cash and short term investments as at fiscal year t=0, scaled by total asset base; and indebtedness (*leverage*) measured as long-term debt at fiscal year t=0, scaled by total asset base. This set of control variables accounts for previously documented borrower characteristics associated with debt contracting (e.g., Johnson 2003). Moreover, it is likely that these factors may also be correlated with FVAs, e.g. smaller acquirers may opt for high FVA target; therefore, we include them in our estimation model. While the above variables are measured immediately following the deal, i.e., t=0, we also include contemporaneous measures of

[15] We acknowledge that this measure is imperfect given the likely changes in book values due to day-to-day business activities occurring between the most recent fiscal quarter end and the subsequent acquisition date. However, to the extent that any changes in book values are random across firms, our measure of FVA should be free from bias.

changes in sales, book-to-market and profitability when we estimate our model over the 3-year horizon following the business combination. This ensures we are capturing post-deal changes in the fundamentals that may be unrelated to FVAs.

In addition to borrower entity-level attributes, it is possible that deal characteristics could shape subsequent debt capacity in ways other than, but correlated with, FVAs. To this end, we control for goodwill (*Deal goodwill*) measured as the total amount of goodwill recognized as part of the specific deal scaled by total asset base. We include goodwill as a control variable in order to separate between the consequences of goodwill and non-goodwill, given goodwill is genenerally not seen as part of the collateralizable asset base. We expect that FVA's main effect on debt relief and subsequent debt contracting should be primarily attributable to assets other than goodwill, since these are more easily identified, quantified, and collateralized. We also control for the potential synergies stemming from the M&A by including the cumulative abnormal return of the target and acquirer surrounding the deal announcement (*Deal Announcement CAR*). To the extent that variation in FVAs is simply capturing synergies which may translate into greater cash flows or reductions in risk that lenders may price into future debt deals, we control for this to abstract away from any changes in fundamentals post-deal.

Additionally, we control for the diversification aspect of the deal, with an indicatory variable (*cross-industry M&A*) that equals one if the target's main two-digit SIC industry is different from the acquirer, and zero otherwise. We include this variable given Franco, Urcan, and Vasvari (2016) document a link between corporate industrial diversification and subsequent changes in the cost of debt. We also include two controls to capture pre- and post-acquisition deal activity of the acquirer. First, *M&A_deals_count*—measured as the total number of business combinations undertaken by the acquirer in the given fiscal year—which controls for the acquirer's

propensity to engage in corporate deals in general and also captures any other M&A deals of the firm where FVAs were unobservable. Second, we include an indicator variable (*If_past_debt_issuance*) which is assigned a value of one if long-term debt issuances were greater than long-term debt reductions in the fiscal year prior to the deal, and zero otherwise. This variable captures past borrower behavior in credit markets.

Finally, we also include industry-year fixed effects, which take into consideration time-invariant industry characteristics, as well as sectoral and macroeconomic trends.[16] In particular, this fixed effect structure alleviates the concern that particular years or industry time periods are associated with higher/lower FVAs, e.g. recessionary periods like financial crises being associated with lower FVAs as well as reduced credit supply.

3.2 Data and Summary Statistics

We obtain sample data from several sources. First, we identify mergers and acquisitions from the Thomson Reuters Securities Data Corporation (SDC) Platinum database. Our variable of interest, *FVA*, is intended to capture the fair value adjustment related to target asset and liabilities. For this reason, we select deals between public acquirers and public targets, with a value of $10 million (USD), and resulting in majority (over 50%) ownership of the target. This requirement ensures that acquirers follow business combination accounting requirements (under SFAS 141 and the subsequent SFAS 141R), which prescribe fair value measurement of target assets and liabilities at acquisition date. Our initial screening results in 2,192 public-to-public deals completed between 2001 and 2013. We end our sample period at 2013 to ensure we have up to three years of post-

[16] For example, the recent fluctuations in commodity prices affected the fundamentals of oil & gas companies as well as the market for corporate control. Developments like this can be accounted for by using industry-time fixed effects, but not industry and time fixed effects individually.

acquisition time-series, necessary for our research design. From this broad initial sample, we then exclude firms classified as regulated utilities (sic codes 4900–4999) and those within financial industries (sic codes 6000–6999). We also exclude targets without matching Compustat financial data for the most recent quarter preceding the acquisition date. These procedures result in a reduced sample of 1,100 deals from which we then manually collect transaction related data from the required business combination disclosures within their 10-K.

As discussed in section 2.1, US GAAP requires that firms who undertake business combinations disclose, at a minimum: (1) the name and a description of the target; (2) the acquisition date; (3) the percentage of voting equity interests acquired; (4) the amount of goodwill recognized (including a qualitative description of any intangible assets that do not qualify for separate recognition); (5) the acquisition-date fair value of the total consideration transferred; and (6) the amount recognized as of the acquisition date (i.e. fair value) for each major class of assets acquired and liabilities assumed. The rich disclosure requirements allow us to hand-collect data on the acquisition-date fair values of assets and liabilities, a sample disclosure is shown in Appendix A. In some instances acquirers will only disclose the fair value of *net* assets acquired, or not disclose separately the fair values of individual assets classes (e.g. PPE, intangibles, receivables, inventories, deferred taxes, etc.). We exlcude deals where we are unable to observe the fair value of total assets, goodwill (or bargain purchase price) and total purchase price. We note that since some acquirers disclose assets net of cash, we ensure consistency and deduct cash balance from asset balances and our FVA computation.

As reported in Panel A of Table 1, we are left with 638 deals with non-missing balances of acquired assets, transaction's goodwill, and the purchase price. Finally, we require financial statement data—obtained from Compustat—for the newly consolidated entity for up to three fiscal

years following the deal, which yields a final sample of 506 business combination deals used in our main analysis.[17] Table 1 further details our sample selection procedures.

Panel B and C of Table 1 report the frequency of deals by calendar year and industry (Fama-French 30). We observe a fairly balanced distribution of deals across our sample period, with an uptick in the middle of last decade give the boom (e.g. 67 deals in 2007), and reduction after the financial crisis (23 deals reported in 2009). Using the Fama–French 30 industries classification, acquirers in i) business equipment, ii) personal and business services and iii) healthcare, medical equipment, pharmaceutical products appear most frequent in our sample. Taken together these three industries constitute close to 60% of the total count. This observation is consistent with practitioner reports (e.g., Thomson Reuters and Dealogic M&A Highlights). Overall, despite what appear as restrictive sampling criteria, our final sample is somewhat representative of the entire M&A population.

Table 2 includes the descriptive statistics of our final sample of deals. The absolute FVAs associated with the target's total assets less cash, constitute an average of 187% of the target's assets and 29% of the acquirer's assets, which suggests that valuation adjustments are economically significant. These adjustments could be driven by tangible fixed assets (e.g., property, plant, and equipment, or PPE), current assets (e.g., inventories), goodwill, and non-goodwill intangibles. To the extent we separate out FVAs associated with particular asset classes, we find that FVAs relating to PPE constitute 43% (2.34%) of the target's (acquirer's) assets. One essential condition for FVAs to affect debt contracting is that the target's *net* assets (i.e., assets relative to liabilities) are adjusted upward, resulting in an immediate reduction in leverage and

[17] In supplementary debt structure tests, we also use the Capital IQ Capital Structure database.

expanded asset base on the balance sheet that improves debt capacity and facilitates additional borrowing. While firms tend to take on additional debt as part of funding the business combination which makes leverage reductions difficult to observe, our univariate results speak to a significant increase in the asset base of the combined entity driven by FVAs. We present the distributional properties of our regression variables in Panel B of Table 2, where the average FVA is approximately 19 percent of the *TAB* of the acquirer and target.

We report univariate correlations in Table 3 that provide suggestive evidence consistent with our predictions. Specifically, FVAs are greater for larger deals and when goodwill is significant. Smaller, less profitable, and highly levered acquirers seem to engage in deals with higher FVAs. As for the dependent variables, FVAs has a positive relation with subsequent debt issuance, and even stronger positive (negative) correlations with collateralized credit and debt maturity (interest rates). Other relations suggest that our sample deals are not significantly different from the population of firms—e.g., cash holding and leverage are negatively correlated, while larger firms are comparatively more profitable and engage in acquisitions more frequently (Johnson 1997).

4. Empirical Results

4.1 Debt Issuance

We find consistent results that entities with larger FVAs are significantly more likely to issue debt in the future. As can be seen in Table 4, for *gross issuance*, the FVA coefficient goes up from 0.26 (year 1) to 0.57 (years 1 and 2), and to 0.58 (years 1, 2, and 3) and is robust to the inclusion of contemporaneous controls for sales, book-to-market and profitability (column 5). The documented main effects are economically meaningful. An FVA of 10% corresponds to over a

6% increase in the average gross debt issuance in the three years following the deal. The trends are similar for *net issuance* reported in Table 5. An FVA of 10% corresponds to over a 2.4% increase in the average net debt issuance in the three years following the deal. This finding supports the notion that acquirers do not immediately take advantage of the relief in their debt capacity but spread their debt issuance over time. One explanation may be that lenders are waiting to ensure that FVAs do not reverse in the short-run and represent permanent increase in balance sheet value.

