# Accounting Restatements and Debt Contract Renegotiation

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## Abstract

This study investigates the impact of accounting restatements on the existing debt contract. Based on a sample of borrowing firms with restatements for the period from 2000 to 2018, we manually construct a novel dataset on debt contract renegotiation. We find that restating firms have a higher likelihood of renegotiation than the firms without restatements. Our examination on how initial contract terms are renegotiated in the post-restatement period shows that, unlike tightening restrictions that new creditors are more likely to react with, creditors in relationship are willing to provide financial flexibility in respond to borrowers' restatements as they are bonded with borrowers' interests, and may perceive the value of long-term customer relationship higher than the potential borrower risk arising from a restatement. Further analysis on restatement severity shows that existing creditors are less likely to relax the original loan terms if the restatements involve fraud or revenue recognition issues, suggesting that creditors are willing to provide support to debtors only to the extent that the benefits are bilateral. Our findings suggest that renegotiation is a trade-off between bonding interests in existing contracts and creditors' protection against debtors' risk associated with restatements. To our knowledge, this paper is the first to examine the implications of accounting restatements on the renegotiation of existing debt contracts.

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## 1. Introduction

The role of accounting information in debt contracting has long been of great interest to researchers in accounting and finance. Since an accounting restatement is a correction of previously issued financial information that is inaccurate, prior studies show that capital providers treat it as a proxy for reduced credibility of accounting information, and it affects firms' external financing choices (e.g., Chen, Cheng, and Lo, 2013). Equity holders' reaction to restatements has been largely documented (e.g. Palmrose, Richardson, and Scholz, 2004; Hennes, Leone, and Miller, 2008; Gordon, Henry, Peytcheva, Sun, 2008; Files, Swanson, and Tse, 2009; Bardos, Golec, and Harding, 2011; Burks, 2011), while only a few studies have examined debt market reaction to accounting restatements in private debt contracting. Graham et al. (2008), Costello and Wittenberg-Moerman (2011) and Chen (2016) provide evidence that, creditors charge higher interest rates, increase collateral requirements, decrease loan maturities and demand more covenant restrictions in the new debt contract when the borrowers restate their financial statements. However, all of these studies have focused on a new debt contract that is initiated after the restatements, and the restatement impact on existing debtholders has been ignored. Given the assumption of the incomplete contracting that it is impossible to write a complete contract *ex ante* (e.g., Hart and Moore, 1988; Benmelech and Bergman, 2008), the understanding of how restatement may give rise to renegotiation of the existing debt contract is an important issue.

We aim to fill this void by examining whether an accounting restatement may trigger the renegotiation of an existing debt contract, and how it may affect the renegotiation outcome. Debt renegotiation is not a rare occurrence during a debt term (Roberts and Sufi, 2009b). A large number of debt contracting studies document that creditors exercise their decision rights in a state-contingent manner when the borrower is unable to make a required debt repayment or violates certain covenants from the existing debt contracts (i.e. technical default) (e.g., Hart and Moore 1988; Aghion and Bolton 1992; Dewatripont and Tirole 1994; Chava and Roberts, 2008; Nini, Smith, and Sufi, 2012). Recent research on the determinants of debt contract renegotiation (e.g., Roberts and Sufi, 2009b; Denis and Wang, 2014; Roberts, 2015; Nikolaev, 2018) shows that, due to the *ex ante* contractual incompleteness, a shift in control right to creditors can be conditioned on a wide set of information about future scenarios, including those outside of technical default and/or bankruptcy. Accounting restatements do not necessarily induce either a missed repayment

or a technical default, but it increases the perceived information asymmetry (e.g. Agrawal and Chadha, 2005; Graham et al., 2008; Chen et al., 2013). Therefore, we predict that existing lenders are more likely to modify the original contract terms as an *ex post* monitoring tool when their borrower restates its financial statements. We then further explore the renegotiation outcomes in the existing lending relationship after accounting restatements. Prior literature suggests a negative impact of accounting restatements on the new debt contracts signed after the restatement, reflecting a passive attitude from the new creditors (e.g., Graham et al., 2008; Costello and Wittenberg-Moerman, 2011; Chen, 2016). However, the lenders in relationship are more likely to have different reactions to restatements than those who newly enter into the contractual relationship due to their private information access and bonding interests in the existing contracts.is yet unexplored. Therefore, our second research question is aiming to understand in what direction, each initial contract term is modified in the post-restatement period.

We posit that creditors at different stages of debt contacting would have different reactions to the restatement for the following two reasons. First, prior literature argues that creditors in existing lending relationship are willing to provide financial flexibility and long-term funding to assist their borrowers in situations of financial difficulties because these creditors can reap gains from the lender-borrower relationship by obtaining the borrower's proprietary information and earning potential benefits in "good times" (e.g., Chemmanur and Fulghieri, 1994; Berlin and Mester, 1998; Degryse et al., 2009). It indicates creditors in relationship may trade off the benefits from the valuable long-term bank-borrower relationship and potential default risk from their borrower's difficult situation. Despite of the largely documented negative impact from restatements, it is possible that creditors perceive the value of lending relationship overweighs the negative effect from increased borrower risk associated with a restatement.

Second, unlike creditors who enter into a new debt contract, existing creditors are bonded with a situation in which their borrowers have drawn their funds from the credit agreements to perform ongoing operating, financing and investment activities. Considerable restatement literature documents that misreporting firms would encounter a series of adverse economic consequences after the restatement (e.g., Hribar and Jenkins, 2004; Palmrose et al., 2004; Karpoff et al., 2008; Chakravarthy et al., 2014). As such, it is possible that the restating firms are more likely to experience financial and operating difficulties following a restatement than during normal

operation. These existing lenders may become more concerned about their borrowers' ability to repay the debt when restatements occur. Since the borrower's capability of debt repayment is related to the creditors' ability to recover the investment (Roberts and Sufi, 2009b), it suggests that the interests of the borrower and creditors are bonded. Therefore, existing creditors are less likely to restrict all the contract terms when the borrower restates its financial statements. Instead, due to the presence of bonding interest, lenders in existing relationship would be more tolerant towards restatements and may even offer relatively generous assistance and support borrowers by relaxing partial contract terms so that, to some extent, these financial flexibilities can reduce the probability of loan being default. However, given that the restatement often creates higher information risk and borrower's credit risk (e.g., Graham et al., 2008), it is also possible that existing creditors may tighten some other loan terms to compensate for the emerging borrower risk from a restatement.

We construct a novel dataset containing renegotiation information for existing contracts by manually reading through the SEC filings for restating firms covered in Audit Analytics for the period 2000-2008. We also collect related renegotiation data for non-restating firms in the control group should it is needed. During the data collection process, we reduce potential data biases by manually searching, checking and recording all the relevant debt contracting information from the SEC filings. As such, the renegotiation information in our sample is unique, and we contain all non-redundant loan facilities that keep active at least one year surrounding the restatement announcement in our final sample. Using this sample, we can trace whether and how contract terms were modified when a restatement occurred. After requiring firm-level financial data available on Compustat, stock price data available on CRSP, and loan origination terms and other basic debt contracts data available on Dealscan, our sample construction starts with 1,121 unique restatements.

We then employ the propensity score matching (PSM, hereafter) approach to examine whether the existing contractual terms are more likely to be renegotiated after the restatement than the non-restating firms, and apply within-sample analysis to explore the renegotiation outcome for restating firms.. The PSM matched sample consists of 710 firms (355 pairs) with 1,124 loan facilities, and the final sample used for within-sample analysis is 525 restating firms with 836 facilities. We find that restating firms have 35.21% higher likelihood of debt contract renegotiation than the PSM matched non-restating control firms within one year after the restatements This

finding suggests that accounting restatement is a strong predictor of the occurrence of debt contract renegotiation. In the sensitivity test, we further exclude the restating firm and its paired firm if the restating firm involves any sorts of defaults. The result shows the marginal effect of restatement on the probability of renegotiation is 28.84% and this effect remains statistically significant. Hence, it suggests that existing creditors are more likely to respond to accounting restatements by renegotiating the debt contracts.

Investigating the renegotiation outcomes, we have three main findings with respect to the modification of loan terms within one year after the restatements. Firstly, we find that around 65% of debt contract renegotiations have the extension of loan maturity and relaxation of either financial covenants or general covenants. In contrast to the findings for new contract after financial reporting problems, these results are consistent with our conjecture that existing creditors are willing to relax partial contract terms to assist the restating borrowers in pulling through the emerging financial and operating difficulties from a restatement. Secondly, we find that over 60% of loan modifications are associated with increment of interest rate, reduction of loan size and additional requirements for collateral to secure the loan. These findings suggest that, existing creditors behave in a similar way as the new creditors do by tightening some loan terms when it comes to protect themselves from the increased information risk and credit risk following borrowers' accounting restatements. Thirdly, we show an interesting finding that creditors who tighten one certain loan feature often relax at least another term. However, it is not the same case while the renegotiation is mainly about relaxation. For example, 82.27% of all the renegotiations with loan size decrement are associated with a concurrent relaxation of at least one other loan term; while only 49.07% of all the renegotiations with loan amount increment involve the tightening of another restriction in the contract. This finding suggests that the relaxation of contract terms is the primary motivation for a debt contract renegotiation when a restatement occurs. It is consistent with our prediction that existing creditors typically perceive the value of long-term customer relationship is greater than the potential borrower risk arising from an accounting restatement and thus are willing to offer more financial flexibility by relaxing partial terms to relieve the borrower's financial and operating difficulty stemming from a restatement.

To further explore the restatement impact on the loan amendment, we follow Chen (2016) to examine existing lenders' response to more severe types of restatements, i.e. the fraud or

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revenue-related restatements. This is because, these types of restatements are often deemed as caused by intentional manipulation of financial statements or misappropriation of assets (e.g., Ettredge et al., 2010). We find that, if the borrower's restatements involve fraud or revenue recognition issues, existing creditors are less likely to relax the original loan terms; instead, these creditors would impose more unfavourable terms to protect themselves from wealth transfer. This result suggests that creditors provide financial support to borrowers due to bonding interests in the existing contracts but the support will be provided only to the extent that the restatements are not severely damaging the creditors' trust in management.

Our study primarily contributes to the literature that investigates the role of accounting information in debt contracting by providing novel empirical evidence on the impact of restatements on debt renegotiation. Previous literature documents that creditors impose unfavourable terms and have more restrictions in new debt contracts that are initiated after the borrowers' restatements (Graham et al., 2008; Costello and Wittenberg-Moerman, 2011; Chen, 2016). In contrast, our study focuses on the restatement impact on renegotiations of existing debt contracts. We posit and find that a restatement impacts new and existing creditors differently. Specifically, unlike tightening restrictions that new creditors are more likely to respond to the borrowers' restatements, creditors in relationship are willing to provide financial flexibility to their restating borrower as they are bonded with borrowers' interests, and may perceive the value of long-term customer relationship is higher than the potential borrower risk arising from a restatement. To our knowledge, this paper is the first to examine the implications of accounting restatements on existing debt renegotiation.

We also add to the growing empirical research on the investigation of determinants of debt contract renegotiation. Prior contracting studies document that several factors such as *ex post* changes in firm's financial health and equity market conditions (Roberts and Sufi 2009b) and the proximity of actual covenant variable to its pre-determined limit (e.g., Denis and Wang, 2014) play an important role in debt contract renegotiation even without defaults or financial distress. We provide fresh evidence further parsing an accounting restatement is another trigger for a renegotiation. Thus, our research contributes to a better understanding of the motivation behind the debt contract renegotiation.

The following section presents our hypothesis development. The third section shows the data and sample construction. The fourth section describes our research design. The fifth section discusses our empirical findings. We concludes the paper in the last section.

## 2. Hypothesis Development

An accounting restatement is a retrospective revision of previously issued financial information that fails to produce timely, relevant and credible information regarding the firm's current performance and expected future cash flows (e.g., Palmrose and Scholz, 2004; Chen et al., 2013). Correction of inaccurate financial statement disclosures often diminishes the reliability of financial reporting (e.g., Gleason et al., 2008). In addition, since managers in the restating firms have various incentives to misreport[1], financial misreporting often generates more questions about other aspects of the firm's managerial behaviours, reported performance, and internal control system (e.g., Kinney and McDaniel, 1989; Graham et al., 2008). As such, accounting restatement often amplifies the information asymmetry between contractual parties and decreases the visibility of the firm. Such reduction in information transparency leads to the difficulties of debtholders in gathering and processing firm-specific information, which induces a high level of information risk. This information risk is a non-diversifiable risk (e.g., Easley and O'Hara 2004; O'Hara 2003) and should be considered in the existing debt contracting. Moreover, Duffie and Lando (2001) construct a theoretical model that information risk faced by creditors is a function of borrower default risk (see also, Kim et al., 2011). Thus, existing creditors are motivated to evaluate downside risk from time to time and make a subsequent adjustment on prior credit agreement to prevent the borrower from participating in loan-value-destroying actions due to divergent interests.

We posit that accounting restatement is a key driver of debt contract renegotiation also due to the following two reasons. First, debt contract renegotiation enables the existing creditors to

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[1] Specifically, managers may have pressure to conceal poor financial performance (e.g., Scholz, 2014), financial distress (e.g., Summers and Sweeney, 1998), and unwise investment made in pre-misstated period (e.g., Kedia and Philippon, 2009; Bens et al., 2012). Some managers are motivated to seek for external financing, M&A, and investment at lower cost (e.g., Dechow et al., 1996; Efendi et al., 2007; Chen et al., 2016), and attempt to meet high market expectation (e.g., Graham et al., 2005; Burns and Kedia, 2006). Managers may also manage earnings upwards to enhance their external reputation (e.g., Farrell and Whidbee, 2003; Francis et al., 2004; Desai et al., 2006) and maximize their personal wealth through option-based compensation (e.g., Burns and Kedia, 2006). Avoiding debt covenant violations is another important factor that incentivizes managers to manipulate earnings (e.g., Pittman and Zhao, 2019).

have more intensive monitoring activities and disciplines on management discretion over firm's decision making (Nikolaev, 2018). In return, creditors can benefit from renegotiation to protect themselves from future wealth transfer. Such benefits are more pronounced for severe agency conflicts and information problems (e.g., Berlin and Mester, 1992; Garleanu and Zwiebel, 2009). Second, considerable restatement research documents that a series of significant negative economic consequences following a restatement[2]. These adverse consequences would have real impacts on the firm's financing, operating, and investment activities (Karpoff et al., 2008), which in turn, has a negative effect on firm's cash flow (Graham et al. 2008). The misreporting firms may encounter financial and operating difficulties after the restatement announcement, which could impair the firm's ability of debt repayment and thus increase the borrower's default probability. The diminished ability of the borrower to repay the debt would in turn raise the creditors' concerns about their ability of recover the investment. Existing creditors would take actions to reduce the likelihood of a loan being default through debt contract renegotiation. Therefore, we would expect to see a positive association between accounting restatement and debt contract renegotiation.

However, there are possible reasons that accounting restatements do not necessarily trigger a debt contract renegotiation if no missed repayment or technical violation following it. First, since debt contract renegotiation is a costly and time-consuming process, creditors may want to avoid this process unless the borrower has approached or is approaching to default states. Syndicated loan market has become the most important sources of corporate financing in private debt market worldwide during the past two decades (e.g., Lin et al., 2012; Lim et al., 2014). All lenders who participate in the syndicated loan should reach a consensus on a renegotiation involving material contract modifications (Wight, Cooke, and Gray, 2009). The unanimous consent process would induce a large number of coordination costs, such as amendment fees, timeliness of reaching agreement, hold-up problem by some lenders, or the likelihood of failing to approve modification (e.g., Gertner and Scharfstein, 1991; Bris and Welch, 2005). Second, since debt holders are less informed about firm projects and financial performance than management (Garleanu and Zwiebel,

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[2] For example, the revelation of financial misstatement could lead to a substantial decline in firm valuation (e.g., Palmrose et al., 2004; Hennes et al., 2008), higher cost of capital (e.g., Hribar and Jenkins, 2004; Chen 2016), unfavourable trade provisions with outside stakeholders (e.g., Karpoff et al., 2008), and less supports and assistance from local communities (Chakravarthy et al., 2014).

2009), private bank loans typically include more restrictive and detailed contract terms, such as performance-pricing provisions and debt covenants (e.g., Asquith et al., 2005; Chava et al., 2010; Beatty et al., 2010), to mitigate agency conflicts and information asymmetries between contractual parties (e.g., Berlin and Mester, 1992; Nini, et al., 2012). Hence, if the restated accounting figures do not violate pre-determined covenant thresholds, creditors may not want to exercise their control right to make subsequent modifications to loan terms.

Despite of the competing view stated above, we predict that debt contract renegotiation is more likely to occur when the borrower restates its financial statement, since an accounting restatement has been influential in many aspects of the borrower's operation and financial situation. We state our first hypothesis in alternative form as follows:

**H1**: The likelihood of debt contract renegotiation is positively associated with the occurrence of accounting restatement.

### 3.2. Accounting restatements and renegotiation outcomes

The impact of restatement on debt contract renegotiation is remained as a black box. Our aim in this section is to provide a better understanding of the role of restatement in debt renegotiation by examining the possible renegotiation outcomes. Comparing to creditors who are about to sign a new contract, existing creditors are trapped in a situation where the borrowers have obtained their investment to undertake operating activities. Hence, creditors in relationship are more likely to have different reactions towards financial misreporting. These creditors would relax partial loan terms when their borrower announces a financial restatement[3] for two primary reasons.

First, research on relationship lending suggests that both contractual parties reap gains from bank-borrower relationship (e.g., Chemmanur and Fulghieri, 1994; Berlin and Mester, 1998; Elsas and Krahnen, 1998; Degryse et al., 2009). They find that lenders in lending relationship are willing to offer long-term funding to assist their debtors in times of financial difficulties (see Degryse et al., 2009, pp. 115-117). Such assistance behaviour indicates that private lenders find it valuable to invest in and maintain long-term bank-borrower relationship (e.g., Petersen and Rajan, 1995; Berlin and Mester, 1998), because banks can enjoy a comparative advantage in gathering and

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[3]Accounting restatement contains a wide range of management intentions, which can be either unintentional errors or intentional frauds (Karpoff et al., 2014). However, in the second hypothesis, we focus on the overall effect of accounting restatement in the existing private debt contracting. We further explore the impact of severe restatements (fraudulent and revenue-related restatements) on loan amendment in section 5.2.4.

processing borrower's private information and benefit from potential rents earned in "good states" (smoothing interest rate, intertemporal subsidization) (e.g., Kirschenmann and Norden, 2012). If lenders close the existing relationship, they have to collect information *ex ante* and *ex interim* to seek for new borrowers, which would induce high sunk costs (e.g., Lehmann and Neuberger, 2001). Moreover, as mentioned earlier, a restatement often results in severe negative economic consequences, which would have an adverse influence on firm's cash flow (e.g., Graham et al., 2008). Existing lenders, therefore, are concerned about recovering their investment if restating firms incur difficulties in repaying the debt. Providing some slack on partial initial loan terms can somewhat relieve the emerging financial and operating difficulties from a restatement. This in turn, can reduce the probability of a loan being default. If existing lenders perceive the value of lending relationship is higher than increased borrower risk from a restatement, they are willing to help their borrower on the verge of financial difficulty and have endogenous incentives to offer financial flexibility and favourable loan terms to sustain such valuable customer relationship.

Second, existing creditors are in a relatively superior position in obtaining the inside information about the restating firms. Creditors in relationship, relative to outsiders, monitor the borrowers more actively and closely throughout the debt contracting process and may perceive management incentives for misreport (Chen, 2016). As earlier mentioned, managers in restating firms have various incentives to misstate their financial statements, both internal and external (e.g., Ettredge et al., 2010). Executives manipulate earnings not only due to the financial distress and poor financial performance, but probably because of their desires to achieve specific goals (e.g., Dechow et al., 1996; Graham et al., 2005; Burns and Kedia, 2006; Efendi et al., 2007; Chen et al., 2016). Therefore, if existing creditors, through their information advantage, perceive the accounting restatement does not emerge from behaviour that is detrimental to underlying business and thus loan value, they may be willing to offer some financial support during the restating firm's difficult time.

Taken together, we posit that existing creditors are more likely to relax partial contract terms that can provide the restating borrower with more flexibility to satisfy its additional investment and operating demands and such flexibility. This in turn, improves the borrower's capability of debt repayment and enhances the security of loan value.

There are several major contract terms that existing creditors can rely on to provide such flexibility. First of all, creditors in relationship would offer longer loan maturity to their restating borrower who have difficulty in refinancing or rolling over a new debt. Traditional banking literature (e.g., Diamond, 1991; Chemmanur and Fulghieri, 1994) investigates the association between borrower risk and loan maturity. Diamond (1991)'s theory suggests that loan maturity is a *nonmonotonic* function of borrower risk. He finds that low-risk and high-risk firms borrow short-term, since low-risk firms are able to roll over short-term debt at a relatively low interest rate and high-risk firms are often refused long-term debt due to high default risks. Intermediate-risk firms prefer to long-term debt to minimize refinancing risk and to avoid high transaction costs related to rolling over a new debt. Given that a restatement often results in higher information risk and greater credit risk (e.g., Palmrose, et al., 2004; Graham et al., 2008), restating firm would be considered to have median or high level of risk by outside investors (i.e., new lenders). Therefore, misreporting firms probably receive external financing at higher costs or may even have difficulty in seeking for other financial arrangement to repay the existing debt. In addition, Chemmanur and Fulghieri (1994) investigate how existing lenders deal with a situation in which their borrower is facing financial distress. They indicate that relatively risky debtors benefit most from bank-borrower relationship because these borrowers are likely to receive a longer maturity as a renegotiation outcome. This renegotiation outcome is possible, as lenders can benefit from firm's private information, strong decision rights over corporate operations and future investments and more intensive monitoring activities other than loan maturity (Chemmanur and Fulghieri, 1994). In summary, restating firms may face a higher probability of refinancing risk and high transaction costs associated with rolling over a new debt, thus seeking assistance from their current creditors. Creditors in relationship are willing to provide the restating borrower with the extension of loan maturity as financial flexibility because lenders can benefit from a reputation as good decision makers and a bank-lender relationship.

Debt covenants are another useful contractual mechanism for creditors to offer financial flexibility to their borrower. Previous finance literature describes debt covenants as trip wires to mitigate a wide range of agency conflicts associated with outside financing (e.g., Smith and Warner, 1979; Garleanu and Zwiebel, 2009). A failure in complying with the debt covenants would

cause tremendous negative consequences[4]. Managers therefore have great incentives to trade off the benefits of avoiding the breach of covenants versus the costs of complying with GAAP accounting standard (Pittman and Zhao, 2019). A rich literature (e.g., Watts and Zimmerman 1986; DeFond and Jiambalvo, 1994; Dichev and Skinner, 2002) documents that managers in misreporting firms are motivated to choose favourable accounting method to avert such severe consequences of covenant violations. Consistent with this view, Pittman and Zhao (2019) find that the tightness of financial covenant is positively associated with the likelihood of financial misstatement. The intentions for managers to avoid covenant violation would reduce the ability of covenants to monitor the borrower, and such diminished usefulness of covenants can erode the loan value (see, two examples presented in Prilmeier, 2017 pp. 560). In addition, the model in Garleanu and Zwiebel (2009) indicates that, in order to be granted strong control and decision rights, creditors deliberately set more restrictive covenant limits at a loan inception (see also Dessein, 2005). Denis and Wang (2014) provide evidence that creditors are willing to increase the covenant cushions to relax covenant restrictions when the borrower's actual covenant variables are closer to their pre-determined covenant thresholds. Denis and Wang (2014) also document that approximately 50% of debt covenants would be in technical defaults without the relaxation in covenant limits. The relaxation of covenant limits can allow the borrower not prohibited by *ex ante* stringent covenant restrictions and prevent the borrower from earnings manipulation to avoid actual covenant violations. Hence, we predict that creditors are more likely to relax financial covenants when the borrower restates its financial statement, because the relaxation of original restrictive financial covenants can weaken managers' incentives to avoid debt covenant violations and enhance the capacity of financial covenants to monitor borrower's financing, operating, and investment activities.

In addition to financial covenants, general covenants included in debt contracts also serve as an important role for creditors to provide flexibility to their restating borrower. General covenants can explicitly restrict the borrower's ability to take positive net present value (NPV)

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[4] For example, covenant violations result in higher costs of borrowing, accelerated debt repayment (Beneish and Press 1993), more restrictive constraints over important corporate decision (e.g., Chava and Roberts, 2008; Roberts and Sufi, 2009a; Nini et al., 2012). Violations of debt covenants also engender significant information asymmetry and uncertainty on the aspects of outside investors and auditors (Gao et al., 2017), and have an adverse influence in executive careers (Nini et al., 2012).

projects in good states (e.g., Nini et al., 2009). As noted above, the outside capital providers, local communities, customers and suppliers would impose unfavourable provisions of trade when a restatement occurs (Karpoff et al., 2008; Chakravarthy et al., 2014). These unfavourable terms of trade from outsiders can impede the restating firms to undertake ongoing business strategy and thus have a negative impact on firm's cash flow. We posit that creditors are willing to provide the borrower with flexibility by relaxing some general covenants to satisfy its specific operating and financial needs. On one hand, it can be explained by the view on lending relationship that existing lenders offer favourable terms to debtors who need assistance (e.g., Chemmanur and Fulghieri, 1994; Degryse et al., 2009). The assistance from existing creditors, on the other hand, can mitigate adverse economic consequences from a restatement and thus enhance borrower's ability of debt repayment.

In short, we predict that creditors are more likely to provide the borrower with assistance and support by relaxing loan maturity, financial covenants and general covenants, since such assistance can both enhance the creditors' ability to recover their investment and sustain valuable long-term customer relationship. Given the similar role that loan maturity and debt covenants play in debt contracting, which has impacts on borrowers' financing, operating and investment activities (Kirschenmann and Norden, 2012; Denis and Wang, 2014), we group these three loan terms into borrower flexibility category (*CATEGORYONE*) in our study. Moreover, since the relaxation of one particular terms from *CATEGORYONE* may result in large default risk and great *ex post* agent conflicts (e.g., Flannery, 1986; Demiroglu and James, 2010), we posit that creditors would not relax all of them simultaneously. Overall, we predict that loan terms from *CATEGORYONE* are more likely to be relaxed after the restatement announcement. This leads to the first direction of our second hypothesis:

**H2a (Assistance provided by existing lenders):** *Ceteris paribus*, loan maturity, financial covenants and general covenants are more relax for the same contract in the post-restatement period than that in the pre-restatement period.

Accounting restatement often results in higher credit risk and greater information risk (e.g., Palmrose et al. 2004; Wilson, 2008; Graham et al., 2008; Chen et al., 2013). Traditional banking research (e.g., Freixas and Rochet, 1997; Strahan 1999) suggests that credit risk is the primary risk in the lending relationship and is positively associated with loan pricing. In addition, prior

literature provides theoretical evidence that firm-specific information risk is originated from limited information and this information risk is a non-diversifiable risk that should be incorporated in the security price (e.g., Easley, Hvidkjaer, and O'Hara, 2002; Easley and O'Hara, 2004). From a different angle, the positive association between information asymmetry and cost of borrowing can be explained by the argument that greater information disclosure and higher quality of financial information can mitigate information asymmetry and thus reduce the cost of debt financing (e.g., Diamond and Verrecchia, 1991; Verrecchia, 2001; Graham et al., 2008; Wittenberg-Moerman, 2009). Hence, we predict that, when the borrower restates its financial statement, existing creditors are more likely to charge a higher interest rate to compensate for increased credit risk, and emerging information risk from borrower's poor information disclosure quality.

Previous literature (e.g., Strahan, 1999; Qian and Strahan, 2007) on private debt financing documents that lenders' downside risk is determined by the amount of their investment on the borrower, and the size of loan can limit the lenders' potential risk exposure. Creditors would evaluate the timing and riskiness of its expected future cash flow from current projects and future investment to determine the deal size (Armstrong et al., 2010). In other words, the borrower's ability to generate the cash flow can be reflected in the size of revolving lines of credit and term loans (Strahan, 1999). Even though private lenders have easier access to the borrower's private information and superior information processing capability (e.g., Bharath et al., 2008; Chen 2016), they still prefer to the most reliable information regarding their downside risk, borrower's financial health and operating performance (Armstrong et al., 2010). If borrower's financial statement provides overstated asset values and reported earnings, opaque performance measures, or the measures that make it difficult to anticipate the borrower's future cash flows, the creditors may fail to assess their downside risk and evaluate the credit quality of the borrower. As stated above, the restatement often leads to a higher information asymmetry and creates the overall uncertainty regarding firm's financial health and reported performance (e.g., Palmrose et al. 2004; Chen et al., 2013). Creditors would also question the credibility of information provided by the borrower and therefore reduce the loan size to mitigate their potential loss in case of default and/or bankruptcy. There is a subtle but essential point that needs to be recognized. In many cases, the reduction of loan amount would affect the debt capacity of the credit agreement rather than the actual flow of capital (Roberts and Sufi, 2009b). The reduction of loan size rarely results in an immediate

repayment of part of the loan; instead, it typically restricts the firm's ability to borrowing from this credit agreement. This argument indicates that the reduction in loan amount serves as an important role in eliminating potential losses with the limited constraints on the firm financing, producing and operating activities. Thus, we posit that creditors are more likely to reduce the loan amount when the borrower restates its financial statement due to the difficulty in assessing its future expected cash flow.

Collateral requirements are common features of loan made by lenders (Rajan and Winton, 1995; Jimenez, Salas, and Saurina, 2006), together with interest spread, loan maturity, loan size and debt covenants. Theoretical financial research documents that collateral is often used to reduce or avert the moral hazard (Boot et al., 1991), and/or adverse selection (e.g., Bester, 1985; Besanko and Thakor, 1987a, 1987b). A collateralized creditor's specific claim on the assets pledged to secure a loan could minimize the losses in case of loan default and/or bankruptcy, suggesting that collateral can reduce the riskiness of a loan (e.g., Berger and Udell, 1990). Previous literature finds that risker borrowers are more likely to pledge collateral to secure the loan (e.g., Morsman, 1986; Jimenez, Salas, and Saurina, 2006). This finding supports the important role that observed risk issues play in decisions on the loan terms. Rajan and Winton (1995) documents that collateral is motivated as contractual devices that provide the creditors with great incentives to monitor the borrower and thus enhance the monitoring efficiency. Accounting restatement suggests that previously issued financial information is inaccurate and managers in restating firms are less than credible (e.g., Chen et al., 2013). As such, restating firms are often perceived to have severe information disclosure problems and larger credit risk after the restatement announcement. Therefore, we predict that potential borrower risk arising from a restatement would incentivize the creditors to demand collateral to grant a security to the existing loan.

Taken together, we predict that lenders are more likely to increase interest rate, reduce the loan amount, and pledge collateral to secure the loan for the same loan facility when the borrower restates its financial statement to compensate for increasing borrower risks from accounting restatements. Since interest spreads, loan amount, and collateral requirement can potentially be tightened to reduce potential losses in defaults and/or bankruptcy, we classify these three contract terms into creditor investment protection category (*CATEGORYTWO*). This leads to the second direction of our second hypothesis:

**H2b (Compensation for borrower risk):** *Ceteris paribus*, interest spread and loan size are more restrictive, and a loan is more likely to be secured by collateral for the same contract in the post-restatement period than that in the pre-restatement period.

## 3. Sample Construction and Data Collection

### 3.1. Sample Construction

Our initial restatement sample consists of 14,705 accounting restatements in non-financial service industry with valid SIC information from Audit Analytics Non-Reliance Restatement database filed over the period 2000 through 2018. We choose the fiscal years 2000-2018 as our sample period, as Audit Analytics includes the restatement information filed by all SEC registrants beginning January 1, 2000 and bank loan information from Dealscan is available ending August 2019. Given that our analyses include firm characteristics to be our control variables, we then merge the restatement sample with Compustat database, which results in a sample of 10,678 restatement observations[5]. Next, we eliminate the firms that are not included in Dealscan by employing Roberts Dealscan-Compustat link (Chava and Roberts, 2008). We also require the firms in our sample have facility information with non-missing loan characteristics. This process leads to a loss of 1,657 firms from our sample. At this phase, sample selection procedures stated above create a sample of 2,465 restatements from 1,121 firms.

For each restating firm, we keep the first restatement if it restated multiple times during our sample period. However, we aggregate the financial effect of restatements that occur in the consecutive years to the first restatement to avoid any confounding effects[6]. This process leads to a sample in which the number of restating firms is equivalent to the number of restatements. The decision that we do not consider all the restatements in restating firms is due to two considerations: the sustained effect of previous restatement announcement and information collection cost. First, since it is possible that the effect of previous restatement still prolongs when contractual parties

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[5] Reichelt and Wang (2010) start their initial sample by including accounting restatements from Audit Analytics, and deduct around 25% of restatement observations without a matching CIK code when merging with Compustat. Audit Analytics and Compustat fail to merge perfectly for two reasons: a) Audit Analytics assigns the historical CIK to each firm-year observation, while Compustat adopts a header (i.e., current) CIK. b) some Compustat CIKs have errors, with the most obvious CIK error is Schering-Plough (gvkey: 009459). More discussions regarding this issue is beyond the scope of our study.

[6] For firms with multiple restatements, confounding effects may arise from the fact that the pre-announcement window of the subsequent restatement could overlap with the post-announcement window of the first restatement (Graham et al., 2008; Chen, 2016).

enter into a new debt contract, existing creditors who notice their borrower with lower accounting quality probably do not react to the subsequent restatements. Second, prior empirical studies acknowledge that collecting renegotiation information requires the significant amount of time to identify renegotiation events and the change in contractual terms by reading each firm's SEC filings (e.g., Roberts and Sufi, 2009b; Denis and Wang, 2014; Roberts, 2015). All of these studies adopt random selection method based on 3,720 private agreements from Nini, Smith, and Sufi (2009a) to narrow down their sample size and, therefore, reduce data collection cost. Our study focuses on the first occurring restatement, because it can help to both avoid potential concerns over selection bias from random selection and reduce our sample size in a reasonable way. A series of data-handling processes and further exclusions leave 1,121 unique or aggregate restatements from 1,121 restating firms that is deemed as our firm-level pool sample. See more details about the sample selection procedure of restatement firms in the Panel A of Table 1.

In order to test the first hypothesis that whether or not the accounting restatement increases the likelihood of debt contract renegotiation, we adopt a Propensity Score Matching (PSM, hereafter) method using firm-level pool sample to further refine our sample. In particular, we apply a PSM approach with 1:1 nearest neighbour to identify non-restating control firms of which firm characteristic should be identical or as similar as possible to that of restating firms from treatment group. Treatment group is the firm-level pool sample after further excluding 99 missing restatement-year control variable information, which yields a sample of 1,022 misreporting firms. Control group includes all the non-restating firms from Dealscan *FACILITY* database with Compustat records and no missing loan characteristics. More detailed descriptions of PSM process and its matching quality are presented in the sections of research design. The PSM process creates a sample of 765 matched pairs[7] of restating and non-restating firms.