The effect of FVAs on net credit issuance is a real outcome, as the acquiring entity raises additional new debt capital. We also note that the link between FVAs and debt issuance is economically and statistically more significant for *gross issuance*. This finding is consistent with the explanation that acquirers with high FVAs not only issue more new debt than those with low FVAs, but they also tend to be more likely to refinance their existing contracts.

We note that control variables behave consistently with previous literature. For example, small and profitable firms issue more debt following the deal, although the effect of profitability becomes significantly weaker when we examine *net issuance*. Moreover, companies that frequently engage in acquisitions (*M&A deals count*) are also active in issuing debt—likely due to debt-financed acquisitions—both in gross and net terms. A notable exception is pre-deal indebtedness (*leverage*), which has a positive relationship with *gross issuance* post-deal but a negative association with future *net issuance*. A potential explanation for this apparent contrast is that companies with a large amount of debt reduce their net indebtedness and at the same time renegotiate/refinance their existing credit agreements to a significant extent.

To gain further insight into the channel through which FVAs relate to future debt issuance we provide more detailed analysis in Table 6 by decomposing FVA into its three components: Tangible, Intangible (exc. Goodwill), and Goodwill, and by isolating positive versus negative

FVAs. We find at the improvements in debt activities post-acquisition are isolated to the sub-sample reporting positive FVAs and not negative FVAs and those FVAs related to tangible assets as opposed to intangible assets. These results are in line with the interpretation that accounting plays a certification role for collateral (Berger and Udell 1990), given the assets pledged in credit contracts post-acquisition become proportionally higher when they are recognized on the balance sheet via FVAs.

We then turn our attention to the quality of the FVAs given the subjectivity surrounding fair value determinations may allow managers to opportunistically report FVAs. For example, managers might attempt to report higher FVAs and lower goodwill on a transaction to minimize the probability of large goodwill impairment write-offs in the future which reflect acquisition mistakes and can lead to managerial dismissals. We provide insight into whether lenders account for the "credibility" of FVAs by interacting our variable of interest, FVA, with an indicator variable that captures high goodwill, i.e., where the ratio of goodwill to purchase price is in the top tercile of our sample distribution. This variable is predicated on the notion that high goodwill balances may allow managers greater opportunity to strategically manager their FVAs. Our findings, reported in Table 7, suggest that lenders see through this opportunism as the coefficient on the interaction between goodwill magnitude and FVA is negative for net issuance. More importantly, this evidence suggests that lenders do use FVA information when making lending decisions.

4.2 The Cost of Debt

Having shown that acquirers utilize the increased debt capacity facilitated by the upward valuation of the target's assets, we now turn our attention to the examination of the cost of debt. If

high FVAs are expected by sophisticated lenders that understand the valuation of the target's assets, there should be no change in risk premiums. Alternatively, if FVA-induced asset growth increases debt capacity, the higher asset base should lead to a decline in the acquiring firm's cost of debt.

We examine the influence of FVAs on the subsequent changes in the cost of debt (*change in interest*) in Table 8. Our findings indicate that the average interest charged to the acquirer goes down after deals with large FVAs. The coefficient on *FVA* varies between -0.14 and -0.17, suggesting that a 10% increase in FVAs reduces the future interest costs (per dollar of borrowing) by a relative magnitude which is between 14% and 17%. This finding is consistent with reported FVAs potentially increasing the debt capacity of the combined firm by reflecting larger assets on the balance since lenders are willing to accept lower credit risk premiums.

4.3 Collateral and Maturity

While we find that companies with high FVAs issue more and cheaper debt, these findings alone do not explain whether the *design* of the debt contracts may be changing in the post-acquisition period. We explore dimensions of debt structure affected by the changes in the base of collateralizable assets. We first explore whether recognizing higher FVAs in their balance sheets allows acquirers to obtain more secured debt. The ability to pledge greater collateral as a consequence of FVAs provides a potential channel through which our documented issuance and cost of debt effects may operate: by enlarging the base of their recognized pledgable assets, borrowers could obtain more and cheaper financing (Berger and Udell 1990; Campello and Larrain 2015; Calomiris et al. 2016).

Panel A of Table 9 provides support for this narrative. Borrowers that benefit from high FVAs seem to increase secured debt, controlling for contemporaneous changes in unsecured debt. Specifically, the coefficient on *FVA* is positive in all specifications and significant from year 2 onwards—coefficient varying from 0.091 to 0.147. Economically speaking, a 10% increase in FVAs implies an increase in secured debt of approximately 14%. These results suggest that the combined entity prioritizes secured debt that requires collateral and are in line with the argument that accounting plays a certification role for collateral (Berger and Udell 1990) given borrowers in our setting are able to boost their pledged collateral through FVAs recognized on their balance sheets. While lenders could request the registration of the pledged asset or could independently examine and value the collateral on a regular basis, it appears that lenders tend to rely on balance sheet valuations of assets given the certification provided by the audit function.

If lenders deem the balance sheet of the combined entity safer due to the increased asset base resulting from FVAs, they should be willing to provide debt with a longer maturity (e.g., Barclay and Smith 1995). We find evidence consistent with this argument in Panel B of Table 9. Specifically, we find a shift in the maturity structure of corporate debt that is associated with the magnitude of reported FVAs. Economically, FVAs of 10% suggest an increase of 11.8% (19.6%) in long-term debt over the two years (three years) following the deal. This effect does not appear immediately after the deal but strengthens over time, similar to the observed increases in debt issuance.[18]

[18] In untabulated sensitivity tests we redefine FVA to explicitly exclude goodwill and find qualitatively similar results.

5. Conclusions

We examine whether the fair value adjustments (FVAs) of assets arising from business combinations affects firms' borrowing capacity and debt issuance behavior. FVAs reflect requirements of current accounting rules to record the *fair value* of a target's identifiable assets and liabilities when a merger or acquisition takes place. Using a large hand-collected sample of 506 business combination disclosures provided by non-financial US acquirers, we measure fair-value adjustments (FVAs) of targets' assets and investigate whether these accounting adjustments allow acquirers to increase their debt capacity and improve debt contracting terms. We document that FVAs significantly increase the target's assets relative to the book values reported by the target before the transaction in the range of 187% with fixed assets alone increases their value by 46%. Moreover, the average corporate acquirer reports an increase in their pre-deal total assets of approximately 28% related to the FVA of the target assets. From a debt contracting perspective, such adjustments can potentially improve the borrowing capacity by expanding the reported asset values on the balance sheet and reducing the accounting leverage ratio of the combined entity, given upward asset valuation adjustments tend not to be accompanied by similar adjustments in the values of the target's liabilities.

We document that this increased debt capacity allows acquiring firms (with greater FVAs) to issue more and cheaper debt. Specifically, our results indicate that a 10% increase in FVAs results in a 5.7% (2.4%) increase in the cumulative gross (net) debt issuance over the three-year period following the deal, suggesting that the acquiring firms are both renegotiating existing debt and issuing new debt. Consistent with the reporting of previously unrecognized asset values allowing acquirers to increase the value of the collateral on their balance sheet we find that FVAs on tangible assets and positive FVAs are driving the increase in the new levels of debt during the

post-acquisition period. Broadly speaking these findings are consistent with lenders fixating on balance sheet values when establishing the collateralizable asset base of borrowers, and not necessarily contracting on economic values. That said, this may not necessarily reflect naïve lending but efficient contracting, given that lender might prefer to avoid the cost of employing independent valuations of borrowers' assets.

We then turn our attention to examining the conditions of the debt contracts, and find a negative association between FVAs and the cost of debt in the post-acquisition period. Economically speaking, a 10% increase in FVAs results in a significant 14–17% decline in the post-deal interest expense. Finally, we document that acquirers with high FVAs obtain debt at longer maturities and tilt their debt structure towards more secured debt (controlling for contemporaneous changes in unsecured debt). Overall, the recognition of FVAs facilitates more lending from debt providers who demand collateral and rely on publicly available financial statements when making investment decisions.

Our evidence is in line with the idea that the understatement of assets due to conservative accounting could be costly to borrowing entities. To the extent that lenders simply rely on reported numbers in the financial statements, the use of fair values better align reported asset values to their economic value and thus allow firms to borrow at levels closer to their optimal capacities, relative to historical cost. Future research could shed further light on this issue.

References

Aghion, P. and Bolton, P., 1992. An incomplete contract approach to financial contracting. *The Review of Economic Studies*, 59(3), pp.473–494.

Ahmed, A.S., Billings, B.K., Morton, R.M. and Stanford-Harris, M., 2002. The role of accounting conservatism in mitigating bondholder–shareholder conflicts over dividend policy and in reducing debt costs. *The Accounting Review*, 77(4), pp.867–890.