We then manually merge each firm from PSM sample with loan facilities from Dealscan *FACILITY* database. Note that if only restating firm or only non-restating control firm from

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[7] Around 25% of treated firms fails to have matched control firms is because we conduct firm-level PSM approach by using firm characteristic variables calculated at the four fiscal years (*t-4*) before announcement date for treated firms or before the disclosure date for control firms. This leads to a situation where the firms at time (*t-4*) do not exist in the Compustat and thus have missing Compustat control variables which cannot be able to generate propensity score. For example, it is highly likely that the firm that announces accounting restatement in fiscal year 2000 but does not have any Compustat information in 1996. In our sample, 16,520 out of 55,289 firm-year observations have missing firm-level explanation variable at time *t-4*.

matched pairs has missing active facility, we will delete both of them (the pair). This process leads to a sample of 1,216 loan facilities from 768 firms (384 restating firms and 384 non-restating firms). We next eliminate firm observations missing the control variables required in our study. This process leads to a sample of 1,124 loan facilities from 710 firms (355 restating firms and 355 non-restating firms) to test the first hypothesis. In the sensitivity test, we attempt to test whether or not the restatement increases the likelihood of a debt contract renegotiation, even without any sorts of defaults. we further exclude the restating firm and its paired firm if the restatement firm involves a technical default or/and a repayment default. The filters stated above result in a sample of 982 loan facilities from 624 firms (312 restating firms and 312 non-restating firms). Table 1, Panel B presents the detailed sampling procedure for the first hypothesis.

To test the second hypothesis that how the features of existing contract are amended after the restatement announcement, we continue to manually merger each restating firm without matched control firm during the PSM process with the loan facilities from Dealscan *FACILITY* database. This merging process creates a facility-firm sample that consists of 812 firms with 1,293 loan facilities. We then deduct the firms with missing Compustat control variables. After excluding the facilities that are not renegotiated, we obtain a sample of 836 loan facilities from 525 restating firms that is to test the second hypothesis. Panel C of Table 1 reports the whole process of sample construction for the second hypothesis.

## 3.2. Data Collection

Financial data is available from Compustat, stock return data comes from CRSP, and macroeconomic variables are collected from Global Financial Data and FDIC. We extract basic data on bank loan from Dealscan provided by the Reuters Loan Pricing Corporation's (LPC, hereafter). Since renegotiation data is not available in Dealscan, we hand collect the details of renegotiation information from Security and Exchange Commission filings.

We examine SEC filings by using Electronic Data-Gathering, Analysis and Retrieval (EDGAR) system to collect information on debt contract renegotiation,. In particular, we obtain renegotiation information by researching and reading SEC filings (10-Ks, 10-Qs, and 8-Ks) of each firm within one year after a restatement. The SEC requires all public firms provide detailed information of their credit agreements (Johnson, 1997; Kaplan and Zingales, 1997) and disclose any significant changes to these credit agreements in the exhibits of firm's filings (e.g., Sufi, 2009;

Roberts and Sufi, 2009; Nini, Smith and Sufi, 2009a). By reading the detailed information in SEC filings, we can identify whether the credit facility is renegotiated and record the renegotiation outcomes of this credit facility.

More precisely, the first step for collecting renegotiation data is to gather the SEC filings with keywords "facility" and "credit agreement" for all our firm observations using SeekiNF. This platform[8] is a useful tool that enables users to employ a keyword search in different types of SEC filings. Then, we read each document in the annual reports (10-K), quarterly reports (10-Qs), and periodic reports (8-Ks) of which date is within one fiscal year after the restatement announcement. When finding a renegotiation, we record the exact date of this renegotiation reported in the firm's SEC filings. We record renegotiation outcomes from the description information of renegotiation reported in SEC filings. In our study, renegotiation outcomes include the renegotiation of six standard and common loan features, namely, interest spread, loan amount, loan securitization, loan maturity, financial covenants and general covenants. We also collect data on other variables that trigger a renegotiation, such as covenant violations, missed repayments, or other types of defaults, as described in the borrower's SEC filings.

[Insert Table 1 here]

## 4. Research Design

### 4.1.1. Reasons for using PSM

A challenge in the first hypothesis on the association between accounting restatements and the likelihood of debt contract renegotiation is that other determinants may also trigger the renegotiation of debt contracts (Roberts and Sufi, 2009b; Nikolaev, 2018). Thus, it is possible that restating firm has a debt contract renegotiation before the restatement announcement and debt contracts in the non-restating firms can be amended as well.

One important advantage of PSM is that it creates a sample of treated and untreated control subjects that are similar across relevant observed covariates (Shipman et al., 2017) except for the treatment effect. As such, the matching process is a relatively appropriate way to address the issue that other factors may also trigger the debt contract renegotiation. We employ a PSM approach to match each restating firm to its closest neighbour with same fiscal year and same industry, which

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[8] Available at: https://www.seekedgar.com/home.html

generates restatement announcement dates for the treatment group and its matched disclosure dates for the control group. We next perform a conditional logistic regression test to investigate whether restating firms relative to their non-restating control firms have a higher likelihood of a renegotiation within one year following the PSM matched date. Hence, the PSM approach can enable us to investigate our first research question in a relatively reasonable and accurate way.

**4.1.2. Identify non-restating firms through PSM**

The matching process starts with the treatment sample that consists of 1,022 restating firms (restatement observations). Managers in the misreporting firm have various incentives to misreport before the misstated period. Such financial misstatements will be detected and revealed to the public at the announcement date. It is important to determine the time interval between misstatement beginning date and restatement announcement date, since the aim of PSM in our study is to identify control firms whose observable baseline characteristics are nearly identical to those of restating firms at this determined time interval before the announcement date (also referred as to corresponding misstatement beginning date).

We choose 3.5 years as the average time interval for each restatement firm, because restatements with intervals less than 3.5 years covers around 75% of restatement observations in our treatment sample, and can be used as a representative time interval for the majority of restatement observations. Therefore, we can combine this representative time interval and announcement date to roughly calculate the time point when the firm is motivated to misstates its financial statement. We denote the presence of a restatement announcement as time $t$ and examine the exogenous factors that may encourage managers to have misreporting behaviours at four fiscal years ($t$-4) preceding the announcement date.

We estimate the propensity score using a logistic regression model[9], in which treatment status (whether or not the firm $j$ announces accounting restatement at time $t$) is regressed on

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[9] Previous PSM studies (e.g., Caliendo and Kopeinig, 2008; Austin, 2011; Shipman et al., 2017) suggest that there are several models can be used to estimate propensity score, such as linear probability model (LPM, hereafter), logistic regression model and probit regression model. We choose logistic model for two reasons: 1) Compared to logistic or probit model, LPM have some notable drawbacks especially when the dependent variable has a significant skewness and predictions fail to be within (0,1) bounds of probabilities (Caliendo and Kopeinig, 2008). 2) Caliendo and Kopeinig (2008) also suggest that logistic and probit models often generate the similar results for a dichotomous treatment case in which estimate the probability of being treated. Austin (2011) argues that logistic regression model is the most commonly used in the research area (see, for example, Haggard et al. 2015).

observable covariates at four balance sheet dates (*t-4*) before the restatement announcement. Specifically, the response variable is the natural logarithm of odds ratio of accounting restatement. Propensity score for each firm is estimated using the fitted value from the logistic regression model. Our match each restating firm to one non-restating firm with the closest propensity score within the same industry and fiscal year, and then drop unmatched observations to create our PSM sample.

***PSM model***

Previous literature provides several measures of firm characteristics that affect the likelihood of financial misstatement (e.g., Dechow et al., 1996; Dechow et al., 2011; Scholz, 2014), and debt contract renegotiation (e.g., Roberts and Sufi, 2009b; Denis and Wang, 2014; Nikolaev, 2018). Specifically, the managers in the firm with a smaller size (e.g., Gleason et al., 2008), poor financial performance (e.g., Scholz, 2014), a higher market expectation (e.g., Graham et al., 2005; Badertscher, 2011), or a larger leverage ratio (e.g., Dechow et al., 1996, Beatty et al., 2003; Pittman and Zhao, 2019), have great incentives to misreport the financial statement. In addition, Roberts and Sufi (2009b) argue that change in firm characteristics is a strong predictor of the incidence of renegotiation. For example, the asset growth, increase in firm's financial leverage, decline in profitability, and the fluctuation in the stock return performance may have large impacts on the likelihood of debt contract renegotiation. Therefore, we use a firm-level PSM approach to create a firm-level matched sample by identifying control firms whose firm characteristics at time *t-4* are similar to those of restating firms. This matched sample makes it possible to examine whether accounting restatement increases the likelihood of renegotiation, as we can further include firm characteristics in the fiscal year *t* of the PSM matched date in the conditional logistic model (2) from our main test to control for the effect of change in firm's financial and operating conditions.

Taken together, to balance the efficiency and bias of variable selections, we include four firm characteristics (total book assets, return on assets, financial leverage, and market to book ratio) calculated at four fiscal year preceding restatement announcement (*t-4*) in our firm-level PSM logistic model. The dependent variable *RESTATEMENT$_{j,t}$* equals 1 when firm *j* restates its financial statement at time *t*; 0 otherwise. The PSM model is as follows:

*Pr(RESTATEMENT$_{j,t}$=1)* $=$ *log($\frac{p_j}{1-p_j}$)$=$ $\gamma_0$ $+$ $\gamma_1$LNASSET$_{j,t-4}$$+$ $\gamma_2$ROA$_{j,t-4}$ $+$ $\gamma_3$ LEVERAGE$_{j,t-4}$$+$ $\gamma_4$ Market-to-Book$_{j,t-4}$ $+$ Industry $+$ Year $+$ $\varepsilon$*                     ***Model (1)***

Where, $p_j$ is the latent probability that the firm $j$ restates its financial statement at time $t$ ($p_j$=1). Covariates in model (1) is calculated at four fiscal years preceding the restatement announcement (*t-4*). The covariates are defined as follows: *LNASSET* is the natural log of total book assets (#AT). *ROA* is EBITDA scaled by total book assets (#EBITDA/#AT). *LEVERAGE* is the total debt scaled by total book assets ((#DLC + #DLTT)/#AT). *Market-to-Book* is the sum of market value of equity and book value of debt (#LT + #PSTKL - #TXDITC + #PRCC_F * #CSHO)) scaled by total book assets (#AT). We collect firm characteristics variables from the COMPUSTAT. The PSM model also includes industry (Fama and French 12-industry) and year fixed effects to capture any variations over time and across different industries.

### 4.1.3. PSM results

### 4.1.3.1. Logistic regression results for Propensity Scores

Panel A of Table 3 presents estimated coefficients and their corresponding z-statistic from the PSM model. The results indicate that firms with larger sizes (*LNASSET*) and a higher market expectation (*Market-to-Book*) have greater incentives to misstate its financial statement. However, profitable firms (ROA) are less likely to have misreport behaviours. In particular, a one-unit increase in firm size yields a 0.1376 increase in the log-odds of the accounting restatement, holding all other covariates constant. The log-odds of restatement increases by 0.0284 when the firm's stock return performance increases one unit and decreases by -0.6942 for one-unit increase in firm's profitability, holding all other covariates constant. The likelihood ratio (LR) Chi-square is statistically significant at the 0.1% level. It suggests that there is no effect of four covariates included in PSM logistic model (1), taken together, on the dependent variable (accounting restatement).

### 4.1.3.2. Covariate balance test for firm-level PSM sample

In Panel B of Table 2, we report the balance of measured covariate test between treatment and control groups to test the validity of firm-level PSM process in our study. It shows that there is a significant reduction in the differences between treated and control firms after matching. The standardized bias of all the covariates after matching are less than ± 10%, suggesting that PSM approach used in our study is valid in reducing potential selection bias. Moreover, the p-value for dimension reduction t-test of each covariate is over the 10% significance level, which indicates that the covariate of treated and comparison groups have similar distributions after being matched

by propensity scores. The Pseudo $R^2$s before and after matching are 0.100 and 0.003 in firm-level PSM, respectively. It reveals that the likelihood of restatement can be explained by covariates better before the matching than after the matching. The Pseudo $R^2$ after matching is low because covariates have similar distributions between treatment sample and comparison sample (Caliendo and Kopeinig, 2008). In addition, the likelihood ratio (LR) Chi-square is statistically significant at the 0.1% level before the matching, whereas the likelihood ratio (LR) test on the joint significance of four independent variables is not statistically significant after the matching. All the results stated above indicate that the PSM process is valid and is of good quality.

[Insert Table 2 here]

**4.2. Test of the first hypothesis (H1)**

Using this facility-firm connected sample, we estimate a conditional logistic regression model, Model (2), to compare the difference in dependent variable, the probability of renegotiation, within propensity score-matched pairs. Model (2) is presented as below:

$Pr(RENEGOTIATION_{i,t+1})$ = $α_0$ + $α_1$ $RESTATEMENT_{j,t}$ + $α_2$ $LNASSET_{j,t}$ + $α_3$ $ROA_{j,t}$ + $α_4$ $LEVERAGE_{j,t}$ + $α_5$ $Market$-$to$-$Book_{j,t}$ +$α_6$ $ΔBANKLEVERAGE$ + $α_7$ $ΔCREDITSPREAD$ + $α_8$ $ΔGDPGROWTH$ +$α_9$ $ΔSTOCKRETURN$+$Deal$ $purpose$+$Credit$ $rating$ +$Loan$ $characteristics$+ $ε$

*Model (2)*

Where, dependent variable *RENEGOTIATION* is an indicator variable that takes the value of one if the loan facility *i* has at least one major contract term (interest spread, loan maturity, loan amount, collateral requirement, financial covenants and general covenants) amended within one year (*t+1*) after a restatement. Test variable $RESTATEMENT_{j,t}$ is a dummy variable, which equals 1 if the firm *j* is from the treated group; 0 if the firm *j* is from the control group. $α_1$ is the coefficient of interest (the coefficient of *RESTATEDFIRM*). The first hypothesis (H1) on the positive association between accounting restatement and the likelihood of debt contract renegotiation is supported if $α_1$ is positive at conventional significant level.

The empirical evidence from prior renegotiation studies (e.g., Roberts and Sufi, 2009b; Denis and Wang, 2014; Nikolaev, 2018) shows that change in firm characteristics and change in macroeconomics factors have impacts on the likelihood of renegotiation. Since the first-step PSM process has generated a sample of the matched firms (restating firm and its paired non-restating firm) with the similar firm characteristics at time *t-4*. We only include the current value of firm

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characteristics and change in macroeconomics factors in Model (2) to control for the fluctuation in firm condition and equity and credit market condition. The definition of these four firm characteristic variables is the same as that Model (1). All the firm characteristic variables are calculated using the data at the PSM matched date *t*. The indices of firm characteristics correspond to firm (*j*) – facility (*i*) – fiscal year (*t*) observations.

For macroeconomics variables, we follow Roberts and Sufi (2009b) and Denis and Wang (2014) to include credit spread, bank leverage, GDP growth, and aggregate stock return in Model (2). To be specific, credit spread proxies for the liquidity of public debt markets as a whole and, hence, high credit spreads corresponds to a lower demand for corporate bond and a higher creditor bargaining power. We examine an aggregate measure of credit spread (*CREDITSPREAD*) using the difference between yield on BB-rated publicly traded bonds and the yield on AAA-rated publicly traded bonds to evaluate credit market conditions. In addition, bank financial leverage (*BANKLEVERAGE*) reflects financial health of the banking sector, which plays an essential role in determining the willingness of lenders to initiate the debt contract renegotiation process. We calculate the ratio of total liabilities to total book assets to measure bank leverage at the aggregative level of commercial banks in the United States. We collect this data from the Federal Deposit Insurance Corporation (FDIC). GDP growth (*GDPGROWTH*) is an indicator of aggregate productivity and refers to the United States Real GDP in constant 2012 dollars from Global Financial Data. Stock market return (*STOCKRETURN*) reflects the degree of equity financing's attractiveness and is measured by using the quarterly market return on the value-weighted market portfolio from the CRSP database. All these market condition control variables are contemporaneous to avoid any mechanical associations. In particular, we measure the change in each of these covariates as the difference between the value in the fiscal year of the PSM matched date *t* and the value in the fiscal year of loan origination or prior renegotiation date (*t-x*), to control for the evolution of macroeconomics factors from the time of loan origination.

We also incorporate *ex ante* loan characteristics, i.e. initial contract terms, to control for their potential impacts on the likelihood of renegotiation, since they are found to have a significant impact on the sensitivity of renegotiation to changes in the firm's financial condition (Roberts and Sufi, 2009b). Following Roberts and Sufi (2009b), the initial contract terms that we included in the model are as follows: *LOG(LOANMATURITY)* is the natural log of stated maturity of each loan

facility *i* in firm *j* (#Maturity from Dealscan FACILITY database). *LOG(INTERESTSPREAD)* is the natural log of basis point spread over benchmark, typically LIBOR, for each loan facility *i* in firm *j* (#All-in-Drawn from Dealscan CURRENT FACILITY PRCING database). *LOG(LOANAMOUNT)* is the natural log of loan amounts for each facility *i* in firm *j* (#Facility Amount from Dealscan FACILITY database). *LOG(NLEANDER)* is the natural log of the number of lenders in the lending syndicate for each loan facility *i* in firm *j* (#Lender from Dealscan LENDER database). Covenant on cash flow is a dummy variable, which equals 1 if the covenant contains a covenant on any cash flow measure (e.g., Debt/EBITDA, fixed charge coverage, interest coverage, etc.); 0 otherwise for each deal *i* in firm *j* (#CovenantType from Dealscan (SAS) files). We also include an indicator variable *YOUNGLOAN*, which takes the value of 1 if the loan facility *i* in firm *j* has elapsed less than half of the stated maturity; 0 otherwise. Collateral requirement (*SECURITY*) is an indicator variable, which equals 1 if lenders require loan facility to be secured, 0 otherwise (#Secured from Dealscan FACILITY database). Credit rating fixed effect and deal purpose fixed effect are also included to control for the variations in credit risks, and any systematical differences across deals, respectively.

**4.3. Test of the second hypothesis (H2)**

**4.3.1. The model**

We follow Costello and Wittenberg-Moerman (2011) to conduct the following ordinary least square (OLS) regression to examine the effect of restatement announcement on the amendment of each initial loan term, except for the likelihood of security requirement. For the likelihood of security requirement, since it is an indicator variable, we estimate a logistic regression for it. The Model (3) is presented as follows:

*LOANFEATURE$_i$ = β$_0$ + β$_1$ RESTATEDPOST$_i$ + β$_2$ LNASSET$_j$ + β$_3$ ROA$_j$ + β$_4$ LEVERAGE$_j$ + β$_5$ Market-to-Book$_j$ + β$_6$ TANGIBLE$_j$+ β$_m$ LOANSPECIFIC_CONTROL$_i$ + Year + Industry + Deal purpose + ε* **Model(3)**

**4.3.2. Dependent variables**

Dependent variable *LOANFEATURE* in model (3) refers to one of five features of a debt contract: *CATEGORYONE*, which consists of the natural log of loan maturity (*LOG(MATURITY)*), financial covenant index (*FINCOVENTIndex*), and general covenant index (*GENCOVENTIndex*);

*CATEGORYTWO*, including interest spread (*INTERESTSPREAD)*, the natural log of loan amount (*LOG(LOANSIZE)*), and the likelihood of a loan to be secured *Pr(SECURITY=1)*.

### 4.3.3. Test variable

*RESTATEDPOST$_i$* equals to 1 if the loan facility *i* is renegotiated within one fiscal year after the restatement announcement date (*t+1*), and equals 0 if the loan facility *i* is the original debt contract issued before the restatement announcement. The coefficient (*β$_1$*) of *RESTATEDPOST* is the focus of main analysis for the second hypothesis. H2a that contractual terms from *CATEGORYONE* are more relax in the post-restatement period is supported, if we observe *β$_1$* is positive when the dependent variable is *LOG(MATURITY)*, and negative when the dependent variable is one of the following features of debt contract: *FINCOVENTIndex*, *GENCOVENTIndex*. H2b that contract terms from *CATEGORYTWO* are more tighten in the post-restatement period is supported, if we observe *β$_1$* is positive when the dependent variable is one of the following loan features: *INTERESTSPREAD*, *Pr(SECURITY=1)*, and *β$_1$* is negative when the dependent variable is *LOG(LOANSIZE)*.

### 4.3.4. Control variables

The control variables in the Model (3) include firm characteristics that could have influence on the features of debt contract (e.g., Graham et al., 2008; Costello and Wittenberg-Moerman, 2011; Kim et al., 2011). The firm with a smaller size (*LNASSET*), a lower profitability (*ROA*), poor growth opportunities (*Market-to-Book*), a higher financial leverage ratio (*LEVERAGE*), few tangible assets (*TANGIBLE*) coincide with higher agency costs of debt and less favourable debt covenants. To be specific, larger firms (*LNASSET*) are expected to have lower information asymmetry and, therefore, can receive external financing with smaller monitoring costs and borrow from private lenders on more favourable terms. Profitable firms (*ROA*) typically have lower default risks, suggesting that these firms can borrow at lower cost and with more favourable loan features. We also include market to book ratio (*Market-to-Book*), as an indicator of a firm's growth prospects. All else equal, growth firms may receive a lower cost of bank borrowing. However, the competing view suggests that the borrower recognized as having better growth options may be vulnerable to financial distress (Graham et al., 2008). It suggests that growth firm may receive higher cost of debt. The borrowers with higher leverage ratios (*LEVERAGE*) are subject to higher default risk and hence, we expect that these firms are likely to face a higher

borrowing cost. We also incorporate tangibility of book assets (*TANGIBLE*) in the model. Since creditors can recover tangible assets should the borrower default, we expect borrowers with more tangible assets are associated with lower borrowing costs and more favourable loan terms. The definition of all firm characteristic variables is discussed in the firm-level PSM model (1)'s specification, except for *TANGIBLE*. *TANGIBLE* is defined as the ratio of net property, plant and equipment (COMPUSTAT item #PPENT) to total assets (COMPUSTAT item #AT).

We also incorporate six standard *ex ante* loan characteristics to control for the potential correlations with each other (Graham et al., 2008). *LOANSPECIFIC_CONTROL* comprises interest spread over LIBOR (*INTERESTSPREAD*), the natural log of loan size (*LOG(LOANSIZE)*), the natural log of loan maturity (*LOG(MATURITY)*), the likelihood of a loan being secured (*SECURITY*), financial covenant index (*FINCOVENTIndex*), and general covenant index (*GENCOVENTIndex*). These loan characteristic variables can also be the dependent variable in the Models (3) and (4). If we choose one of six loan features as our dependent variable, then the remainders will be assigned to control variables.

All loan characteristic variables are defined in the conditional logistic model (2)'s specification, except for financial covenant index (*FINCOVENTIndex*) and debt covenant index (*GENCOVENTIndex*). We discuss how to measure these two debt covenant indexes in the following section 4.3.5. we last include industry (Fama and French 12-industry) fixed effects and year fixed effect to account for any variations across industries and over time. Deal purpose fixed effects are also included in the Models (3) to control for any systematic variations across deals.

### 4.3.5. Measures of debt covenant indexes

It is acknowledged that there are more than one restrictive covenants (either financial covenants or general covenants) included in each debt contract (e.g., Doyle, Ge, and McVay, 2007a; Kim et al., 2011). In addition, individual covenants can be amended in multiple aspects[10] (Denis and Wang, 2014). Thus, it is quite difficult to recognize whether the financial (general) covenants, on average, are tightened or relaxed under the one contract renegotiation. In other words, the nature

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[10] For financial or general covenants that place a maximum or minimum number on certain accounting ratios or financial figures, the restrictive thresholds usually are modified over the life of the loan contract. However, when these covenants are renegotiated, their thresholds for multiple period often changes. For purposes of recording how the covenant limit changes induced by a renegotiation, we compare covenant limit under the same period between the original contract and the renegotiated contract.

of some renegotiations regarding the debt covenants is typically mixed. For example, a renegotiation increases the minimum level of interest coverage (tightened) and, yet, in the meanwhile, increases the maximum level of leverage ratio (relaxed). Some renegotiations even do not change restrictive thresholds for debt covenants, but modify applicable clauses attached to the requirement of those covenants.

There is a lack of renegotiation literature suggesting how to measure the mixed renegotiation outcomes of debt covenants, with an exception of Denis and Wang (2014). Denis and Wang (2014) treat the renegotiation outcome that covenant existing limits within the same group are both tightened and relaxed as no renegotiation. However, they overlook a situation where the number of covenants whose limits are tightened does not equal to that of covenants whose limits are relaxed.

To accurately identify the direction and magnitude of modified covenants in a single renegotiation, we follow the spirit of Davis et al. (2016) to construct a financial covenant index score (*FINCOVENTIndex*) and a general covenant index score (*GENCOVENTIndex*). In particular, financial covenant index score (*FINCOVENTIndex*) is based on 15 distinct financial covenants from "FinancialCovenant" and NetWorthCovenant" datasets from Dealscan. Standard definitions of financial covenants are presented in Appendix 2 Panel A. Following Armstrong et al. (2010), Costello and Wittenberg-Moerman (2011) and Denis and Wang (2014), we construct a general covenant index score (*GENCOVENTIndex*) is based on four categories[11] of general covenants: investment restrictions (capital expenditure [12] and acquisition restrictions), borrowing-based restrictions, payout covenants (restrictions on dividend, repurchase, and payout to other stakeholders), other restrictive covenants (insurance proceeds, cash flow, asset sale and debt/equity sweeps). The four categories of general covenants are defined in Appendix 2 Panel B. With respect to the specific index construction, we calculate *FINCOVENTIndex* (*GENCOVENTIndex)* by adding 1 for each identified financial (general) covenant limit that is tightened, subtracting 1 for

[11] Note that there are more than one covenant restrictions within each category of general covenants and thus each credit agreement may include more than four general covenants.
[12] Max. Capex (the maximum level of capital expenditure) is included in the Dealscan "FinancialCovenant" dataset. However, Max. Capex is not accounting-ratio-based financial covenant (Demerjian and Owens, 2016) and is not placed under the financial covenant section in the credit agreement. Thus, we follow Denis and Wang (2014) to regard Max. Capex (capital expenditure) as one type of general covenant.

each identified financial (general) covenant limit that is relaxed, and summing across all tightened covenants and relaxed covenants for each loan facility $i$.

Since both financial covenant index (*FINCOVENTIndex*) and general covenant index (*GENCOVENTIndex*) reflect the aggregate change in debt covenants, the coefficients and their significance level of *LOANSPECIFIC_CONTROL$_i$* when the control variable is either *FINCOVENTIndex* or *GENCOVENTIndex* are the interest of our study. If the existing creditors substitute more flexible debt covenant with higher interest rate, smaller loan size and higher likelihood of loan securitization, we expect a positive coefficient ($\beta_m$) on *FINCOVENTIndex* or *GENCOVENTIndex* when the dependent variable is *LOG(LOANSIZE)*; a negative coefficient ($\beta_m$) when the dependent variable is (*LOG(INTERESTSPREAD)*) or *Pr(SECURITY)=1*.

## 5. Empirical Results

### 5.1. Accounting restatement and the likelihood of debt contract renegotiation

### 5.1.1. Descriptive Statistics

Table 3 provides the detailed information for both firm characteristics and loan characteristics from two sample, the first of which is the *sample to test H1* consisting of a sample of 1,124 loan facilities from 710 firms. The second sample is the *sensitivity test sample* that consists of a sample of 982 loan facilities from 624 firms. The data indicate that the average firms in both samples are of the similar firm characteristics, except for ROA and market-to-book ratio. In particular, the firms in the *sample to test H1* relative to those in our *sensitivity test sample* are less profitable with lower stock return performance. The statistics is reasonable, as our sensitivity test sample excludes the firms that involve any sorts of default cases triggered by accounting restatements and their PSM matched control firms. These deleted firms typically experienced low profitability and thus faced poor market performance. The average firm in the *sample to test H1* has the natural logarithm of total asset of 6.58, the leverage of 0.31, the return on asset of 0.11, and the market to book ratio of 1.54. Note that all the firm characteristics are calculated at the four fiscal years preceding the restatement announcement date for treatment group or PSM matched disclosure date for control group.

In addition, the loan facilities in these two sample have almost similar *ex ante* loan characteristics. Two exceptions are that facilities in the *sample to test H1* have lower interest spreads over LIBOR and smaller borrowing amount. Not surprisingly, however, the choice of

borrowing amount for creditors is determined by many factors and debt contract with smaller loan size typically charge lower interest rate. The average debt contact in the *sample to test H1* specifies a stated maturity of 54.54 days, an interest spread over LIBOR of 198.36 basis points (bps), and the borrowings in the deal amount of $219.93 million. The sample loans of the firms are syndicated by an average of 9.7 lenders. On average, 79.57% of loan facilities in our sample contains covenants on cash flow, 61.03% of facilities have loan securitization and 41.20% of debt contacts are young loan.

[Insert Table 3 here]

### 5.1.1. Main Analysis

Panel A of Table 4 presents the main empirical result for our first hypothesis that tests whether an accounting restatement increases the likelihood of debt contract renegotiation. The sample in the main analysis consists of 1,124 loan facilities from 710 firms. We report the marginal effects (in percentage) for each explanation variable along with the associated z-statistic (in parentheses) from a conditional logistic regression.

Column (1) in Panel A reports the baseline results that exclude our test variable, i.e., whether or not the firm is a restating firm. Since each firm from the same paired group has the similar firm characteristics at four balance sheet dates preceding the PSM matched date (*t-4*) after the firm-level PSM process, the baseline results show that borrowers with the asset contraction (*LN(Asset)*), declining stock return performance (*Market-to-Book*), increasing firm financial leverage (*Leverage*) and decreasing firm profitability (*ROA*) are more likely to experience the renegotiations of debt contract. Specifically, a positive change in the natural log of assets (*LN(Asset)*) from one standard deviation below to one standard deviation above the mean positive growth rate is negatively associated with a change in the predicted likelihood of debt contract renegotiation equal to -2.896%. This suggests that the asset growth is less likely to trigger the renegotiation of debt contract. Compared to the unconditional probability[13] of 45.88%, presented at the bottom of table 4, the probability of debt contract renegotiation reduces by -43.679% when firm performance (*ROA*) increases from one SD below to that above its mean value, while rises by

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[13] Unconditional probability is referred as to the likelihood of observing a debt contract renegotiation within one fiscal year after the restatement announcement for treated group or matched disclosed date for control group, which reflects the panel nature of our sample data.

30.010% for a comparable increment in the borrower's book leverage (*Leverage*). These results coincide with the view that both the firm's performance and the firm's leverage are two important new information regarding the debtor's ability of debt repayment and the lenders' capability of their investment recovery in case of loan default. The likelihood of renegotiation declines by 1.375% when *Market-to-Book* increases from one SD below to one SD above its mean value, holding all other covariates constant. This result infers that borrower's equity market performance could also affect the creditors' decision to initiate the renegotiation process. Even after control for the changes in firm characteristics and all fixed effects, the fluctuation in macroeconomic factors have a great influence on whether or not renegotiations occur. An 1% increase in aggregate bank leverage ratio of U.S. commercial banks leads to a 4.423% increment in the likelihood of debt modification, indicating that even a relatively small change to creditors' financial health is influential for the occurrence of debt contract renegotiation. A 1% increment in credit spreads results in a 3.482% increase in the likelihood of renegotiation, suggesting that creditors would enjoy an advantageous bargaining power when credit spreads are relatively higher. However, we find weak evidence that the change in GDP growth and stock market return have impacts on the loan amendment.

Column (2) in Panel A indicates that, after conditioning on other potential determinants, the likelihood of debt contract renegotiation is significantly higher if the firm is from treatment group. Specifically, restatement announcement increases the probability of loan modification by 35.21%, suggesting that the magnitude of change in the predicted likelihood is quite similar relative to the unconditional mean of the likelihood (45.88%). This finding is consistent with our prediction that accounting restatement serves as an essential exogenous factor that plays a role in the occurrence of debt contract renegotiation.

### 5.1.2. Sensitivity Test

Numerous pervious empirical studies document that accounting restatements vary in misreporting severity (e.g., Desai et al., 2006; Hennes et al., 2008). The firm with more severe restatement may encounter a covenant violation or have a missed repayment due to the financial distress and/or bad performance. Prior renegotiation literature (e.g., Chava and Roberts, 2008; Roberts and Sufi, 2009a; Nini et al., 2012) documents either a payment default or a covenant violation can trigger the allocation of control right to lenders, suggesting that restatement-triggered defaults can increase the likelihood of a debt contract renegotiation. To test whether a restatement

without any defaults also play a role in a loan amendment, we repeat main analysis in Model (2) for the sensitivity test sample consisting of a sample of 982 loan facilities from 624 firms..

Panel B of Table 4 indicates that, for the sample without any restatement-triggered default cases, unconditional mean of the renegotiation probability has a slight reduction from 45.87% to 43.42%. The baseline results from Column (3) in Panel B are similar to those from Column (1) in Panel A. To be specific, the asset contraction (*LN(Asset)*), declining stock return performance (*Market-to-Book*), increasing firm financial leverage (*Leverage*) and decreasing firm profitability (*ROA*), the change in aggregate bank leverage ratio (*ΔBank Leverage*), and the fluctuation in credit spreads (*ΔCredit Spread*) are positively associated with the likelihood of loan amendment. In Column (4), we further include the test variable, i.e., whether or not the firm is from treated group. The result shows that the marginal effect of accounting restatement on the probability of renegotiation decreases from 35.21% to 28.84% but it remains statistically significant. This finding indicates that accounting restatement is a primary driver of debt contract renegotiation, even without any sorts of defaults, which is supportive to our first hypothesis. All these findings are consistent with our main analysis in Columns (1) and (2) of Panel A.

[Insert Table 4 here]

## 5.2. Restatement Announcement and Renegotiation Outcomes

### 5.2.1 Summary statistics

Panel A of Table 5 presents the distribution of loans over two mutually exclusive loan outcomes, i.e. whether or not loan facility is renegotiated within one year after the restatement announcement. Strikingly, we find that 71.03% of sample debt contracts are renegotiated when the borrower restates its financial statement, suggesting that accounting restatement can induce a high likelihood of debt contract renegotiation. Panel A of Table 5 also summarizes the average stated maturity, the average loan duration, and the fraction of average stated time to maturity that has elapsed until a restatement occurs. The result shows that, among those loan facilities that have been amended, the restatement occurs, on average, 830.96 days after loan origination, by which time nearly one-half of the average stated maturity has elapsed.