Armstrong, C.S., Guay, W.R. and Weber, J.P., 2010. The role of information and financial reporting in corporate governance and debt contracting. *Journal of Accounting and Economics*, 50(2), pp. 179–234.

Ball, R., Bushman, R.M. and Vasvari, F.P., 2008. The debt-contracting value of accounting information and loan syndicate structure. *Journal of Accounting Research*, 46(2), pp. 247–287.

Barclay, M.J. and Smith, C.W., 1995. The maturity structure of corporate debt. *Journal of Finance*, 50(2), pp.609–631.

Beatty, A., Ramesh, K. and Weber, J., 2002. The importance of accounting changes in debt contracts: the cost of flexibility in covenant calculations. *Journal of Accounting and Economics*, 33(2), pp. 205–227.

Berger, A.N., Frame, W.S., Ioannidou, V., 2011a. Tests of ex ante versus ex post theories of collateral using private and public information. *Journal of Financial Economics* 1, 85–97.

Besanko, D., Thakor, A.V., 1987. Collateral and rationing: sorting equilibria in monopolistic and competitive credit markets. *International Economic Review* 28, 671–689.

Bester, H., 1985. Screening vs. rationing in credit markets with imperfect information. *The American Economic Review* 75, 850–855.

Bhattacharya, S. and Chiesa, G., 1995. Proprietary information, financial intermediation, and research incentives. *Journal of Financial Intermediation*, 4(4), pp.328–357.

Calomiris, C.W., Larrain, M., Liberti, J. and Sturgess, J., 2017. How collateral laws shape lending and sectoral activity. *Journal of Financial Economics*, 123(1), pp.163–188.

Campello, M. and Larrain, M., 2015. Enlarging the contracting space: Collateral menus, access to credit, and economic activity. *Review of Financial Studies*, 29(2), pp.349–383.

Chan, Y., Kanatas, G., 1985. Asymmetric valuations and the role of collateral in loan agreements. *Journal of Money, Credit and Banking* 17, 84–95.

Christensen, H.B. and Nikolaev, V.V., 2012. Capital versus performance covenants in debt contracts. *Journal of Accounting Research*, 50(1), pp.75–116.

Christensen, H.B. and Nikolaev, V.V., 2013. Does fair value accounting for non-financial assets pass the market test? *Review of Accounting Studies*, 18(3), pp.734–775.

Christensen, H.B., Nikolaev, V.V. and Wittenberg-Moerman, R., 2016. Accounting information in financial contracting: The incomplete contract theory perspective. *Journal of Accounting Research*, 54(2), pp.397–435.

Cohen, M., Katz, S.P. and Sadka, G., 2012, July. Debt covenants and capital structure: Evidence from an exogenous shock to debt capacity. Working paper. Columbia University and University of Texas at Dallas.

Collins, D.W., and Hribar, P., 2002. Errors in estimating accruals: Implications for empirical research. *Journal of Accounting Research*, 40(1), pp.105-134.

Denis, D.J. and Mihov, V.T., 2003. The choice among bank debt, non-bank private debt, and public debt: evidence from new corporate borrowings. *Journal of Financial Economics*, 70(1), pp.3–28.

Diamond, D.W., 1984. Financial intermediation and delegated monitoring. *The Review of Economic Studies*, 51(3), pp.393–414.

Diamond, D.W., 1991. Monitoring and reputation: The choice between bank loans and directly placed debt. *Journal of Political Economy*, pp. 689–721.

Erel, I., Jang, Y. and Weisbach, M.S., 2015. Do acquisitions relieve target firms' financial constraints? *Journal of Finance*, 70(1), pp. 289–328.

Franco, F., Urcan, O., and Vasvari, F., 2016. Corporate diversification and the cost of debt: The role of segment disclosures. *The Accounting Review* 91, pp. 1139–1165.

Frankel, R., Seethamraju, C. and Zach, T., 2008. GAAP goodwill and debt contracting efficiency: evidence from net-worth covenants. *Review of Accounting Studies*, 13(1), pp. 87–118.

Freixas, X. and Rochet, J.C., 2008. Microeconomics of banking. MIT press.

Gan, J., 2007. Collateral, debt capacity, and corporate investment: evidence from a natural experiment. *Journal of Financial Economics*, 85(3), pp.709–734.

Harford, J., 2005. What drives merger waves? *Journal of Financial Economics*, 77(3), pp. 529–560.

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

Harford, J. and Uysal, V.B., 2014. Bond market access and investment. *Journal of Financial Economics*, 112(2), pp.147–163.

Hart, O. and Moore, J., 1994. A theory of debt based on the inalienability of human capital. *The Quarterly Journal of Economics*, 109(4), pp.841–879.

Haselmann, R., Pistor, K. and Vig, V., 2010. How law affects lending. *Review of Financial Studies*, 23(2), pp.549–580.

Holthausen, R.W. and Watts, R.L., 2001. The relevance of the value-relevance literature for financial accounting standard setting. *Journal of Accounting and Economics*, 31(1), pp. 3–75.

Jensen, M.C. and Meckling, W.H., 1976. Theory of the firm: managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), pp.305–360.

Jiménez, G., Salas, V., Saurina, J., 2006. Determinants of collateral. *Journal of Financial Economics* 81, 255–281.

Johnson, S.A., 1997. An empirical analysis of the determinants of corporate debt ownership structure. *Journal of Financial and Quantitative Analysis*, 32(1), pp.47–69.

Johnson, S.A., 2003. Debt maturity and the effects of growth opportunities and liquidity risk on leverage. *Review of Financial Studies*, 16(1), pp.209–236.

Leary, M.T. and Roberts, M.R., 2014. Do peer firms affect corporate financial policy? *Journal of Finance*, 69(1), pp.139–178.

Leftwich, R., 1981. Evidence of the impact of mandatory changes in accounting principles on corporate loan agreements. *Journal of Accounting and Economics*, 3(1), pp.3–36.

Loumioti, M., 2013. The use of intangible assets as loan collateral. Working paper. MIT.

Myers, S.C., 1977. Determinants of corporate borrowing. *Journal of Financial Economics*, 5(2), pp.147–175.

Myers, S.C. and Majluf, N.S., 1984. Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*, 13(2), pp.187-221.

Nikolaev, V.V., 2010. Debt covenants and accounting conservatism. *Journal of Accounting Research*, 48(1), pp.51–89.

Rampini, A.A. and Viswanathan, S., 2010. Collateral, risk management, and the distribution of debt capacity. *Journal of Finance*, 65(6), pp.2293–2322.

Rajan, R. and Winton, A., 1995. Covenants and collateral as incentives to monitor. *Journal of Finance*, 50(4), pp.1113–1146.

Smith, C.W. and Warner, J.B., 1979. On financial contracting: An analysis of bond covenants. *Journal of Financial Economics*, 7(2), pp.117–161.

Tirole, J., 2010. The theory of corporate finance. Princeton University Press.

Viger, C., Belzile, R. and Anandarajan, A.A., 2008. Disclosure versus recognition of stock option compensation: Effect on the credit decisions of loan officers. *Behavioral Research in Accounting*, 20(1), pp.93–113.

Watts, R.L. and Zimmerman, J.L., 1978. Towards a positive theory of the determination of accounting standards. *The Accounting Review*, pp.112–134.

Wittenberg-Moerman, R., 2008. The role of information asymmetry and financial reporting quality in debt trading: Evidence from the secondary loan market. *Journal of Accounting and Economics*, 46(2), pp.240–260.

Zhang, J., 2008. The contracting benefits of accounting conservatism to lenders and borrowers. *Journal of Accounting and Economics*, 45(1), pp.27–54.

Appendix A: Sample 10-K Disclosure on Fair Value Adjustments (Ashland Inc, FY2009)

NOTE B – ACQUISITIONS

On November 13, 2008, Ashland completed its acquisition of Hercules. The acquisition creates a defined core for Ashland composed of three specialty chemical businesses which includes specialty additives and ingredients, paper and water technologies, and specialty resins. The acquisition also creates a leadership position in attractive and growing renewable/sustainable chemistries.

The merger was recorded by Ashland using the purchase method of accounting in accordance with applicable U.S. GAAP whereby the total purchase price, including qualifying transaction-related expenses, were allocated to tangible and intangible assets and liabilities acquired based upon their respective fair values.

The total merger consideration for outstanding Hercules Common Stock was $2,096 million in cash and $450 million in Ashland Common Stock. Each share of Hercules Common Stock issued and outstanding immediately prior to the effective date of the Hercules acquisition was converted into the right to receive $18.60 in cash and 0.0930 of a share of Ashland Common Stock, subject to the payment of cash in lieu of fractional shares of Ashland Common Stock. Ashland exchanged 10.5 million shares of Ashland common shares for the 112.7 million shares of outstanding Hercules Common Stock on November 13, 2008.