In Panel B of Table 5, we present summary statistics of five observable borrower characteristics and six standard *ex ante* loan characteristics considered in our model. The average borrower in the *sample to test H2* has the natural logarithm of total asset of 6.74, the return on

asset of 0.12, the financial leverage of 0.34, the market to book ratio of 1.57, and the tangible ratio of 0.32. The firms in our study are relatively profitable but smaller than those in Costello and Wittenberg-Moerman (2011), suggesting that borrowers subject to accounting restatement have better growth prospects and more investment opportunities than the borrowers vulnerable to internal control weaknesses (ICWs, hereafter). The average facility at origination in this sample specifies an interest spread over LIBOR of 220.76 basis points (bps), borrowings in the loan amount of $263.51 million, a stated maturity of 56.45 months. 61.35 percent of loan facilities in this sample, on average, are collateralized. The loan facilities are restricted by an average of 1.67 financial covenants and 4.14 general covenants. The debt contracts in our sample include more favourable terms and are at lower cost than those in Costello and Wittenberg-Moerman (2011). This evidence indicates that borrowers subject to accounting restatements are less risky and do not necessarily have serious information opaque compared to borrowers with potential ICWs problems.

In Panel C and D of Table 5, we provide additional detailed information on the renegotiation outcomes through the *sample to test H2* consisting of a sample of 836 loan facilities from 535 firms. As presented in Panel C, a large proportion of loan terms from the borrower flexibility category (*CATEGORYONE*) are relaxed during the debt contract renegotiation. For the sets of renegotiations involving different contractual terms, 74.95% of the debt contract renegotiations extend loan maturity, 63.06% of the financial covenant renegotiations relax the previous thresholds, and 66.59% of renegotiations relax the previous general covenant restrictions. However, the majority of renegotiations impose more constraints on contract terms from the creditor investment protection category (*CATEGORYTWO*). In particular, 62.26% of debt contract amendments charge higher interest rate, 63.11% of renegotiations decrease the predetermined loan amount, and 107 more loan faculties are secured by collateral after the renegotiation. The statistics suggest that existing creditors, on the one hand, are willing to provide the borrower with assistance and supports by relaxing the contract terms from borrower flexibility category (*CATEGORYONE*). Hence, the borrower could pull through the temporary financial difficulties and operating restrictions arising from restatement announcement with the help of such flexibility provided by the creditors. On the other hand, these lenders would tighten the contract terms associated with the loan security (*CATEGORYTWO*) to protect themselves from wealth transfers.

Panel D of Table 5 reports the renegotiation leads to large level changes in the value of three measurable contract terms, namely, interest spread over LIBOR, loan amount, and loan maturity. For the renegotiation involving interest spreads, the average absolute value of level increment to interest spreads is 67.62%. Such substantial changes indicate that creditors typically have a heavy reliance on interest rate to price increasing borrower risk from the accounting restatement. However, the average magnitude of reduction to loan amount is smaller (27.25%), compared to that of the increment to loan amount (55.43%). One reasonable explanation is that the substantial reduction in loan amount would have significant impacts on the borrower's current operating activities and future investments. This, in turn, probably has a negative influence on the firm's ability to repay the debt. In addition, the average magnitude in the extension of loan maturity is 51.67%. This result suggests that creditors perceive that the value of lending relationship is higher than emerging risk from a restatement and thus are willing to sustain this existing lending relationship for a longer period. Previous literature (e.g., Roberts and Sufi, 2009b; Denis and Wang, 2014; Nikolaev, 2018) documents that numerous exogenous factors may affect the renegotiation outcomes. For example, the asset growth, increasing financial leverage and declining profitability are highly likely to induce the positive outcomes of renegotiation. In the multivariate analysis (section 5.2.2), we control for several potential factors to confirm that favourable outcomes of the debt contract renegotiation occur also due to the borrower's restatement announcement.

Although Table 5 presents the majority of renegotiations involve a tightening of the contract terms from the creditor investment protection category (*CATEGORYTWO*), it is surprising that a large number (over 35%) of renegotiations result in a lower interest spread and/or larger loan size. At first glance, the outcomes of these renegotiations look puzzling. Why do the existing creditors allow lower cost of debt and increase the loan amount when the borrower is detected to have lower quality accounting? To shed light on this issue, we further report the unconditional correlations between renegotiation outcomes of different contract terms under a signal contract renegotiation in Table 6 Panel A.

[Insert Table 5 here]

Panel A and Panel B of Table 6 show that existing creditors typically offer the borrower trade-offs among different loan features during the renegotiation process through the *sample to test H2* that consists of a sample of 836 loan facilities from 535 firms. Table 6 Panel A presents

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that, when the loan maturity is modified in a manner that is favourable to the borrower, interest spread, loan size, and collateral requirement are more likely to change in the opposite position. The renegotiation of financial covenants is associated with the amendment of interest rate and loan amount. Lenders are more likely to require collateral to secure a loan if they amend general covenant restrictions. Interestingly, the modification of contract terms from the same category probably substitute with each other. For example, the renegotiation of interest spread coincide with the amendment of loan size. Creditors would modify the financial covenants and general covenants simultaneously within one contract renegotiation, whereas those who amend either financial or general covenants are unwilling to change loan maturity.

As reported in Panel B of Table 6, we find a large number of renegotiations involving the tightening of one certain loan feature are accompanied by the relaxation of other loan terms. For example, among the 358 cases in which the interest rate increases, 329 (91.90%) involve a concurrent relaxation of at least one other loan term. On the contrary, of the 217 instances in which the interest rate is lower, only 120 (55.30%) involve the tightening of another restriction in the contract. This finding is almost similar across other five standard contract terms, suggesting that the relaxation of one certain contract is probably in response to the tightening of any other contract items. We, therefore, conclude that the relaxation of loan terms is typically the primary motivation for the debt contract renegotiation. Such financial flexibility and supports provided by existing creditors not only ensure that the borrower's ability of debt repayment is not impaired, but also indicate that creditors perceive lender-borrower relationship is valuable and thus intend to invest in this existing relationship.

[Insert Table 6 here]

**5.2.2. Multivariate Analysis**

**5.2.2.1. The impact of restatement on contract terms from *CATEGORYONE***

Columns (1), (2) and (3) of Table 7 report the empirical results on the relation between the restatement announcement and the amendment of loan features from borrower flexibility category (*CATEGORYONE*). Consistent with our prediction, a *RESTATEDPOST* (i.e., the period within one fiscal year after restatement announcement) leads to the extension of loan maturity, as well as the relaxation of financial covenant limits and general covenant restrictions. In particular, Column (1) of Table 7 presents the results of the restatement effects on the loan maturity. Coefficient of 0.086

on the *RESTATEDPOST* dummy variable represents an 8.6% extension in loan maturity within one fiscal year after the restatement announcement, holding all other variables constant. When compared to the mean maturity in the prior-restatement period of 56.45, the coefficient the *RESTATEDPOST* further implies that accounting restatement would increase 4.85 months. This finding suggests that creditors are willing to extend the loan maturity to relieve the borrower's pressure from debt repayment, since the restating firms are likely to encounter financial constraints arising from restatement and may have difficulty in repaying the loan. Column (1) also reports the following association between control variable and loan maturity. First, higher firm leverage (*LEVERAGE*) is positively associated with longer maturity of loan, which is consistent with the empirical results from Barclay and Smith (1995) and Johnson (2003). Further, borrowers with better financial performance (*ROA*) and more tangible assets (*TANGIBLE*) have easier access to the debts with longer maturity. Loan amount has a positively association with loan maturity. All these findings are in line with the empirical evidence presented in Graham et al. (2008) and Costello and Wittenberg-Moerman (2011). Moreover, the weak relation between the loan maturity and either financial covenants (*FINCOVENTIndex*) or general covenants (*GENCOVENTIndex*) suggests that creditors would not modify loan maturity and relax debt covenant simultaneously. This result is consistent with a negative and significant correlation between loan maturity and financial (general) covenants under one contract renegotiation reported in Panel A of Table 6.

In column (2) of Table 7, we investigate the impact of restatement announcement on the aggregate modification of financial covenants. When compared to the mean number of financial covenant restrictions in the prior-restatement period of 1.672, coefficient of -0.185 on the *RESTATEDPOST* variable indicates that 11.06% of financial covenants would be relaxed after the occurrence of accounting restatement. This result suggests that creditors are willing to relax some partial existing covenant limits in the post-restatement period. Such relaxation enables the borrower's ongoing operating and investment activities not prohibited by initial restrictive financial covenants and reduces the borrower's incentives for earnings manipulation to avoid covenant violations. Column (2) also presents the relationship between control variables and the financial covenant index (*FINCOVENTIndex*). The results show that borrowers with growing assets (*LNASSET*), and increasing tangible assets (*TANGIBLE*) are more likely to enjoy the relaxation of financial covenant restrictions. Given that the financial covenant index

(*FINCOVENTIndex*) is a proxy for the aggregate change in the financial covenant tightness, the coefficient on other loan characteristic variables can reflect the potential substitutions between the financial covenants and other amended contract terms. We find that, the increment of interest rate (*INTERESTSPREAD*) and the reduction of loan amount (*LOG(LOANSIZE)*) coincides with the relaxation of financial covenant. It is interesting that the coefficient on general covenant index (*GENCOVENTIndex*) is negative and statistically significant, suggesting that creditors who tighten the general covenant restrictions are more likely to relax financial covenant limits. This finding indicates that existing creditors are less likely to relax (or tighten) these types of debt covenants simultaneously; instead, there exists a trade-off between the tightness of financial covenants and that of general covenants for the purpose of loan protection.

Column (3) of Table 7 reports the results of the test that examines the relation between the restatement announcement and the aggregate modification to general covenant restrictions. The coefficient on the test variable *RESTATEDPOST* is -0.374. This result indicates that, of the mean number of financial covenant restrictions in the prior-restatement period of 4.141, 9.03% of general covenants would be relaxed after the restatement announcement. This significant and negative coefficient is consistent with our conjecture that creditors would provide the restating borrower with more flexibility concerning firm's daily activities in the post-restatement period, since the borrower may face a series of unfavourable restrictions on financing, investment, and operating activities from the outside stakeholders. Such relaxation could help the borrower to maintain daily activities, which in turn, increases the ability of borrower to repay the loan. Moreover, coefficients on control variables are consistent with our predictions. In particular, better financial performance (*ROA*) declining firm leverage (*LEVERAGE*) and increasing tangible assets (*TANGIBLE*) are associated with the relaxation of general covenants. The negative and significant coefficient on collateral requirement (*SECURITY*) indicates that creditors would require the loan to be secured if they relax the general covenant restrictions. Similar to the result in Column (2) of Table 7, the coefficient of -0.117 on financial covenant index (*FINCOVENTIndex*) suggests that the relaxation of general covenant corresponds to the tightening of financial covenants.

### 5.2.2.2. The impact of restatement on contract terms from *CATEGORYTWO*

Columns (4), (5) and (6) of Table 7 present the empirical results on the relation between the restatement announcement and the renegotiation of contract terms from creditor investment

protection category (*CATEGORYTWO*). In line with our conjectures, a *RESTATEDPOST* (i.e., the period within one fiscal year after restatement announcement) results in the increment of interest rate, the reduction of loan size, and a higher probability of a loan being secured. In Table 7 Column (4), the coefficient of 24.569 on the test variable *RESTATEDPOST* indicates that interest rate increases by 24.569 basis points (bps). This positive and statistically significant coefficient suggests that creditors require a higher cost of debt to compensate for the increasing credit risk and monitoring costs from the accounting restatements. Column (4) also presents the relation between the control variables and loan pricing. Specifically, the results indicate that small (*LNASSET*), highly leveraged (*LEVERAGE*), distressed borrowers with poor financial performance (*ROA*), fewer growth prospects (*Market-to-Book*) and few tangible assets (*TANGIBLE*) are related to a higher pricing of loan. The results also show that the secured loans (*SECURITY*) with shorter maturity (*LOG(MATURITY)*) and larger size (*LOG(LOANSIZE)*) are priced at lower interest spreads, which is consistent with the empirical evidence in Beatty, Ramesh, and Weber (2002) and Graham et al. (2008). The negative and significant coefficient on financial covenant index (*FINCOVENTIndex*) implies that the tightening of financial covenant is negatively associated with interest spreads. Given that the predominate renegotiation outcomes are the relaxation of previous contract value (or limits) as suggested in Panel B of Table 6, we can conclude that existing creditors are more likely to charge lower loan pricing to compensate the increasing restrictions from tightened financial covenants. However, we find a weak association between general covenant index (*GENCOVENTIndex*) and interest spread, therefore suggesting that creditors might not rely on loan pricing to substitute with the tightening of general covenants.

Column (5) of Table 7 reports the results of the restatement announcement's effect on the loan amount. The coefficient of -0.088 on the *RESTATEDPOST* dummy variable translates into an 8.8% reduction in loan amount within one fiscal year after restatement announcement. When compared with the mean loan amount in the prior-restatement period of $263.51 millions, the coefficient the *RESTATEDPOST* variable further indicates that the loan amount reduces by $23.19 millions when the borrower announces an accounting restatement. This finding suggests that creditors would restrict the borrower's ability of borrowing from the existing debt contract in the post-restatement period to minimize potential loss in case of default. The loadings on control variables are consistent with our predictions. The large (*LNASSET*), profitable (*ROA*), and low

levered (*LEVERAGE*) borrowers have lower default risk and therefore have easier access to the loans with larger amount. The results also show that the secured loans (*SECURITY*) with longer maturity (*LOG(MATURITY)*) and lower interest rate (*INTERESTSPREAD*) are associated with the larger amount of loan. Coefficient on financial covenant index (*FINCOVENTIndex*) is positive and statistically significant, indicating that creditors would enlarge the loan size as a compensation to mitigate the increasing financing and operating restrictions from tightened financial covenants. However, general covenant index (*GENCOVENTIndex*) is not significantly related to the loan size (*LOG(LOANSIZE)*), which suggests that there is a lack of substitution effect between general covenants and loan size within the same renegotiation.

Table 7, Column (6) presents the results of the association between restatement and loan securitization. The coefficient on the *RESTATEDPOST* test variable is positive and statistically significant, which indicates that creditors would require the loan to be secured following the restatement announcement. In particular, the coefficient of 0.296 on *RESTATEDPOST* represents an 4.678% increase in the likelihood that a loan is secured by collateral[14], holding all other variables constant. This suggests that creditors would require the borrower to provide collateral against the existing loan in the post-restatement period, as loan securitization can reduce the borrower risk by providing a lien on the firm's assets that minimize loss in loan default or bankruptcy. The impacts of control variables on the collateral requirement are intuitive. Variables referring to a higher credit risk corresponds to an increment in the likelihood of a loan being secured. To be specific, coefficient reveals that a loan is more likely to be secured if the borrowers are smaller (*LNASSET*), with poor financial performance (*ROA*), with higher leverage (*LEVERAGE*), with fewer growth options (*Market-to-Book*), and with less tangible assets (*TANGIBLE*). The results also show that loans with higher interest rate (*INTERESTSPREAD*), larger size (*LOG(LOANSIZE)*) and longer loan maturity (*LOG(MATURITY)*) are more likely to be secured. The coefficient on general covenant index (*GENCOVENTIndex*) is negative and significantly different from zero, suggesting that the relaxation of general covenants is substituted by loan securitization. In other words, creditors who relax general covenants are more likely to demand collateral to secure the existing loan.

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[14] The coefficient of *RESTATEDPOST* dummy variable of 0.296 when the dependent variable is *SECURITY* translates into a 4.678% marginal effect in the logistic model.

[Insert Table 7 here]

### 5.2.3. Robustness tests

To conduct each robustness test, we repeat the analysis in Models (3) and (4) conditioned on a given specification.

### 5.2.3.1. Firm fixed effect and clustered standard errors

In the main analysis for the second hypothesis, we have included five observable firm characteristics to capture their potential effects on the features of debt contracts. However, it is possible that unobservable firm characteristics can also have impacts on the contract terms. Since quite a few (approximately 22.4%) restating firms in our sample have more than one loan facilities that are issued (or amended) at different points of time, we should further control for potential unobservable time-variation firm-level effects. In addition, the majority of (around 58%) borrowers obtain at least two loan facilities, which could lead to these loans potentially correlating with each other. Such correlation may induce biased standard errors. To address these two concerns, we follow Graham et al. (2008) to perform a firm fixed effect regression with standard errors corrected for heteroscedasticity and firm-specific clustering.

Columns (1), (2) and (3) of Table 8 report the results on the association between accounting restatement and the modification of contract terms from borrower flexibility category (*CATEGORYONE*). The results show that, after controlling for firm fixed effects, the influence of *RESTATEDPOST* on either financial covenants or general covenants remains similar, while coefficient on the *RESTATEDPOST* test variable on the loan maturity (*LOG(MATURITY)*) slightly increases to 0.094 from 0.086 (Table 8, Column 1) and this effect keeps economically and statistically significant at the 1% level. As reported in Columns (2) and (3) of Table 8, the association between the covenant modification and the renegotiation outcome of other contract terms remains the same, suggesting that the main results on the potential substitutions between financial (or general) covenants and other items under one contract renegotiation are robust. All the findings are consistent with the main results in Columns (1), (2) and (3) of Table 7.