The purchase price of Hercules, excluding debt assumed, was $2,594 million, including expenses incurred in connection with the transaction, and consisted of the following items:

Purchase price (in millions)			
Cash consideration for stock	$	2,096	(a)
Stock consideration		450	(b)
Cash consideration for Restricted Stock Units (RSUs)		5	(c)
Options			
Cash-out options		15	(d)
Fair value of Hercules stock options converted into stock options for Ashland shares		10	(e)
Transaction costs		18	(f)
Total purchase price	$	2,594	

The following table summarizes the values of the assets acquired and liabilities assumed at the date of acquisition, as well as adjustments that have been made as a result of ongoing valuations.

Purchase price allocation (in millions)	At November 13 2008
Assets:	
Cash	$ 54
Accounts receivable	355
Inventory	261
Other current assets	57
Intangible assets	1,116
Goodwill	1,806
Asbestos receivable	118
Property, plant and equipment	1,059
Purchased in-process research and development	10
Other noncurrent assets	164
Liabilities:	
Accounts payable	(231)
Accrued expenses	(215)
Debt	(799)
Pension and other postretirement obligations	(316)
Environmental	(100)
Asbestos	(494)
Deferred tax - net	(129)
Other noncurrent liabilities	(122)
Total purchase price	$ 2,594

As of September 30, 2009, the purchase price allocation for the acquisition was essentially completed. Adjustments to the current fair value estimates may occur as valuations are finalized for Hercules asbestos receivables and reserves. For additional information, see Note P.

Appendix B: Variable definitions

Appendix B reports our variable definitions and associated data sources, i.e. SDC, Capital IQ, Compustat and 10-K financial reports. All continuous variables are log-transformed and winsorized in the extreme 2.5 percentiles.

Deal characteristics	**Definition**	**Source**
FVA (Fair Value Adjustment)	Total fair value of assets (net of cash) of the target reported in business combination note, less *Target assets*, scaled *TAB;*	Acquirer's 10-K business combination footnote
FVA net of goodwill	*FVA* less amount of goodwill recognized, scaled by *TAB;*	Acquirer's 10-K business combination footnote
FVA Intangibles net of goodwill	Total fair value of intangible assets (other than goodwill) of the target reported in business combination note, less target intangible assets (other than goodwill) as reported in the quarter preceding the deal, scaled *TAB;*	Acquirer's 10-K business combination footnote
FVA Tangibles	Total fair value of assets (net of cash) of the target reported in business combination note, less *Target assets*, less fair value of intangible assets of the target reported in the business combination note and goodwill recognized, scaled *TAB;*	Acquirer's 10-K business combination footnote
Deal goodwill	Amount of goodwill recognized, scaled by *TAB;*	Acquirer's 10-K business combination footnote
Deal size	Purchase price, scaled by *TAB;*	Acquirer's 10-K business combination footnote
Cross-industry M&A	If the target's main two-digit SIC industry is different from the acquirer's one;	SDC Platinum
M&A deals count	Total number of takeovers completed in the deal's calendar year;	SDC Platinum
Target assets (pre-deal)	Target's total assets, as reported in the quarter preceding the deal;	Compustat
Acquirer assets (pre-deal)	Acquirer's total assets, as reported in the quarter preceding the deal;	Compustat
TAB	Total Assets Base, defined as the sum of target's assets and acquirer's assets as of the quarter preceding the M&A deal;	Compustat
Deal announcement CAR	Sum of acquirer and target's three day cumulative abnormal returns (4 factor risk model) centered at the announcement date.	CRSP and Kenneth French's factors database

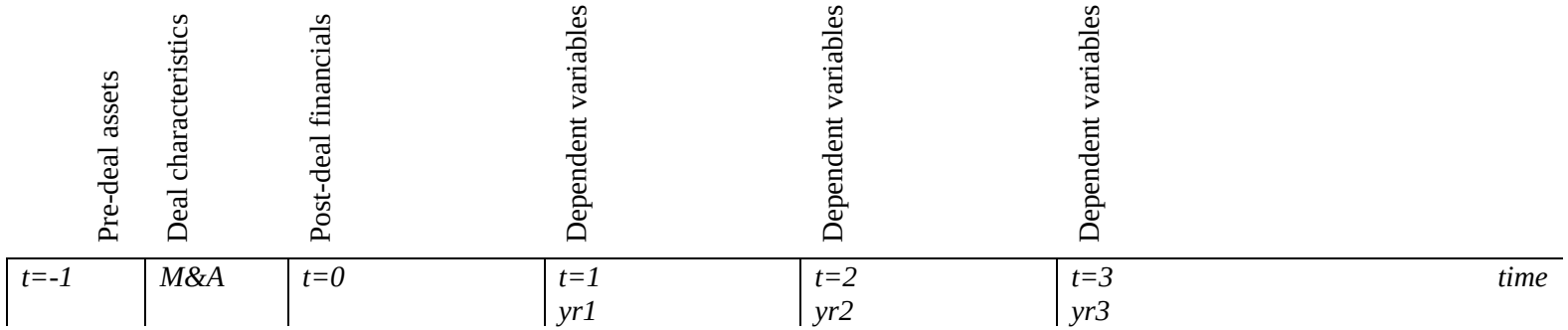
Post-deal acquirer characteristics	**Definition**	**Source**
Sales	Total revenue in fiscal year of business combination, i.e. year t=0;	Compustat
BM	Ratio of total shareholder's equity to market value at fiscal year-end;	Compustat/CRSP
Profitability	Ratio of net income to total revenue at fiscal year t=0;	Compustat
Cash balance	Cash and short-term investments at fiscal year t=0, scaled by *TAB;*	Compustat
Leverage	Long-term debt at fiscal year t=0, scaled by *TAB;*	Compustat
Change in leverage 1 (2) [3] year	Change in long-term debt from year 0 to year 1 (2) [3], scaled by *TAB;*	Compustat
Change in sales 3 year	Change in total revenue from year 0 to year 3*;*	Compustat
Change in BM 3 year	Change in ratio of total shareholder's equity to market value at fiscal year-end from year 0 to year 3*;*	Compustat
Change in profitability 3 year	Change in ratio of net income to total revenue at fiscal year-end from year 0 to year 3*;*	Compustat
Change in unsecured debt 1 (2) [3] year	Change in unsecured debt from year 0 to year 1 (2) [3], scaled by *TAB;*	Capital IQ
Change in ST debt 1 (2) [3] year	Change in short-term debt from year 0 to year 1 (2) [3], scaled by *TAB;*	Capital IQt
If past debt issuance (yes=1)	Indicator variable assigned a value of 1 if long-term debt issuances were greater than long-term debt reductions in the two fiscal years prior to the deal;	Compustat

Dependent variables	**Definition**	**Source**
1yr Gross Debt Issuance	Long-term debt issuance in year 1, scaled by *TAB;*	Compustat
1+2yr Gross Debt Issuance	Sum of long-term debt issuances in years 1 and 2, scaled by *TAB;*	Compustat
1+2+3yr Gross Debt Issuance	Sum of long-term debt issuances in years 1 to 3, scaled by *TAB;*	Compustat
2yr Gross Debt Issuance	Long-term debt issuances in year 2, scaled by *TAB;*	Compustat
2+3yr Gross Debt Issuance	Sum of long-term debt issuances in years 2 and 3, scaled by *TAB;*	Compustat
1yr Net Debt Issuance	Net debt issuance (long-term debt issuance less long term debt retirement) in year 1, scaled by *TAB;*	Compustat
1+2yr Net Debt Issuance	Sum of net debt issuances in years 1 and 2, scaled by *TAB;*	Compustat
1+2+3yr Net Debt Issuance	Sum of net debt issuances in years 1 to 3, scaled by *TAB;*	Compustat
2yr Net Debt Issuance	Net debt issuance in year 2, scaled by *TAB;*	Compustat
2+3yr Net Debt Issuance	Sum of net debt issuances in years 2 and 3, scaled by *TAB;*	Compustat
Change in interest 1 year	Interest rate in year 1 (ratio of interest and related expense in fiscal year 1 to long-term debt level at the beginning of the fiscal period) less interest rate in year 0 (ratio of interest and related expense in fiscal year 0 to long-term debt level of acquirer and target in the quarter preceding the deal);	Compustat

Change in interest 2 years	Interest rate in year 2 less interest rate in year 0;	Compustat
Change in interest 3 years	Interest rate in year 3 less interest rate in year 0;	Compustat
Change in mean interest 1+2 years	Debt-weighted mean interest rate in years 1 and 2 less interest rate in year 0;	Compustat
Change in mean interest 1+2+3 years	Debt-weighted mean interest rate in years 1 to 3 less interest rate in year 0;	Compustat
Change in secured debt 1 (2) [3] years	Secured debt reported at the end of fiscal year 1 (2) [3] less secured debt in year 0, scaled by *TAB;*	Capital IQ
Change in secured debt 1+2 years	Mean secured debt in years 1 and 2 less secured debt in year 0, scaled by *TAB;*	Capital IQ
Change in secured debt 1+2+3 years	Mean secured debt in years 1 to 3 less secured debt in year 0, scaled by *TAB;*	Capital IQ
Change in LT debt 1 (2) [3] years	Long-term debt reported at the end of in fiscal year 1 (2) [3] less long-term debt in year 0, scaled by *TAB;*	Capital IQ
Change in LT debt 1+2 years	Mean long-term debt in years 1 and 2 less long-term debt in year 0, scaled by *TAB;*	Capital IQ
Change in LT debt 1+2+3 years	Mean long-term debt in years 1 to 3 less long-term debt in year 0, scaled by *TAB.*	Capital IQ

Appendix C: Timeline

Appendix C presents a timeline that details when variables are calculated relative to the merger or acquisition.



Example: Suppose that an acquirer has a December fiscal year-end and that the M&A transaction is completed in November 2006. We retrieve target and acquirer pre-deal assets from October 2006 (third quarter) financial statements. We collect FVA, deal goodwill and size from acquirer's business combination notes in the 10-K dated December 2006 (*t=0*). Most of post-deal acquirer characteristics are extracted as of December 2006. Our forward-looking dependent variables use amounts from subsequent financial statements in December 2007 (*t=1*), December 2008 (*t=2*), and so on.

Table 1: Sample Selection and Structure

This table presents information on sample selection and structure. The unit of observation is a deal. Panel A details the sample selection procedure for the main analyses. Panel B and C describe the yearly and industry breakdown of the sample, respectively.

Panel A. Sample Selection

SDC sample		2192
less financials and utilities	(765)	
		1427
less missing link to Compustat	(213)	
		1214
less no recent target financials	(114)	
		1100
less missing target assets	(23)	
		1077
less uncollected disclosures	(439)	
		638
less missing basic controls	(34)	
		604
less missing most controls and dependent variables	(98)	
final sample		**506**

Panel B. Distribution of Sample Deals by Year

Year	Frequency	Percent	Cumulative
2001	32	6.32	6.32
2002	38	7.51	13.83
2003	48	9.49	23.32
2004	35	6.92	30.24
2005	53	10.47	40.71
2006	51	10.08	50.79
2007	63	12.45	63.24
2008	36	7.11	70.36
2009	23	4.55	74.90
2010	41	8.10	83.00
2011	26	5.14	88.14
2012	33	6.52	94.66
2013	27	5.34	100
Total	506	100	

Panel C. Distribution of Sample Deals by Industry

Fama–French industry code (30 industries)	Frequency	Percent	Cumulative
Business Equipment	104	20.55	88.74
Personal and Business Services	98	19.37	68.18
Healthcare, Medical Equipment, Pharma Products	86	17.00	24.70
Petroleum and Natural Gas	37	7.31	40.91
Communication	24	4.74	48.81
Retail	18	3.56	97.63
Utilities	16	3.16	44.07
Fabricated Products and Machinery	12	2.37	30.43
Wholesale	12	2.37	94.07
Consumer Goods	11	2.17	6.52
Transportation	9	1.78	91.70
Chemicals	8	1.58	26.28
Recreation	7	1.38	3.16
Restaurants, Hotels, Motels	7	1.38	99.01
Food Products	6	1.19	1.19
Printing and Publishing	6	1.19	4.35
Apparel	6	1.19	7.71
Business Supplies and Shipping Containers	6	1.19	89.92
Construction and Construction Materials	5	0.99	27.27
Precious Metals, Non-Metallic, and Industrials	5	0.99	33.60
Steel Works Etc	4	0.79	28.06
Electrical Equipment	4	0.79	31.23
Aircraft, ships, and railroad equipment	4	0.79	32.61
Automobiles and Trucks	3	0.59	31.82
Beer & Liquor	2	0.40	1.58
Other	6	1.19	100.00
Total	506	100	

Table 2: Descriptive statistics

This table includes descriptive statistics. The unit of observation is a deal. Panel A details the FVA relative to the acquirer's or target's property, plant, and equipment (*PPE*) or non-cash assets (*TA less cash*), which are from the financial reports of the respective companies prior to the deal. *FVA* is calculated as the fair value adjustments on property, plant, and equipment, when compared to *PPE* and as the fair adjustments on assets other than cash when compared to *TA less than cash*. Panel B presents summary statistics of the main regression variables. All variables are defined in Appendix B.

Panel A. Fair Value Adjustments (%)

	N	**mean**	sd	p25	**p50**	p75
FVA / Target's PPE	442	**45.7**	125.4	-11.5	**8.70**	52.4
FVA / Target's TA less cash	506	**186.6**	240.4	41.7	**110.9**	223.1
FVA / Acquirer's PPE	442	**2.43**	8.07	-0.17	**0.08**	1.60
FVA / Acquirer TA less cash	506	**28.4**	40.5	4.3	**14.3**	35.6

Panel B. Regression Variables

	N	**mean**	**sd**	**p25**	**p50**	**p75**
FVA TA less Cash	506	0.192	0.241	0.040	0.113	0.267
FVA TA less Cash and goodwill	506	0.041	0.131	-0.011	0.014	0.073
Deal goodwill	506	0.14	0.16	0.03	0.09	0.20
High goodwill (yes=1)	506	0.33	0.47	0.00	0.00	1.00
Deal size	506	0.29	0.27	0.09	0.20	0.41
Cross-industry M&A	506	0.32	0.47	0	0	1
M&A deals count	506	1.57	0.98	1	1	2
Target Assets (pre-deal)	506	1602.7	3436.9	86.7	344.7	1214.6
Acquirer Assets (pre-deal)	506	11313.6	21876.9	605.4	2596.3	9580.3
Sales t=0	506	9616.7	19439.6	558.9	1846.7	8221.5
Acquirer BM t=0	506	5.46	1.74	4.52	5.68	6.74
Profitability t=0	506	-0.06	0.44	0	0	0
Cash balance t=0	506	0.15	0.15	0	0	0
Leverage t=0	506	0.28	0.21	0	0	0
Change in leverage 1 year	506	0.02	0.10	-0.03	0	0.04
Change in leverage 2 years	506	0.04	0.15	-0.04	0	0.10
Change in leverage 3 years	506	0.07	0.19	-0.04	0.02	0.13
If past debt issuance (yes=1)	506	0.29	0.34	0.00	0.00	0.69
Deal announcement CAR	506	-0.01	0.04	-0.03	-0.01	0.02
1yr Gross Debt Issuance	506	0.11	0.18	0.00	0.03	0.15
1+2yr Gross Debt Issuance	506	0.21	0.29	0.00	0.11	0.29
1+2+3yr Gross Debt Issuance	506	0.31	0.36	0.05	0.18	0.42
1yr Net Debt Issuance	506	0.02	0.09	-0.03	0.00	0.03
1+2yr Net Debt Issuance	506	0.04	0.14	-0.04	0	0.09
1+2+3yr Net Debt Issuance	506	0.06	0.17	-0.04	0.01	0.12

Panel B. Regression Variables (continued)

Change in interest 1 year	437	-0.03	0.13	-0.02	0.00	0.01
Change in interest 2 years	437	-0.03	0.13	-0.03	0.00	0.01
Change in interest 3 years	437	-0.03	0.12	-0.03	0.00	0.01
Change in mean interest 1+2 years	437	-0.03	0.13	-0.02	0.00	0.01
Change in mean interest 1+2+3 years	437	-0.03	0.13	-0.02	0.00	0.01
Change in secured debt 1 yr	506	0.01	0.07	0.00	0.00	0.00
Change in secured debt 2 yr	506	0.02	0.10	0.00	0.00	0.02
Change in secured debt 3 yr	506	0.02	0.13	0.00	0.00	0.02
Change in mean secured debt 1+2 yr	506	0.01	0.07	0.00	0.00	0.01
Change in mean secured debt 1+2+3 yr	506	0.02	0.09	0.00	0.00	0.02
Change in LT debt 1 yr	506	0.03	0.10	-0.02	0.00	0.05
Change in LT debt 2 yr	506	0.04	0.14	-0.03	0.00	0.10
Change in LT debt 3 yr	506	0.05	0.18	-0.04	0.01	0.12
Change in mean LT debt 1+2 yr	506	0.04	0.11	-0.02	0.00	0.08
Change in mean LT debt 1+2+3 yr	506	0.04	0.13	-0.03	0.01	0.09

Table 3: Correlations

This table presents univariate correlations among the main regression variables. All variables are defined in Appendix B.