The last three columns of Table 8 show the results of the test that investigates the impact of restatement announcement on the amendment of loan features from creditor investment protection category (*CATEGORYTWO*). In particular, Column (4) of Table 8 presents that, after controlling for firm fixed effect with adjusted standard errors, coefficient on the *RESTATEDPOST*

dummy variable increases from 24.569 basis points (bps) to 31.369 basis points (bps) and this effect is statistically different from zero. This finding is consistent with our prediction that creditors have a great reliance on loan pricing to minimize their potential loss in case of loan default. The results, as represented in Columns (5) and (6) of Table 8, show that the *RESTATEDPOST* impacts on the reduction of loan size and creditors' desire to require collateral are both lower, but both effects remain statistically significant. In Table 8 Column (5), coefficient on the *RESTATEDPOST* dummy variable decreases from 0.088 to 0.046, which represents that the magnitude in reduction of loan amount decreases from 8.8% to 4.6%. Column (6) of Table 8 shows that there is a slight decrease in the marginal effects of restatements on the likelihood of a loan being secured from 4.678% to 3.092%[15]. These findings can be interpreted by the view that the loan facilities from the same sole lender or loan syndication are potentially correlated with each other. All the findings are consistent with our main results reported in the last three columns of Table 7.

[Insert Table 8 here]

**5.2.3.2. Package Level Regression**

Another issue is that, the basic unit of our analysis is at loan facility level[16]. However, a loan facility may be packaged with other facilities and some partial loan terms included in debt contract are at package level. As a result, the loan contract terms in a package may not be independent but we treat these loan facilities independently. This somewhat affects the accuracy of our main results and overstates statistical significance. To deal with this problem, for each package, we follow Graham et al. (2008) to aggregate individual loan facilities into a package level observation. Specifically, we compute weighted (by loan amount) average facility-level loan characteristics, including interest spread, maturity, collateral requirement. As for collateral requirement, we denote *SECURITY* as 1 if the weighted average of *SECURITY* is over 0.5 in one package, 0 otherwise. We then repeat our main analysis at the package level to check whether or not the package-level regression results are similar to the facility-level results. The package level regression results are reported in Table 9.

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[15] The coefficient of *RESTATEDPOST* dummy variable of 0.224 when the dependent variable is *SECURITY* translates into a 3.092% marginal effect in the logistic model.

[16] Loan facilities in the same package probably have different interest spreads, loan maturities, loan amount, and loan securitizations and, yet, have the same debt covenants (e.g., Graham et al., 2008; Costello and Wittenberg-Moerman, 2011).

The first three columns of Table 9 report the results on the effects of accounting restatements on the renegotiation of the contract terms from borrower flexibility category (*CATEGORYONE*), and show that these results are quite similar to what we present in the main analysis. Specifically, Column (1) of Table 9 show that, for each package, coefficient of 0.099 on the *RESTATEDPOST* dummy variable represents an average 9.9% extension of loan maturity, and the effect is at the 1% significance level. Table 9 Column (2) shows that, coefficient of -0.155 on the *RESTATEDPOST* variable indicates that 9.27% of financial covenants in each package, on average, are relaxed within one fiscal year after a restatement. In Table 9 Column (3), the result presents coefficient of -0.356 on the *RESTATEDPOST* variable suggests that lenders would relax 8.60% of general covenant restrictions in the post-restatement period. All these results reinforce our prediction that lenders are willing to relax loan contract terms from *CATEGORYONE* to provide the borrower with more financial flexibility.

In the last three columns of Table 9, we investigate the relation between restatement announcement and the amendment of contract terms from creditor investment protection category (*CATEGORYTWO*) at the package level. As reported in Column (4) of Table 10, for each package, the *RESTATEDPOST* effect on interest spreads increases to 58.992 from 24.569, which is consistent with the view that lower quality accounting is related to higher loan pricing. Column (5) of Table 9 presents that the coefficient of -0.152 on the *RESTATEDPOST* variable represents an 15.2% reduction in loan size after the restatement announcement at package level and the effect remains negative and statistically significant, which suggests that existing creditors regard reduction in loan amount as a useful contractual mechanism to protect their investment against potential losses. Table 9 Column (6) shows that the coefficient of 0.597 on the post-restatement variable translates to a 9.975% marginal effect of the restatement on loan securitization at package level. This result is supportive to our prediction that lenders would require restating borrower to pledge collateral against their loans as a compensation for increased credit risks and potential default risk from a restatement. All the package-level regression results are similar to the facility-level findings reported in Table 7.

[Insert Table 9 here]

### 5.2.4. Additional Analysis

Audit Analytics database includes a variable (RES_FRAUD) to identify fraud and lists reasons for accounting rule application failures (RES_ACC_RES_TITLE_LIST) in its Non-Reliance Restatement database (e.g., Chen, 2016; Karpoff et al., 2017). Hence, our study denotes a restatement involving fraud or revenue recognition issue when RES_FRAUD equals to 1 or revenue recognition issue is listed as the reason for an accounting restatement with a single issue, or one of the reasons [17] for an accounting restatement with multiple issues in RES_ACC_RES_TITLE_LIST. In our sample, 10.08% of loan facilities are related to the borrowers with fraudulent and revenue-related restatements. Since fraud or revenue-related restatement is significantly egregious and harmful (e.g., Chen, 2016), we expect existing creditors would not relax partial contract terms to provide financial flexibility. Instead, these creditors would impose more restrictions and unfavourable terms in the existing debt contract to prevent their borrower from engaging in the actions detrimental to themselves.

The coefficients on the interaction term variable in Columns (1), (2) and (3) of Table 10 indicate that fraud or revenue-related misreporting would lead to the shortening of loan maturity and the tightening of financial covenants and general covenants. Column (1) of Table 10 shows that the coefficient on *RESTATEDPOST* is 0.095 and the coefficient on the interaction term *RESTATEDPOST * FRAUDREV* is -0.116, and both effects are at the 1% significance level. This finding suggests that creditors would extend the loan maturity by 9.5% for non-severe restatements, while creditors would shorten the loan maturity by 2.10% when the misreporting firm involves frauds or revenue recognition issues. The lower magnitude in shortening of loan maturity can be explained by the view that firms with fraud or revenue-related misreporting encounter more severe adverse economic consequences and, thus, are highly likely to get into a financial dilemma and encounter numerous restrictions on operating, financing, and investment activities. Existing creditors are concerned about their ability of investment recovery and thus less likely to accelerate the process of debt repayment. As reported in Column (2) of Table 10, the coefficient on *RESTATEDPOST* is -0.221, whereas the coefficient on interaction term *RESTATEDPOST ***

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[17] The majority of restatements are associated with multiple failures of accounting rule application (e.g., Expense (payroll, SGA, other) recording issues, revenue recognition issues, PPE intangible or fixed asset (value/diminution) issues, etc.). We follow Chen (2016) to identify the restatement involves revenue recognition issues if revenue recognition is one of the reasons listed in RES_ACC_RES_TITLE_LIST.

*FRAUDREV* is 0.315, and coefficients are statistically significant. The result indicates that lenders are willing to relax 13.22% (0.221/1.672) of financial covenants for not severe restatement. However, lenders would tighten 5.62% ((0.315-0.221)/1.672) of financial covenants when the firm involves a fraud or revenue-related restatement. Similarly, Table 10 Column (3) presents coefficient of -0.398 on *RESTATEDPOST* and coefficient of 0.426 on *RESTATEDPOST * FRAUDREV* suggests that 9.61% (0.398/4.141) of general covenants would be relaxed for not severe misreporting, and yet 0.68% ((0.426-0.398)/4.141) of general covenants would be tightened for fraud or revenue-related misreporting. The small magnitude in tightening the debt covenants can be interpreted that imposing more restrictions on severe misreporting firm would impair its ability to repay the debt. All the findings are consistent with our prediction that creditors would not offer assistance and supports. Instead, they intend to shorten existing relationship when the borrower has a severe misreporting problem, since material restatements indicate a lack of management credibility and induce a high level of uncertainty about firm's financial performance and future growth prospects (e.g., Palmrose and Scholz, 2004; Chen 2016).

Column (4) of Table 10 shows the coefficient on *RESTATEDPOST* is 19.142 and coefficient on *RESTATEDPOST * FRAUDREV* is 48.211, and both coefficients are statistically significant. The result indicates that the non-fraudulent or non-revenue-related restatements would increase the interest rate by 19.142 basis points (bps), while restatements involving frauds or revenue recognition issues would increase the interest rate by 67.353 (48.211+19.142) basis points (bps). Column (5) of Table 10 presents the coefficient on *RESTATEDPOST * FRAUDREV* is statistically insignificant, indicating that fraud or revenue-related restatements do not lead to a more significant reduction in loan size. This finding suggests that more severe restatement has more negative impacts on the firm's cash flow and thus reduces its capability of debt repayment. To secure their investment, existing creditors would not have a significant reduction in loan size. Moreover, we do not find that the likelihood of a loan being secured is affected by fraud or revenue-related misreporting. This result is probably due to the majority (72.89%) of loan facilities having been secured by collateral before the misreporting firms announce their severe accounting restatements.

[Insert Table 10 here]

## 6. Conclusion

This study examines whether and how initial contract terms in existing private debt contracts are modified after a restatement. We find that accounting restatement serves as a significant exogenous uncertainty realization that leads to significant modifications to the existing debt contracts. In particular, restating firm has a significantly higher likelihood of debt contract renegotiation during the period in which the accounting restatement occurs than its non-restating PSM matched firm.

Relative to previous literature which documents that, following a restatement, creditors would put numerous unfavourable contractual terms and restrictive debt covenants in the subsequent new contract (e.g., Graham et al., 2008; Costello and Wittenberg-Moerman, 2011; Chen, 2016), our findings provide novel evidence that creditors at different stages of debt contracting have different reactions towards debtors' restatements. Our study shows that creditors in relationship are willing to relax partial terms. It does not like the creditors in new contracts where they tend to restrict all the contract terms, when the restatements occur. Specifically, we find that existing creditors are more likely to extend the loan maturity, or relax either financial covenants or general covenants to provide borrowers with financial assistance and support to meet borrowers' specific needs when borrowers would have difficulty in the post-restatement period. We also find that, to compensate for the potentially increased default risk from borrowers' restatements, existing creditors would charge higher interest rates, reduce loan amounts and require the loan to be secured by collateral after the restatements. Although a debt contract renegotiation in the post-restatement period results in both relaxation and tightening of initial contract terms, the predominant renegotiation outcome is the relaxation of contract term value (or existing limit). This finding suggests that existing creditors are bonded with their borrowers' interests, and may perceive the value of long-term customer relationship is higher than the potential borrower risk arising from a restatement. Thus, these creditors are willing to assist restating borrowers in pulling through difficulties when the restatements occur. However, our further analysis shows that creditors would not offer the financial flexibility to the borrowers who involve severe types of restatements; instead, they would place more restrictions and unfavourable contract terms in the existing credit agreement to protect their wealth against potentially huge loss.

Collectively, our findings provide empirical support to incomplete contract theory (e.g., Hart and Moore, 1988; Benmelech and Bergman, 2008). The higher likelihood of debt contract renegotiations after restatement announcement suggests that *ex ante* debt contract is incomplete and an accounting restatement serves as an essential exogenous contingency realization through *ex post* renegotiation.

To shed light on the effect of restatement in debt contracting, our results introduce an interesting view that renegotiation of debt contracts represents an essential vehicle through which existing creditors intend to sustain healthy bank-borrower relationship and secure their investment in equilibrium when one negative event occurs. In particular, our findings show that, instead of imposing more significant constraints on borrower's ongoing operating, financing and investment activities following a restatement, creditors in relationship are willing to offer some financial slack to their borrower to implement business strategy and preferred operating activities. Such financial slack provided by creditors has a positive effect on borrower's cash flow and in turn increases the capability of the borrower to repay the debt. In this way, creditors not only can increase their ability to recover the investment, but also maintain the valuable lending relationship for a long time.

Although our findings provide suggestive evidence on substitution effects between financial covenants and general covenants under one contract renegotiation, it is not complete and exclusive. Due to the heavy workload of data collection, our paper only grounds on the debt covenants in a broad scope. Future studies may shed light on which specific types of debt covenants, i.e., performance covenants, capital covenants, and general covenants, are modified more often following a negative event and how these modified covenants substitute with each other under one contract renegotiation.

**Table 1**

**Sample construction**

**Panel A**: Sample selection procedure of restatement firms (firm-level pool sample)

| | Number of restatements | Number of firms |
|---|---|---|
| Accounting restatements in non-financial service industry from Audit Analytics for the fiscal year 2000-2018 | 14,705 | 8,180 |
| Requiring restating firms having available data in Compustat | 10,678 | 5,790 |
| Requiring restating firms having available data in Dealscan | 5,463 | 2,778 |
| Requiring restating firms having available data for at least one facility in Dealscan | 2,465 | 1,121 |
| Keeping the first restatement when there were multiple restatements for one firm (if any)* | *1,121* | *1,121* |

* For those restatements occurring in the consecutive years, we treat them as a unique restatement by aggregating all the factors (i.e., reasons for restatements, their financial effects, and record the first occurring beginning date and filing date among these consecutive restatements). This process leads to a sample in which the number of restating firms coincides with that of accounting restatements.

*Table 1 (Continued)*

**Penal B**: Propensity Score Matched Sample (nearest 1:1) (to test hypothesis 1)

| | Number of firms | Number of loan facilities |
|---|---|---|
| Number of restatements | *1,121* | |
| Requiring restating firms having available data for control variables used for performing PSM | 1,022 | |
| Requiring firms that exist in Dealscan but are not restating firms (non-restating firms) having available data for control variables used for performing PSM | 3,336 | |
| The total number of firms (***Sample used for performing PSM***) | **4,358** | |
| Restating firms (treatment group) matched by PSM | 765 | |
| Non-restating firms (control group) matched by PSM | 765 | |
| The total number of firms (**PSM matched sample**) | **1,530** | |
| Treatment group with available data on loan facility in Dealscan | 384 | 627 |
| Control group with available data on loan facility in Dealscan | 384 | 589 |
| The total number of firms having valid credit facility information[18] | 768 | 1,216 |
| Requiring all the facilities from the treat and control groups without missing control variables [19] (***Sample to test H1***) | **710** | **1,124** |
| **Sensitivity Test (hypothesis 1)** | | |
| Excluding restating firms and their paired firms if restatement triggers technical violations (***Sensitivity test sample***) | **624** | **982** |

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[18] We require both the restating firm and its matched control firm have valid loan facility information simultaneously. Note that if only the restating firm or only its paired control firm has missing facility information, we will delete the pair.

[19] We require firms to have non-missing Compustat data for each firm-level control variable at time $t$ and non-missing Dealscan data for control variable *LENDER*. If only the restating firm or only its matched control firm has missing control variables, we will delete the pair.

*Table 1 (Continued)*

**Penal C**: Sample construction for within-sample analysis (to test hypothesis 2)

| | Number of firms | Number of loan facilities |
|---|---|---|
| Number of restatements | *1,121* | . |
| Merging restating with active credit facility in Dealscan | 812 | 1,293 |
| Requiring firms having all the control variables available in Compustat [20] (***Facility-firm sample***) | 739 | **1,177** |
| Requiring the loan facilities that are not renegotiated (***Sample to test H2***) | **525** | **836** |

**Notes:**

This table presents our sample construction process.

Panel A reports the sample selection procedure of the restating firms. Panel B provides detailed information about Propensity Score Matching process with 1:1 nearest neighbour to identify the PSM matched sample, as well as shows the process of sample to test the first hypothesis. Panel C presents the sample construction for within-sample analysis to test the second hypothesis.

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[20] We require firms to have non-missing Compustat data for each firm-control variable.

**Table 2**
**Propensity Score Matching Process**

**Panel A:** logistic estimation of restatement for propensity score

| $RESTATEMENT_{j,t}$ | Coefficient | Z-stat | P>|z| |
|---|---|---|---|
| LN(Asset) $_{j,t-4}$ | 0.1376* | 1.74 | 0.083 |
| Leverage $_{j,t-4}$ | -0.0328 | -0.16 | 0.871 |
| ROA $_{j,t-4}$ | -0.6942* | -1.67 | 0.095 |
| Market/Book $_{j,t-4}$ | 0.0284*** | 3.06 | 0.002 |
| Year fixed effect | YES | | |
| Industry fixed effect | YES | | |
| Log likelihood | -1285.5487 | | |
| Number of firms in treatment group | 1,022 | | |
| Number of firms in control group | 3,336 | | |
| Sample used for performing PSM | **4,358** | | |
| LR$chi^2$ | 150.20 | | |
| Pro>$chi^2$ | <0.001 | | |
| Pseudo $R^2$ | 0.0997 | | |

**Panel B:** Covariate balance test for propensity score matched sample

| Variable | Unmatched /matched | Mean | | %bias | %reduct |bias| | t-test | |
|---|---|---|---|---|---|---|---|
| | | Restating firm | Control firm | | | t | p>|t| |
| (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| LNAT $_{j,t-4}$ | Unmatched | 6.2184 | 6.6508 | -20.2 | 58.8 | -4.94 | <0.001 |
| | Matched | 6.2184 | 6.3964 | -8.3 | | -1.22 | 0.223 |
| Leverage $_{j,t-4}$ | Unmatched | 0.27407 | 0.42143 | -1.8 | 85.3 | -0.42 | 0.675 |
| | Matched | 0.27407 | 0.29577 | -0.3 | | -0.80 | 0.425 |
| ROA $_{j,t-4}$ | Unmatched | 0.08286 | -0.0369 | 1.4 | 93.1 | 0.27 | 0.789 |
| | Matched | 0.08286 | 0.0746 | 0.1 | | 0.34 | 0.736 |
| M/B $_{j,t-4}$ | Unmatched | 1.9528 | 2.6983 | -2.3 | 81.0 | -0.45 | 0.655 |
| | Matched | 1.9528 | 1.8113 | 0.4 | | 0.58 | 0.563 |

| Sample | Pseudo $R^2$ | LR$chi^2$ | Pro>$chi^2$ | Mean bias | Median bias |
|---|---|---|---|---|---|
| Unmatched | 0.100 | 32.19 | <0.001 | 6.4 | 2.0 |
| Matched | 0.003 | 6.34 | 0.175 | 2.3 | 0.3 |

**Notes:**

***, **, * represent statistical significance at 1, 5, 10 percent levels (two-tails), respectively.

This table presents the logistic regression results for propensity scores.