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	*FVA TA less Cash*	1																			
2	*FVA TA less Cash and goodwill*	0.68	1																		
3	*Deal goodwill*	0.81	0.16	1																	
4	*Cross-industry M&A*	-0.05	-0.04	-0.02	1																
5	*M&A deals count*	-0.12	-0.01	-0.16	0.22	1															
6	*Sales t=0*	-0.15	0.04	-0.21	0.16	0.23	1														
7	*Acquirer BM t=0*	0.08	0.19	-0.03	0.05	0.09	0.57	1													
8	*Profitability t=0*	-0.07	0.00	-0.07	0.00	0.11	0.47	0.45	1												
9	*Cash balance t=0*	0.06	0.00	0.06	0.01	-0.03	-0.30	-0.35	-0.34	1											
10	*Leverage t=0*	0.22	0.24	0.15	0.01	0.03	0.17	0.27	0.21	-0.48	1										
11	*1yr Gross Debt Issuance*	0.04	0.15	-0.07	-0.04	0.10	-0.10	0.03	0.13	-0.26	0.22	1									
12	*1+2yr Gross Debt Issuance*	0.05	0.16	-0.05	-0.06	0.06	-0.11	0.06	0.13	-0.28	0.30	0.88	1								
13	*1+2+3yr Gross Debt Issuance*	0.07	0.18	-0.04	-0.04	0.04	-0.12	0.05	0.13	-0.28	0.33	0.80	0.92	1							
14	*1yr Net Debt Issuance*	0.04	0.09	-0.01	0.02	0.16	-0.06	0.00	0.03	0.01	-0.08	0.55	0.38	0.30	1						
15	*1+2yr Net Debt Issuance*	0.04	0.10	-0.03	0.02	0.14	-0.09	0.01	0.03	0.03	-0.06	0.44	0.55	0.43	0.70	1					
16	*1+2+3yr Net Debt Issuance*	0.05	0.13	-0.05	0.01	0.14	-0.13	0.02	0.00	0.05	-0.06	0.38	0.49	0.56	0.56	0.77	1				
17	*Change in mean interest 1+2 years*	-0.17	-0.09	-0.14	-0.03	-0.05	0.07	0.03	-0.07	-0.03	-0.18	0.04	0.05	0.00	-0.01	0.02	-0.01	1			
18	*Change in mean interest 1+2+3 years*	-0.18	-0.11	-0.15	-0.04	-0.06	0.07	0.04	-0.06	-0.06	-0.16	0.03	0.04	0.01	-0.03	-0.02	-0.01	0.99	1		
19	*Change in mean secured debt 1+2+3 yr*	0.03	0.09	-0.05	0.03	0.08	-0.15	-0.09	-0.05	-0.02	-0.02	0.31	0.35	0.36	0.39	0.48	0.49	0.02	0.01	1	
20	*Change in mean LT debt 1+2+3 yr*	0.05	0.11	-0.03	0.05	0.13	-0.07	-0.01	0.03	-0.07	-0.05	0.44	0.50	0.48	0.61	0.74	0.74	-0.01	-0.03	0.58	1

Table 4: Gross debt issuance

This table reports the results of OLS regressions of gross debt issuance following an M&A transaction on the reported total FVAs attributable to non-cash assets. Observations enter our analysis at the deal level. We restrict our sample to public-to-public deals available on SDC from 2001 – 2013 and run our analysis over multiple horizons following the deal. Column (1) reports results for gross debt issuance in the year immediately following the transaction; (2) is the two-year period following the deal; (3) is the three-year window following a deal, (4) includes controls for the contemporaneous changes in sales, book-to-market and profitability; and specification (5) removes goodwill from our FVA independent variable. Our dependent variable is gross debt issuance computed as long-term debt issuance in a given period, scaled by the sum of target and acquirer assets as of quarter preceding the M&A transaction. All other variables are defined in Appendix B. T-statistics (reported in parentheses under our coefficient estimates) are robust to within-industry and within-year correlation and heteroscedasticity. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels.

	(1)	(2)	(3)	(4)	(5)
Dep Var: *Gross Issuance*	Year 1	Years 1, 2	Years 1,2,3	Years 1,2,3	Years 1,2,3
FVA	**0.260****	**0.430*****	**0.578*****	**0.569*****	
	(2.60)	**(3.34)**	**(3.59)**	**(3.49)**	
FVA net of goodwill					**0.511*****
					(3.40)
Sales t=0	-0.032***	-0.051***	-0.068***	-0.069***	-0.069***
	(-5.68)	(-5.56)	(-5.59)	(-5.10)	(-5.73)
BM t=0	-0.006	-0.003	-0.002	-0.007	-0.000
	(-0.74)	(-0.24)	(-0.13)	(-0.52)	(-0.01)
Profitability t=0	0.114***	0.176**	0.212***	0.216*	0.201***
	(2.68)	(2.63)	(3.02)	(1.96)	(2.90)
Cash balance t=0	-0.305***	-0.446***	-0.546***	-0.591***	-0.548***
	(-3.08)	(-2.81)	(-3.05)	(-3.19)	(-3.06)
Leverage t=0	0.162**	0.396***	0.594***	0.546***	0.576***
	(2.51)	(3.46)	(4.16)	(3.95)	(3.96)
Cross-industry M&A	0.003	-0.006	0.012	0.020	0.011
	(0.16)	(-0.17)	(0.34)	(0.55)	(0.29)
Deal goodwill	-0.456***	-0.761***	-0.972***	-1.000***	-0.393***
	(-3.65)	(-4.48)	(-4.37)	(-4.46)	(-2.87)
M&A deals count	0.081***	0.095*	0.100*	0.074	0.101*
	(2.64)	(1.88)	(1.78)	(1.43)	(1.77)
Deal announcement CAR	-0.094	0.040	0.064	0.105	0.044
	(-0.57)	(0.13)	(0.17)	(0.27)	(0.12)
If past debt issuance	0.024	0.068	0.090	0.094	0.091
	(0.77)	(1.29)	(1.39)	(1.42)	(1.39)
Change in sales 3 yr				0.012***	
				(3.28)	
Change in BM 3 yr				-0.006	
				(-1.14)	
Change in profitability 3 yr				0.021	
				(0.20)	
Observations	506	506	506	506	506
Adjusted R-squared	0.200	0.204	0.253	0.271	0.251
Industry-Year FE	YES	YES	YES	YES	YES

Table 5: Net debt issuance

This table reports the results of OLS regressions of net debt issuance following an M&A transaction on the reported FVA on non-cash assets. Observations enter our analysis at the deal level. We restrict our sample to public-to-public deals available on SDC from 2001 – 2013 and run our analysis over multiple horizons following the deal. Column (1) reports results for net debt issuance in the year immediately following the transaction; (2) is the two-year period following the deal; (3) is the three-year window following a deal, (4) includes controls for the contemporaneous changes in sales, book-to-market and profitability; and specification (5) removes goodwill from our FVA independent variable Our dependent variable is net debt issuance computed as long term debt issuance less long-term debt reduction in a given period, scaled by the sum of target and acquirer assets as of quarter preceding the M&A transaction. All other variables are defined in Appendix B. T-statistics (reported in parentheses under our coefficient estimates) are robust to within-industry and within-year correlation and heteroscedasticity. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels.

	(1)	(2)	(3)	(4)	(5)
Dep Var: *Net Issuance*	Year 1	Years 1, 2	Years 1,2,3	Years 1,2,3	Years 1,2,3
FVA	**0.073**	**0.153***	**0.255*****	**0.249****	
	(1.26)	**(1.66)**	**(2.79)**	**(2.60)**	
FVA net of goodwill					**0.227*****
					(2.77)
Sales t=0	-0.011***	-0.019***	-0.029***	-0.030***	-0.030***
	(-2.87)	(-3.34)	(-4.62)	(-4.44)	(-4.70)
BM t=0	0.000	0.003	0.011*	0.009	0.012**
	(0.01)	(0.49)	(1.90)	(1.48)	(2.01)
Profitability t=0	0.034*	0.071**	0.062*	0.032	0.057*
	(1.76)	(2.22)	(1.85)	(0.61)	(1.71)
Cash balance t=0	-0.048	-0.022	0.003	-0.034	0.002
	(-0.88)	(-0.23)	(0.03)	(-0.34)	(0.02)
Leverage t=0	-0.109***	-0.145*	-0.172**	-0.200***	-0.180**
	(-2.65)	(-1.98)	(-2.26)	(-2.70)	(-2.36)
Cross-industry M&A	0.010	0.015	0.022	0.029	0.022
	(0.88)	(0.80)	(1.20)	(1.54)	(1.16)
Deal goodwill	-0.064	-0.173	-0.304**	-0.320**	-0.048
	(-0.87)	(-1.58)	(-2.46)	(-2.46)	(-0.67)
M&A deals count	0.051***	0.078**	0.108***	0.090***	0.109***
	(3.17)	(2.54)	(3.18)	(2.87)	(3.17)
Deal announcement CAR	0.066	0.134	0.096	0.118	0.087
	(0.76)	(0.98)	(0.41)	(0.51)	(0.37)
If past debt issuance	0.011	0.033	0.046	0.050*	0.047
	(0.76)	(1.35)	(1.57)	(1.72)	(1.57)
Change in sales 3 yr				0.008***	
				(4.33)	
Change in BM 3 yr				-0.001	
				(-0.38)	
Change in profitability 3 yr				-0.023	
				(-0.42)	
Observations	506	506	506	506	506
Adjusted R-squared	0.103	0.044	0.109	0.142	0.107
Industry-Year FE	YES	YES	YES	YES	YES

Table 6: FVA sensitivity

This table reports the results of OLS regressions of gross and net debt issuance following an M&A transaction on different FVAs characteristics. Observations enter our analysis at the deal level. We restrict our sample to public-to-public deals available on SDC from 2001 – 2013. Our dependent variable in columns 1-4 [5-8] is gross [net] debt issuance computed as long-term debt issuance [less long-term debt reduction] over three-year window following a deal, scaled by the sum of target and acquirer assets as of quarter preceding the M&A transaction. Columns (1) and (5) report results for the reported FVAs on tangbile non-cash assets; columns (2) and (6) for the reported FVAs on intangible assets other than goodwill. In columns (3) and (7) the specifications include both the FVA on tangible and intagible assets variables as just defined. Columns (4) and (8) are estimated on the total FVAs attributable to non-cash assets' splits by its positive and negative sign. All other variables are defined in Appendix B. T-statistics (reported in parentheses under our coefficient estimates) are robust to within-industry and within-year correlation and heteroscedasticity. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Years 1,2,3	Years 1,2,3	Years 1,2,3	Years 1,2,3	Years 1,2,3	Years 1,2,3	Years 1,2,3	Years 1,2,3
	Gross Issuance	*Gross Issuance*	*Gross Issuance*	*Gross Issuance*	*Net Issuance*	*Net Issuance*	*Net Issuance*	*Net Issuance*
FVA Tangibles	**0.964*** **		**0.970*** **		**0.346** **		**0.348** **	
	(3.74)		**(3.78)**		**(2.32)**		**(2.38)**	
FVA Intangibles net of goodwill		**0.317**	**0.328***			**0.130**	**0.134**	
		(1.52)	**(1.66)**			**(0.98)**	**(1.04)**	
FVA (positive)				**0.592*** **				**0.268*** **
				(3.29)				**(2.72)**
FVA (negative)				**0.388**				**0.075**
				(0.47)				**(0.17)**
Sales t=0	-0.072***	-0.068***	-0.070***	-0.068***	-0.031***	-0.030***	-0.030***	-0.029***
	(-6.03)	(-5.65)	(-5.82)	(-5.45)	(-4.70)	(-4.59)	(-4.66)	(-4.49)
BM t=0	-0.004	0.004	-0.004	-0.002	0.011*	0.014**	0.011*	0.012*
	(-0.25)	(0.32)	(-0.28)	(-0.11)	(1.74)	(2.26)	(1.72)	(1.89)
Profitability t=0	0.182***	0.195***	0.196***	0.215***	0.049	0.054	0.054	0.065*

	(2.70)	(2.82)	(2.80)	(2.91)	(1.47)	(1.55)	(1.57)	(1.89)
Cash balance t=0	-0.480***	-0.501**	-0.533***	-0.544***	0.035	0.025	0.013	0.005
	(-2.69)	(-2.61)	(-2.88)	(-3.02)	(0.37)	(0.26)	(0.14)	(0.05)
Leverage t=0	0.578***	0.645***	0.561***	0.594***	-0.172**	-0.148*	-0.179**	-0.172**
	(4.12)	(4.37)	(3.89)	(4.15)	(-2.26)	(-1.96)	(-2.31)	(-2.26)
Cross-industry M&A	0.011	0.009	0.012	0.012	0.022	0.021	0.022	0.022
	(0.31)	(0.25)	(0.32)	(0.34)	(1.15)	(1.11)	(1.16)	(1.21)
Deal goodwill	-0.278**	-0.390***	-0.342**	-0.982***	-0.002	-0.045	-0.028	-0.313**
	(-2.13)	(-2.65)	(-2.49)	(-4.26)	(-0.02)	(-0.55)	(-0.34)	(-2.49)
M&A deals count	0.106*	0.102*	0.100*	0.100*	0.111***	0.109***	0.109***	0.109***
	(1.98)	(1.83)	(1.81)	(1.78)	(3.32)	(3.18)	(3.20)	(3.19)
Deal announcement CAR	0.122	-0.023	0.109	0.059	0.110	0.058	0.105	0.091
	(0.32)	(-0.06)	(0.28)	(0.16)	(0.47)	(0.25)	(0.44)	(0.39)
If past debt issuance	0.087	0.077	0.087	0.090	0.044	0.041	0.044	0.047
	(1.32)	(1.17)	(1.32)	(1.40)	(1.44)	(1.33)	(1.44)	(1.57)
Observations	506	506	506	506	506	506	506	506
Adjusted R-squared	0.252	0.234	0.254	0.252	0.102	0.092	0.102	0.107
Industry-Year FE	YES	YES	YES	YES	YES	YES	YES	YES

Table 7: FVA quality

This table reports the results of OLS regressions of gross and net debt issuance following an M&A transaction on the reported total FVAs attributable to non-cash assets net of goodwill. The FVA variable is interacted with a dichotomous variable *high goodwill* which equals to one if the ratio of goodwill to total purchase price is in the top tercile of distribution. Observations enter our analysis at the deal level. We restrict our sample to public-to-public deals available on SDC from 2001 – 2013 and run our analysis over multiple horizons following the deal. Column (1) [4] reports results for gross [net] debt issuance in the year immediately following the transaction; column (2) [5] is the two-year period following the deal; column (3) [6] is the three-year window following a deal Our dependent variable in columns 1-3 [4-6] is gross [net] debt issuance computed as long-term debt issuance [less long-term debt reduction] in a given period, scaled by the sum of target and acquirer assets as of quarter preceding the M&A transaction. All other variables are defined in Appendix B. T-statistics (reported in parentheses under our coefficient estimates) are robust to within-industry and within-year correlation and heteroscedasticity. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels.

	(1)	(2)	(3)	(4)	(5)	(6)
	Year 1	Years 1, 2	Years 1,2,3	Year 1	Years 1, 2	Years 1,2,3
	Gross Issuance	*Gross Issuance*	*Gross Issuance*	*Net Issuance*	*Net Issuance*	*Net Issuance*
FVA net of goodwill	**0.185***	**0.338****	**0.479*****	**0.083**	**0.171***	**0.290*****
	(1.89)	**(2.55)**	**(2.85)**	**(1.55)**	**(1.90)**	**(3.10)**
High goodwill	**0.083**	**-0.130**	**-0.094**	**-0.104**	**-0.314***	**-0.378****
x FVA net of GW	**(0.39)**	**(-0.49)**	**(-0.31)**	**(-0.73)**	**(-1.97)**	**(-2.37)**
High goodwill	0.001	0.001	0.018	-0.006	-0.002	0.010
	(0.03)	(0.02)	(0.45)	(-0.56)	(-0.14)	(0.59)
Sales t=0	-0.031***	-0.047***	-0.065***	-0.010***	-0.018***	-0.029***
	(-5.23)	(-4.77)	(-4.85)	(-3.03)	(-3.42)	(-4.64)
BM t=0	-0.007	-0.005	-0.004	0.000	0.003	0.012*
	(-0.93)	(-0.43)	(-0.29)	(0.03)	(0.51)	(1.89)
Profitability t=0	0.116***	0.176**	0.213***	0.031	0.063*	0.054
	(2.65)	(2.48)	(2.85)	(1.59)	(1.98)	(1.58)
Cash balance t=0	-0.322***	-0.479***	-0.589***	-0.051	-0.031	-0.015
	(-3.21)	(-3.01)	(-3.30)	(-0.91)	(-0.34)	(-0.16)
Leverage t=0	0.115*	0.317**	0.495***	-0.111***	-0.154**	-0.193**
	(1.76)	(2.62)	(3.29)	(-2.76)	(-2.11)	(-2.47)
Cross-industry M&A	0.003	-0.004	0.012	0.011	0.017	0.024
	(0.15)	(-0.11)	(0.31)	(0.96)	(0.90)	(1.22)
M&A deals count	0.093***	0.113**	0.123**	0.049***	0.075**	0.108***
	(2.93)	(2.20)	(2.21)	(3.11)	(2.54)	(3.20)
Deal announcement CAR	-0.073	0.065	0.101	0.057	0.118	0.083
	(-0.44)	(0.21)	(0.27)	(0.66)	(0.85)	(0.36)
If past debt issuance	0.029	0.081	0.105	0.012	0.037	0.053*
	(0.96)	(1.51)	(1.58)	(0.88)	(1.53)	(1.75)
Observations	506	506	506	506	506	506
Adjusted R-squared	0.180	0.182	0.234	0.104	0.048	0.112
Industry-Year FE	YES	YES	YES	YES	YES	YES

Table 8: Cost of Debt

This table reports the results of our analysis on the changes in cost of debt following an M&A transaction on the reported total FVAs attributable to non-cash assets. Observations enter our analysis at the deal level. We restrict our sample to public-to-public deals available on SDC from 2001 – 2013. Columns (1), (2), and (3) report results for changes in interest rate in years 1, 2, 3 respectively. Columns (4) and (5) present results for changes in the average interest rate in two and three year windows immediately after the deal respectively. An interest rate is the ratio of interest and related expenses in a fiscal year to the long-term debt level at the beginning of the fiscal period. Across all columns our dependent variable is the change calculated relative to interest rate in the deal's year. In columns (1), (2), and (3) the interest rate is for a single fiscal year, while in columns (4) and (5) the interest rate is a debt-weighted rate across the two-year and three-year periods after the deal respectively. All other variables are defined in Appendix B. T-statistics (reported in parentheses under our coefficient estimates) are robust to within-industry and within-year correlation and heteroscedasticity. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels.