The dependent variable is the natural logarithm of odds ratio of accounting restatement. $RESTATEMENT_{j,t}$ equals 1 when firm $j$ restates its financial statement at time $t$; equals 0 if a firm is from Dealscan but not a restating firm.

All variables are measured at four fiscal years preceding restatement announcements for treatment group or PSM matched disclosure date as pseudo restatement announcements for control group.

Panel A reports the regression results. The full sample used for performing PSM consists of 1,022 restating treated firms and 3,336 non-restating control firms over the fiscal year from 2000 to 2018. Panel B presents the statistical descriptive table that show covariate balancing conditions for the PSM matched sample (1530 matched firms). PSM approach is based on 1:1 nearest neighbour match with common and without replacement. 765 non-restating firms are matched.

Variable Definition:
**LNAT:** The natural log of total book assets in millions of dollars;
**Leverage:** The ratio of total debt to total asset;
**ROA:** The ratio of EBITDA to total assets;
**M/B:** the sum of market value of equity and book value of debt scaled by total assets;
**Industry fixed effect:** Fama and French's 12-industry classification of Standard Industrial Classification (SIC) codes;
**Year fixed effect:** The indicator variable for restatement announcement year.
**%bias:** standardized bias of each covariate;
**%reduct |bias|:** the percentage reduction in bias.

**Table 3**
**Sample summary statistics - firm characteristics and loan characteristics**

| Variable | (1) Sample to test H1 | | | (2) Sensitivity test sample | | |
|---|---|---|---|---|---|---|
| | Mean | SD | Median | Mean | SD | Median |
| Firm characteristics: | | | | | | |
| LNAT$_{j,t-4}$ | 6.5822 | 1.7744 | 6.5507 | 6.5853 | 1.7575 | 6.5556 |
| Leverage$_{j,t-4}$ | 0.3076 | 0.2326 | 0.2936 | 0.3069 | 0.2290 | 0.2919 |
| ROA$_{j,t-4}$ | 0.1062 | 0.1078 | 0.1099 | 0.1126 | 0.0974 | 0.1138 |
| M/B$_{j,t-4}$ | 1.5379 | 2.9944 | 1.3133 | 1.6554 | 2.8086 | 1.3276 |
| Loan characteristics at origination: | | | | | | |
| Maturity(months) | 54.54 | 24.977 | 60 | 55.01 | 24.292 | 60 |
| Interest spread (bps) | 198.36 | 209.16 | 170 | 211.84 | 203.70 | 195 |
| Loan facility Size ($Mil) | 219.93 | 554.56 | 77.45 | 259.62 | 515.38 | 106.74 |
| Covenant on Cash Flow | 0.7957 | 0.4898 | 1 | 0.7766 | 0.4852 | 1 |
| Number of lenders | 9.7197 | 11.700 | 7 | 9.8598 | 11.312 | 7 |
| Young loan | 0.4120 | 0.4701 | 0 | 0.3286 | 0.4637 | 0 |
| Secured | 0.6103 | 0.4881 | 1 | 0.6065 | 0.4889 | 1 |
| Firms | **710** | | | **624** | | |
| Treatment group | 355 | | | 312 | | |
| Control group | 355 | | | 312 | | |
| Loan Facilities | **1,124** | | | **982** | | |

**Notes:** This table shows means, standard deviations, and medians for firm- and loan- characteristics from two samples, the first of which is the sample to test H1 consisting of a sample of 1,124 loan facilities from 710 firms. The second sample is the sensitivity test sample that consists of a sample of 982 loan facilities from 624 firms.

Variable definitions are the same as Table 2, except for loan characteristics.

**Maturity:** Stated maturity in months.

**Interest spread:** The interest rate is measured by all-in-drawn-spread charged by the bank over benchmark, typically LIBOR.

**Loan facility Size:** Loan amounts in millions of dollars.

**Covenant on Cash Flow:** An indicator variable that equals to 1 if the covenant contains a covenant on any cash flow measure (e.g., Debt/EBITDA, fixed charge coverage, interest coverage, etc.)

**Number of lenders:** The number of lenders in the lending syndicate.

**Young loan:** An indicator variable that equals to 1 if 1 the facility has elapsed less than half of the stated maturity. (Restated filing date - Facility beginning date) / stated maturity <0.5.

**Secured:** An indicator variable that equals to 1 if the lenders require loan facility to be secured, 0 otherwise.

**Table 4**
**Accounting restatement and the likelihood of debt contract renegotiation**

| | Panel A Sample to test H1 | | Panel B Sensitivity test sample | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| *RESTATEMENT$_{j,t}$* | | 35.21*** | | 28.84*** |
| | | (5.19) | | (4.68) |
| *Firm characteristics* | | | | |
| LN(Asset) $_{j,t}$ | -2.896** | -4.025** | -2.941** | -3.278** |
| | (-2.09) | (-2.38) | (-2.21) | (-2.42) |
| Market to Book $_{j,t}$ | -1.375* | -1.113 | -1.393** | -1.227* |
| | (-1.95) | (-1.57) | (-2.06) | (-1.74) |
| Leverage $_{j,t}$ | 30.010*** | 49.578*** | 28.399*** | 42.845*** |
| | (2.97) | (3.78) | (2.81) | (3.33) |
| ROA $_{j,t}$ | -43.679* | -25.914 | -44.334** | -29.556 |
| | (-1.92) | (-0.93) | (-2.03) | (-1.17) |
| | | | | |
| Δ *Macroeconomic factors* | | | | |
| Δ Bank Leverage | 4.423** | 3.974** | 4.176** | 3.775** |
| | (2.52) | (2.27) | (2.38) | (2.26) |
| Δ Credit Spread | 3.482** | 2.693 | 3.292* | 2.688 |
| | (2.09) | (1.60) | (1.94) | (1.57) |
| Δ GDP growth | 1.628 | 1.300 | 1.535 | 1.259 |
| | (0.87) | (0.55) | (0.80) | (0.51) |
| Δ Stock Market Return | 2.487 | 2.904 | 2.361 | 2.501 |
| | (1.26) | (1.47) | (1.19) | (1.33) |
| | | | | |
| Loan characteristics at origination | YES | YES | YES | YES |
| Credit rating fixed effects | YES | YES | YES | YES |
| Deal purpose fixed effects | YES | YES | YES | YES |
| **Unconditional Pr (renegotiation) (%)** | **45.8786** | **45.8786** | **43.4152** | **43.4152** |
| Firms | **710** | **710** | **624** | **624** |
| Facilities | **1,124** | **1,124** | **982** | **982** |
| LR >$chi^2$ | 38.45 | 143.96 | 37.38 | 135.59 |
| Prob >$chi^2$ | <0.001 | <0.001 | <0.001 | <0.001 |
| Pseudo $R^2$ | 0.1981 | 0.2495 | 0.1874 | 0.2311 |

**Notes:**
***, **, * represent statistical significance at 1, 5, 10 percent levels (two-tails). This table presents the marginal effects (%) and z-statistics (in parentheses) from a conditional logistic regression of whether or not a debt contract renegotiation occurs on various determinants.

Marginal effects for each covariate are computed as the change in predicted probabilities of debt contract renegotiation (in percentage) for a particular outcome calculated based on one standard deviation change from the mean in the explanatory variable, holding all other covariates constant (at their mean value).

The dependent variable *RENEGOTIATION* is an indicator variable that takes the value of one if the loan facility has at least one major contract term (interest spread, loan maturity, loan amount, collateral requirement, financial covenants and general covenants) amended within one year (*t+1*) after a restatement. Test variable *RESTATEMENT$_{j,t}$* is a dummy variable, which equals 1 if the firm *j* is from the treated group; 0 if the firm *j* is from the control group.

Panel A reports a conditional logistic regression result using the *sample to test H1* that consists of a sample of 1,124 loan facilities from 710 firms.

Panel B reports a conditional logistic regression result from the tests conducted in the *sensitivity test sample* that consists of a sample of 982 loan facilities from 624 firms.

All firm characteristic variables are calculated at the fiscal year *t* of restatement announcements for the treatment group or PSM matched disclosure date as pseudo restatement announcements for the control group (PSM matched date, hereafter). The definition of firm characteristics is shown in the note of Table 2.

We measure the change in each of macroeconomic factors as the difference between the value in the fiscal year *t* of the PSM matched date and the value in the fiscal year of loan origination or prior renegotiation date.

**Bank leverage:** The ratio of total liabilities to total book assets for commercial banks in the United States.

**Credit Spread:** The difference between yield on BB-rated publicly traded bonds and the yield on AAA-rated publicly traded bonds to evaluate credit market conditions.

**GDP growth:** The United States Real GDP in constant 2012 dollars.

**Stock Market Return:** The quarterly market return on the value-weighted market portfolio.

**Credit rating fixed effects:** An indicator variable with a value of 1 to rated firm and with a value of 0 to unrated firm.

**Deal purpose fixed effects:** A categorical variable that consists of a series of the indicator variables for the purposes of each package, including takeover, corporate purposes, working capital, debt repayment, CP backup, and acquisition line.

**Unconditional Pr (renegotiation):** The likelihood of observing a debt contract renegotiation within one fiscal year after the restatement announcement for treated group or matched disclosed date for control group, which reflects the panel nature of our sample data.

<div align="center">

**Table 5**
**Descriptive statistics for loan outcomes and renegotiation outcomes**

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**Panel A:** Loan outcomes

| Loan outcome | Number of facilities | Proportion | Average Duration[21] (days) | Average Maturity (days) | Duration/maturity Fraction |
|---|---|---|---|---|---|
| Renegotiated | **836** | 0.7103 | 830.96 | 1717.14 | 0.4839 |
| Not renegotiated | 341 | 0.2897 | 982.43 | 1794.68 | 0.5474 |
| Total | **1,177** | 1 | | | |

**Panel B:** Sample descriptive statistics

| | N | Mean | Standard Deviation | 25% | Median | 75% |
|---|---|---|---|---|---|---|
| **Loan characteristics at origination for sample to test H2:** | | | | | | |
| Interest spread over LIBOR (bps) | 836 | 220.76 | 127.400 | 132.75 | 200 | 275 |
| Loan facility size ($Mil) | 836 | 263.51 | 565.276 | 50 | 113.33 | 296.67 |
| Security | 836 | 0.6135 | 0.4656 | 0 | 1 | 1 |
| Loan maturity (months) | 836 | 56.45 | 16.579 | 48 | 60 | 60 |
| Financial covenants | 836 | 1.672 | 1.437 | 0 | 2 | 3 |
| General covenants | 836 | 4.141 | 3.389 | 1 | 4 | 7 |
| **Firm characteristics at origination for sample to test H2:** | | | | | | |
| Firm size (*LN(ASSET)*) | 525 | 6.7435 | 1.6366 | 5.7801 | 6.7122 | 7.7613 |
| ROA (*EBITDA/ASSET*) | 525 | 0.1247 | 0.1067 | 0.0831 | 0.1251 | 0.1641 |
| Leverage (*DEBT/ASSET*) | 525 | 0.3420 | 0.4094 | 0.1208 | 0.2715 | 0.4524 |
| Market-to-Book | 525 | 1.5716 | 1.0113 | 0.9972 | 1.2886 | 1.8569 |
| Tangible (*net PPE/ASSET*) | 525 | 0.3186 | 0.2593 | 0.1117 | 0.2300 | 0.4946 |

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[21] Average duration refers to the average time interval between facility beginning date and restatement announcement date from firm-level pool sample.

*Table 5 (Continued)*

**Panel C:** Renegotiation outcomes

| Contract terms | All outcome numbers | Terms are tightened | | Terms are relaxed | |
|---|---|---|---|---|---|
| | | Number | Fraction | Number | Fraction |
| **Category one (borrower flexibility category):** | | | | | |
| Loan maturity | 555 | 139 | 0.2505 | 416 | 0.7495 |
| Financial covenants | 314 | 116 | 0.3694 | 198 | 0.6306 |
| General covenants | 422 | 141 | 0.3341 | 281 | 0.6659 |
| **Category two (creditor investment protection category):** | | | | | |
| Interest spread | 575 | 358 | 0.6226 | 217 | 0.3774 |
| Loan amount | 572 | 361 | 0.6311 | 211 | 0.3689 |
| Security | 107 | 107 | 1 | 0 | 0 |

**Panel D:** Level change in value of contract terms due to renegotiation

| Level change in contract term limits | Terms are tightened | | | | Terms are relaxed | | | |
|---|---|---|---|---|---|---|---|---|
| | Mean (%) | Median (%) | Minimum (%) | Maximum (%) | Mean (%) | Median (%) | Minimum (%) | Maximum (%) |
| Interest spread (bps) | 0.6762 | 0.4365 | 0.0500 | 3.5714 | -0.2751 | -0.2500 | -0.0152 | -0.7000 |
| Loan amount ($Mil) | -0.2725 | -0.2255 | -0.0125 | -0.9661 | 0.5543 | 0.3333 | 0.0104 | 4.1667 |
| Loan maturity (days) | -0.2492 | -0.2410 | -0.0119 | -0.5042 | 0.5167 | 0.4093 | 0.0094 | 2.000 |

**Notes:**

The definition of firm characteristics and loan characteristics is presented in Appendix 1.

1. Panel A presents the distribution of loan outcomes: whether or not the credit agreement is renegotiated within one year after the restatement announcement. Panel A also presents average loan duration, average stated maturity, and the fraction of stated maturity that has elapsed until a restatement occurs. The sample is the *facility-firm sample* that consists of a sample of 1,177 loan facilities from 739 firms.

2. Panel B reports descriptive statistics for six *ex ante* standard loan characteristics at the facility level, and five *ex ante* firm characteristics from the *sample to test H2* consisting of 836 loan facilities from 525 firms.

3. Panel C presents the distribution of renegotiation outcomes by contract terms. The sample is the *sample to test H2* that consists of a sample of 836 loan facilities from 525 firms. There are multiple financial covenants and general covenants in each credit agreement, which often leads to a mixed outcome for covenants. A mixed outcome indicates that different financial (or general) covenants within the same credit

x

agreement may have both tightened or relaxed existing limits. We follow Denis and Wang (2014) and the spirit of Davis et al. (2016) to treat covenants are tightened if the number of tightened covenants is larger than that of relaxed covenants; relaxed if the number of relaxed covenants is larger than that of tightened covenants; not changed if the number of relaxed covenants are same as the number of tightened covenants.

4. Panel D reports summary statistics for level change in the value of three measurable contract term due to renegotiation. The sample is the *sample to test H2* that consists of a sample of 836 loan facilities from 525 firms. Following Denis and Wang (2014), the level change is calculated as the change in the contract term value divided by the previous contract term value. A positive change in interest spread, and a negative change in loan amount and loan maturity indicate that terms are tightened. Otherwise, a negative change in interest spread, and a positive change in loan amount and loan maturity indicate that the terms are relaxed.

**Table 6**
**Correlations among renegotiation outcomes**

**Panel A:** Pearson correlations

| Contract term | Interest spread | Loan amount | Security | Loan maturity | Financial covenants | General covenants |
|---|---|---|---|---|---|---|
| Interest spread | 1.000 | | | | | |
| Loan amount | 0.2084*** | 1.000 | | | | |
| Security | 0.0240 | -0.0171 | 1.000 | | | |
| Loan maturity | 0.1982*** | 0.2058*** | 0.0903** | 1.000 | | |
| Financial covenants | 0.1388*** | 0.0920** | 0.0308 | -0.1196*** | 1.000 | |
| General covenants | 0.0095 | 0.0145 | 0.1516*** | -0.1623*** | 0.1944*** | 1.000 |

**Panel B:** Conditional outcomes

| Contract term | Terms are Tightened | Relaxed thresholds over other items | Percentage relaxed | Terms are relaxed | Tightened thresholds over other items | Percentage tightened |
|---|---|---|---|---|---|---|
| Interest spread | 358 | 329 | 0.9190 | 217 | 120 | 0.5530 |
| Loan amount | 361 | 297 | 0.8227 | 211 | 106 | 0.4907 |
| Security | 107 | 62 | 0.5794 | 0 | - | - |
| Loan maturity | 139 | 113 | 0.8129 | 416 | 238 | 0.5721 |
| Financial covenants | 116 | 102 | 0.8793 | 198 | 125 | 0.6313 |
| General covenants | 141 | 68 | 0.4823 | 281 | 144 | 0.5125 |

**Notes:** The sample is the *sample to test H2* that consists of a sample of 836 loan facilities from 525 firms.
The definition of each contract term is presented in Appendix I.
1. Panel A reports the Pearson correlations among different contract terms under one contract renegotiation. Renegotiation outcomes can be having either tightened or relaxed existing value (limits). There are multiple financial covenants and general covenants in each credit agreement, which often leads to a mixed outcome for covenants. A mixed outcome indicates that different financial (or general) covenants within the same credit agreement have both tightened or relaxed existing limits. We follow Denis and Wang (2014) and the spirit of Davis et al. (2016) to treat covenants are tightened if the number of tightened covenants is larger than that of relaxed covenants; relaxed if the number of relaxed covenants is larger than that of tighten covenants; not changed if the number of relaxed covenants and the number of tightened covenants are the same.
2. Panel B presents the number and its corresponding percentage of renegotiations within other contract terms that have the opposite outcome.