	(1)	(2)	(3)	(4)	(5)
	Year 1	Year 2	Year 3	Years 1, 2	Years 1, 2, 3
	Change in Interest	*Change in Interest*	*Change in Interest*	*Change in Interest*	*Change in Interest*
FVA	**-0.145****	**-0.140***	**-0.170*****	**-0.142****	**-0.161*****
	(-2.48)	**(-1.94)**	**(-2.83)**	**(-2.31)**	**(-2.89)**
Sales t=0	0.007	0.007	0.006	0.008	0.008
	(1.12)	(1.11)	(0.77)	(1.17)	(1.10)
BM t=0	0.003	0.002	0.003	0.002	0.002
	(0.28)	(0.20)	(0.29)	(0.23)	(0.21)
Profitability t=0	-0.068*	-0.086*	-0.073**	-0.075*	-0.073**
	(-1.88)	(-1.95)	(-2.21)	(-1.92)	(-2.00)
Cash balance t=0	0.004	0.031	-0.070	0.015	-0.013
	(0.04)	(0.26)	(-0.59)	(0.13)	(-0.11)
Leverage pre-deal	0.289***	0.268***	0.236***	0.282***	0.288***
	(3.49)	(3.26)	(3.30)	(3.45)	(3.60)
Cross-industry M&A	-0.011	-0.006	-0.013	-0.010	-0.012
	(-0.83)	(-0.36)	(-0.90)	(-0.70)	(-0.83)
Deal goodwill	-0.007	0.002	0.012	-0.002	0.018
	(-0.08)	(0.02)	(0.13)	(-0.03)	(0.20)
M&A deals count	-0.028	-0.033	-0.035	-0.028	-0.028
	(-1.09)	(-1.39)	(-1.43)	(-1.12)	(-1.16)
Deal announcement CAR	0.021	-0.012	-0.053	0.031	0.028
	(0.16)	(-0.09)	(-0.42)	(0.23)	(0.21)
Change in leverage 1 yr	0.103				
	(0.94)				
Change in leverage 2 yr		0.027		0.020	
		(0.43)		(0.31)	
Change in leverage 3 yr			0.003		0.007
			(0.07)		(0.14)
Observations	437	437	437	437	437
Adjusted R-squared	0.153	0.167	0.171	0.195	0.209
Industry-Year FE	YES	YES	YES	YES	YES

Table 9: Debt Structure

This table reports the results of OLS regressions of changes in debt structure and reported FVA following an M&A transaction. Observations enter our analysis at the deal level. We restrict our sample to public-to-public deals available on SDC from 2001 – 2013 and run our analysis over multiple horizons following the deal. Panel (A) reports our analysis of changes in the composition of collateralized debt, i.e. secured debt. Our dependent variable, changes in secured debt is measured as secured debt reported at the end of a given fiscal year, i.e. t+1, t+2 or t+3, less secured debt immediately following the deal, i.e. t=0, scaled by *TAB*. Columns (1), (2) and (3) report results for the change in secured debt in years 1, 2 and 3, respectively, immediately following the transaction. While columns (4) and (5) capture the change in mean secured debt over years 1 and 2, and year 1 to 3, respectively. Panel (B) reports our analysis of debt maturity. Our dependent variable is change in long-term debt measured as long-term debt reported at the end of a given fiscal year less long-term debt in year 0, scaled by *TAB*. We perform this analysis over the same time horizons as described for Panel (A). All other variables are defined in Appendix B. T-statistics (reported in parentheses under our coefficient estimates) are robust to within-industry and within-year correlation and heteroscedasticity. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels.

	(1)	(2)	(3)	(4)	(5)
Panel A: *Change in secured debt*	Year 1	Year 2	Year 3	Years 1,2	Years 1,2,3
FVA	**0.048**	**0.140****	**0.137****	**0.091***	**0.147*****
	(1.04)	**(2.24)**	**(2.20)**	**(1.92)**	**(2.67)**
Sales t=0	-0.005*	-0.010**	-0.015***	-0.008***	-0.011***
	(-1.91)	(-2.52)	(-3.41)	(-2.76)	(-3.54)
BM t=0	-0.002	-0.006	0.001	-0.004	-0.004
	(-0.56)	(-1.49)	(0.34)	(-1.09)	(-0.98)
Profitability t=0	-0.001	-0.007	-0.012	-0.004	-0.001
	(-0.06)	(-0.30)	(-0.43)	(-0.26)	(-0.06)
Cash balance t=0	-0.061	-0.126*	-0.105	-0.098**	-0.113**
	(-1.54)	(-1.95)	(-1.50)	(-2.14)	(-2.14)
Leverage t=0	-0.057*	-0.088*	-0.043	-0.062*	-0.060
	(-1.92)	(-1.82)	(-0.66)	(-1.68)	(-1.23)
Cross-industry M&A	0.005	0.013	0.019	0.010	0.013
	(0.61)	(1.20)	(1.40)	(1.13)	(1.31)
Deal goodwill	-0.080	-0.204***	-0.250***	-0.138**	-0.222***
	(-1.61)	(-2.80)	(-3.14)	(-2.60)	(-3.32)
M&A deals count	0.020*	0.028*	0.048**	0.021*	0.031**
	(1.83)	(1.78)	(2.22)	(1.70)	(2.20)
Deal announcement CAR	-0.002	0.026	-0.035	0.013	0.017
	(-0.03)	(0.19)	(-0.20)	(0.12)	(0.14)
Change in unsecured debt 1 yr	0.054				
	(1.02)				
Change in unsecured debt 2 yr		0.032		0.014	
		(0.47)		(0.27)	
Change in unsecured debt 3 yr			0.058		0.036
			(0.64)		(0.57)
Observations	506	506	506	506	506
Adjusted R-squared	0.049	0.098	0.105	0.074	0.109
Industry-Year FE	YES	YES	YES	YES	YES

Table 9: Debt Structure (continued)

	(1)	(2)	(3)	(4)	(5)
Panel B: *Change in LT debt*	Year 1	Year 2	Year 3	Years 1,2	Years 1,2,3
FVA	**0.069**	**0.156**	**0.218****	**0.118***	**0.196****
	(1.15)	**(1.64)**	**(2.60)**	**(1.70)**	**(2.47)**
Sales t=0	-0.010***	-0.017***	-0.024***	-0.014***	-0.019***
	(-2.82)	(-3.00)	(-4.18)	(-3.14)	(-3.96)
BM t=0	-0.002	0.002	0.012**	-0.000	0.003
	(-0.43)	(0.28)	(2.33)	(-0.00)	(0.56)
Profitability t=0	0.034*	0.054*	0.053*	0.046*	0.053**
	(1.78)	(1.81)	(1.83)	(1.98)	(2.17)
Cash balance t=0	-0.120**	-0.119	-0.109	-0.120*	-0.132*
	(-2.26)	(-1.26)	(-1.27)	(-1.77)	(-1.86)
Leverage t=0	-0.121***	-0.138**	-0.172**	-0.116**	-0.137**
	(-2.86)	(-2.02)	(-2.15)	(-2.11)	(-2.19)
Cross-industry M&A	0.012	0.024	0.021	0.018	0.022
	(1.09)	(1.33)	(1.17)	(1.29)	(1.50)
Deal goodwill	-0.064	-0.179	-0.303**	-0.119	-0.230**
	(-0.82)	(-1.62)	(-2.52)	(-1.40)	(-2.33)
M&A deals count	0.048***	0.066**	0.105***	0.058**	0.071**
	(2.69)	(2.06)	(2.95)	(2.46)	(2.62)
Deal announcement CAR	0.014	0.066	-0.049	0.052	0.035
	(0.14)	(0.43)	(-0.22)	(0.39)	(0.22)
Change in ST debt 1 yr	-0.641***				
	(-6.84)				
Change in ST debt 2 yr		-0.373***		-0.341***	
		(-2.71)		(-3.26)	
Change in ST debt 3 yr			-0.359**		-0.247***
			(-2.43)		(-2.82)
Observations	506	506	506	506	506
Adjusted R-squared	0.175	0.060	0.175	0.089	0.098
Industry-Year FE	YES	YES	YES	YES	YES