**Table 7**
**The impact of restatement on the value (or limit) of each contract term**

| Explanatory Variables: | (1) MATURITY | | (2) FINCOVENTIndex | | (3) GENCOVENTIndex | |
|---|---|---|---|---|---|---|
| | Predicted sign | Coefficient | Predicted sign | Coefficient | Predicted sign | Coefficient |
| ***RESTATEDPOST*** | + | **0.086***** | - | **-0.185***** | - | **-0.374***** |
| | | **(8.37)** | | **(-4.15)** | | **(-6.54)** |
| INTERESTSPREAD | ? | 0.000** | ? | -0.000*** | ? | 0.000 |
| | | (1.98) | | (-3.51) | | (1.13) |
| LOANSIZE | + | 0.072*** | + | 0.104** | + | -0.001 |
| | | (7.21) | | (2.17) | | (-0.06) |
| SECURITY | + | 0.019* | ? | -0.045 | - | -0.249*** |
| | | (1.67) | | (-0.83) | | (-3.64) |
| MATURITY | | | + | 0.040 | + | 0.110 |
| | | | | (0.26) | | (0.52) |
| FINCOVENTIndex | + | 0.002 | | | ? | -0.115*** |
| | | (0.26) | | | | (-2.79) |
| GENCOVENTIndex | + | 0.003 | ? | -0.069*** | | |
| | | (0.52) | | (-2.79) | | |
| LNASSET | + | -0.001 | - | -0.041** | - | 0.015 |
| | | (-0.26) | | (-2.01) | | (0.55) |
| ROA | + | 0.154*** | ? | 0.242 | - | -0.515* |
| | | (3.05) | | (1.03) | | (-1.70) |
| LEVERAGE | + | 0.041*** | ? | -0.026 | + | 0.184** |
| | | (2.76) | | (-0.38) | | (2.03) |
| Market-to-Book | ? | 0.006 | ? | -0.023 | ? | 0.025 |
| | | (1.13) | | (-0.92) | | (0.76) |
| TANGIBLE | + | 0.037* | - | -0.162* | - | -0.296*** |
| | | (1.91) | | (-1.83) | | (-2.58) |
| Year fixed effects | YES | | YES | | YES | |
| Industry fixed effects | YES | | YES | | YES | |
| Deal purpose fixed effects | YES | | YES | | YES | |
| Number of observations | 1,672 | | 1,672 | | 1,672 | |
| Number of facilities | 836 | | 836 | | 836 | |
| Adjusted $R^2$ | 0.2346 | | 0.1601 | | 0.1784 | |

*Table 7 (Continued)*

| Explanatory Variables: | (4) INTERESTSPREAD | | (5) LOG(LOANSIZE) | | (6) SECURITY | |
|---|---|---|---|---|---|---|
| | Predicted sign | Coefficient | Predicted sign | Coefficient | Predicted sign | Coefficient |
| ***RESTATEDPOST*** | + | **24.569*** | - | **-0.088*** | + | **0.296*** |
| | | **(2.90)** | | **(-2.97)** | | **(1.91)** |
| INTERESTSPREAD | | | ? | -0.000* | ? | 0.004*** |
| | | | | (-1.95) | | (4.90) |
| LOANSIZE | - | -18.527* | | | + | 0.356* |
| | | (-1.95) | | | | (1.75) |
| SECURITY | ? | 9.886*** | + | 0.045* | | |
| | | (4.99) | | (1.73) | | |
| MATURITY | + | 57.293** | + | 0.778*** | + | 1.072* |
| | | (1.98) | | (7.21) | | (1.70) |
| FINCOVENTIndex | - | -21.429*** | + | 0.046** | - | -0.136 |
| | | (-3.51) | | (2.17) | | (-0.92) |
| GENCOVENTIndex | - | 10.862 | + | -0.001 | - | -0.390*** |
| | | (1.13) | | (-0.06) | | (-3.72) |
| LNASSET | - | -13.558*** | + | 0.277*** | - | -0.546*** |
| | | (-3.33) | | (25.39) | | (-6.50) |
| ROA | - | -174.265*** | + | 0.439*** | - | -1.630* |
| | | (-3.85) | | (2.79) | | (-1.72) |
| LEVERAGE | + | 143.823*** | - | -0.218*** | + | 1.175*** |
| | | (11.17) | | (-4.67) | | (3.17) |
| Market-to-Book | - | -19.715*** | + | 0.027 | - | -0.533*** |
| | | (-4.09) | | (1.60) | | (-5.25) |
| TANGIBLE | - | -27.362** | + | 0.045 | - | -1.965*** |
| | | (-2.00) | | (0.74) | | (-5.95) |
| Year fixed effects | YES | | YES | | YES | |
| Industry fixed effects | YES | | YES | | YES | |
| Deal purpose fixed effects | YES | | YES | | YES | |
| Number of observations | 1,672 | | 1,672 | | 1,672 | |
| Number of facilities | 836 | | 836 | | 836 | |
| Adjusted/Psuedo $R^2$ | 0.3295 | | 0.4931 | | 0.2772 | |

**Notes:** The sample is the *sample to test H2* that consists of a sample of 836 loan facilities from 525 firms. All the columns report the results from the estimation of each contract term value are based on the common Ordinary Linear Regression (OLS) Models (3), except for column (6). Column (6) is a logistic regression estimation of the probability that credit agreement is being secured. The dependent variable equals 1 if the loan is secured, 0 otherwise. In column (1), dependent variable is the natural logarithm of loan maturity. In columns (2) and (3), dependent variable FINCOVENTIndex (or GENCOVENTIndex) equals 0 if financial (or general) covenants are not modified or overall not changed; negative if financial (or general) covenants are relaxed; positive if financial (or general) covenants are tightened. In column (4), we regress the interest rate on *RESTATEDPOST* and firm- and facility-specific control variables. In column (5), dependent variable is the natural logarithm of loan amount. All the regression models include year fixed effects, industry fixed effects and deal purpose fixed effect. t-statistics for OLS model (z-statistics for logistic model) are presented in parentheses. ***, **, * represent statistical significance at 1, 5, 10 percent levels (two-tails), respectively. All variables are formally defined in appendix 1.

**Table 8**
**The impact of restatement on the value (or limit) of each contract term: firm fixed effect and clustered standard errors**

| Explanatory Variables: | (1) MATURITY | (2) FINCOVENTIndex | (3) GENCOVENTIndex | (4) INTERESTSPREAD | (5) LOANSIZE | (6) SECURITY |
|---|---|---|---|---|---|---|
| **_RESTATEDPOST_** | **0.094*** ** | **-0.184*** ** | **-0.373*** ** | **31.369*** ** | **-0.046** ** | **0.224*** |
| | **(9.68)** | **(-3.24)** | **(-4.87)** | **(3.21)** | **(-2.32)** | **(1.74)** |
| INTERESTSPREAD | -0.000 | -0.001*** | 0.001 | | -0.000 | 0.010* |
| | (-0.87) | (-2.94) | (1.26) | | (-1.42) | (1.84) |
| LOANSIZE | 0.063*** | 0.179* | -0.066 | -36.953 | | 0.574 |
| | (2.59) | (1.83) | (-0.45) | (-1.48) | | (0.92) |
| SECURITY | 0.044** | 0.195 | -0.698*** | 7.357** | 0.041 | |
| | (2.14) | (1.18) | (-2.92) | (2.06) | (0.79) | |
| MATURITY | | 0.272 | 0.363 | -32.229 | 0.202*** | 1.657** |
| | | (0.94) | (1.18) | (-0.89) | (2.78) | (2.23) |
| FINCOVENTIndex | 0.006 | | -0.118** | -18.042*** | 0.011* | 0.138 |
| | (0.91) | | (-2.25) | (-2.98) | (1.79) | (1.09) |
| GENCOVENTIndex | 0.005 | -0.096** | | 6.038 | -0.003 | -0.245** |
| | (1.15) | (-2.23) | | (1.28) | (-0.40) | (-2.28) |
| LNASSET | -0.013 | -0.176* | -0.175 | -20.279* | 0.065** | 0.089 |
| | (-0.96) | (-1.85) | (-0.93) | (-1.82) | (2.76) | (1.27) |
| ROA | 0.220*** | -0.115 | -0.801** | 23.393 | 0.321*** | -0.121 |
| | (2.64) | (-0.22) | (-2.08) | (0.22) | (3.99) | (-0.53) |
| LEVERAGE | -0.009 | -0.229* | -0.207 | 56.075* | 0.016 | 0.319* |
| | (-0.45) | (-1.77) | (-1.51) | (1.79) | (0.54) | (1.68) |
| Market-to-Book | -0.010 | 0.080 | 0.035 | -15.962** | 0.022* | -0.119* |
| | (-0.77) | (1.10) | (0.43) | (-2.06) | (1.76) | (-1.76) |
| TANGIBLE | 0.301*** | 0.093 | -1.978** | -24.021* | 0.423*** | -0.435* |
| | (3.02) | (0.15) | (-2.32) | (-1.68) | (3.07) | (-1.93) |
| Year fixed effects | YES | YES | YES | YES | YES | YES |
| Industry fixed effects | YES | YES | YES | YES | YES | YES |
| Deal purpose fixed effects | YES | YES | YES | YES | YES | YES |
| Number of observations | 1,124 | 1,124 | 1,124 | 1,124 | 1,124 | 1,124 |
| Number of facilities | 836 | 836 | 836 | 836 | 836 | 836 |
| Adjusted/ Psuedo $R^2$ | 0.3396 | 0.2354 | 0.2721 | 0.2651 | 0.2924 | 0.2329 |

***, **, * represent statistical significance at 1, 5, 10 percent levels (two-tails), respectively. All variables are defined in Appendix 1.

**Table 9**
**The impact of restatement on the value (or limit) of each contract term: package level regression**

| Explanatory Variables: | (1) MATURITY | (2) FINCOVENTIndex | (3) GENCOVENTIndex | (4) INTERESTSPREAD | (5) LOANSIZE | (6) SECURITY |
|---|---|---|---|---|---|---|
| ***RESTATEDPOST*** | **0.099*** | **-0.155** | **-0.356*** | **58.992*** | **-0.152*** | **0.597*** |
| | **(5.60)** | **(-2.09)** | **(-3.77)** | **(3.39)** | **(-3.11)** | **(3.12)** |
| INTERESTSPREAD | 0.000* | -0.000* | 0.000 | | -0.000 | 0.002** |
| | (1.67) | (-1.71) | (0.23) | | (-1.23) | (2.04) |
| LOANSIZE | 0.118*** | 0.147* | -0.052 | -26.590 | | 0.925*** |
| | (4.28) | (1.66) | (-0.47) | (-1.23) | | (2.71) |
| SECURITY | -0.020 | -0.164 | -0.215*** | 9.377** | 0.141*** | |
| | (-1.00) | (-1.58) | (-2.68) | (2.08) | (2.67) | |
| MATURITY | | -0.126 | -0.166 | 17.689* | 0.615*** | -0.976 |
| | | (-0.57) | (-0.58) | (1.67) | (4.28) | (-1.07) |
| FINCOVENTIndex | -0.008 | | -0.236*** | -29.245* | 0.059* | -0.374 |
| | (-0.57) | | (-3.36) | (-1.71) | (1.66) | (-1.63) |
| GENCOVENTIndex | -0.006 | -0.141*** | | 4.482 | -0.001 | -0.513*** |
| | (-0.58) | (-3.36) | | (0.23) | (-0.47) | (-2.85) |
| LNASSET | -0.010 | -0.015 | 0.029 | -17.519** | 0.269*** | -0.628*** |
| | (-1.23) | (-0.42) | (0.66) | (-2.06) | (16.27) | (-4.47) |
| ROA | 0.182** | 0.527 | -0.383 | -206.402** | 0.404* | -0.279 |
| | (1.98) | (1.43) | (-0.80) | (-2.29) | (1.68) | (-0.18) |
| LEVERAGE | 0.195*** | 0.067 | 0.654*** | 148.073*** | -0.171** | 1.627** |
| | (6.15) | (0.52) | (3.93) | (4.84) | (-2.06) | (2.55) |
| Market-to-Book | 0.007 | -0.065* | 0.081* | -17.351* | 0.047* | -0.567*** |
| | (0.69) | (-1.71) | (1.66) | (-1.82) | (1.87) | (-3.43) |
| TANGIBLE | 0.068** | -0.489*** | -0.513*** | -21.551 | 0.039 | -1.973*** |
| | (1.99) | (-3.56) | (-2.87) | (-0.62) | (0.43) | (-3.55) |
| Year fixed effects | YES | YES | YES | YES | YES | YES |
| Industry fixed effects | YES | YES | YES | YES | YES | YES |
| Deal purpose fixed effects | YES | YES | YES | YES | YES | YES |
| Number of observations | 1,124 | 1,124 | 1,124 | 1,124 | 1,124 | 1,124 |
| Number of facilities | 562 | 562 | 562 | 562 | 562 | 562 |
| Adjusted/ Psuedo $R^2$ | 0.2689 | 0.1938 | 0.2185 | 0.2659 | 0.4364 | 0.2656 |

***, **, * represent statistical significance at 1, 5, 10 percent levels (two-tails), respectively. All variables are defined in Appendix 1.

**Table 10**
**Restatement severity and contract term modification**

| Explanatory Variables: | (1) MATURITY | (2) FINCOVENTIndex | (3) GENCOVENTIndex | (4) INTERESTSPREAD | (5) LOG(LOANSIZE) | (6) SECURITY |
|---|---|---|---|---|---|---|
| **RESTATEDPOST** | **0.095*** | **-0.221*** | **-0.398*** | **19.142** | **-0.073** | **0.261* |
| | **(8.78)** | **(-4.72)** | **(-6.61)** | **(2.15)** | **(-2.29)** | **(1.72)** |
| *FRAUDREV* | -0.015 | -0.002 | -0.091 | 12.068 | 0.036 | 0.130 |
| | (-0.71) | (-0.03) | (-0.74) | (0.62) | (0.55) | (0.35) |
| **RESTATEDPOST * FRAUDREV** | **-0.116*** | **0.315** | **0.426** | **48.211* | **-0.121** | **0.456** |
| | **(-3.89)** | **(2.27)** | **(2.39)** | **(1.76)** | **(-1.30)** | **(0.98)** |
| INTERESTSPREAD | 0.000** | -0.000*** | 0.000 | | -0.000* | 0.004*** |
| | (2.37) | (-3.10) | (0.92) | | (-1.90) | (4.99) |
| LOANSIZE | 0.070*** | 0.110** | -0.001 | -18.071* | | 0.302 |
| | (7.06) | (2.29) | (-0.07) | (-1.90) | | (1.55) |
| SECURITY | 0.015 | -0.035 | -0.239*** | 10.050*** | 0.040 | |
| | (1.35) | (-0.68) | (-3.49) | (5.08) | (1.53) | |
| MATURITY | | 0.085 | 0.116 | 68.275** | 0.674*** | 0.808 |
| | | (0.57) | (0.60) | (2.37) | (7.06) | (1.37) |
| FINCOVENTIndex | 0.004 | | -0.119*** | -18.922*** | 0.674*** | -0.094 |
| | (0.57) | | (-2.87) | (-3.10) | (7.06) | (-0.75) |
| GENCOVENTIndex | 0.003 | -0.070*** | | 8.872 | -0.001 | -0.348*** |
| | (0.60) | (-2.87) | | (0.92) | (-0.07) | (-3.57) |
| LNASSET | -0.000 | -0.046** | 0.014 | -14.017*** | 0.277*** | -0.543*** |
| | (-0.11) | (-2.28) | (0.51) | (-3.45) | (25.40) | (-6.44) |
| ROA | 0.161*** | 0.230 | -0.512* | -176.283*** | 0.441*** | -1.639* |
| | (3.22) | (0.99) | (-1.69) | (-3.91) | (2.80) | (-1.71) |
| LEVERAGE | 0.034** | -0.022 | 0.189** | 144.529*** | -0.218*** | 1.172*** |
| | (2.31) | (-0.32) | (2.13) | (11.25) | (-4.66) | (3.15) |
| Market-to-Book | 0.006 | -0.023 | 0.025 | -20.148*** | 0.026 | -0.531*** |
| | (1.20) | (-0.94) | (0.76) | (-4.21) | (1.56) | (-5.21) |
| TANGIBLE | 0.039** | -0.144 | -0.290** | -25.700* | 0.042 | -1.975*** |
| | (2.03) | (-1.63) | (-2.52) | (-1.89) | (0.71) | (-5.98) |
| Year fixed effects | YES | YES | YES | YES | YES | YES |
| Industry fixed effects | YES | YES | YES | YES | YES | YES |
| Deal purpose fixed effects | YES | YES | YES | YES | YES | YES |
| Number of observations | 1,672 | 1,672 | 1,672 | 1,672 | 1,672 | 1,672 |
| Number of facilities | 836 | 836 | 836 | 836 | 836 | 836 |
| Adjusted/ Psuedo $R^2$ | 0.2556 | 0.1695 | 0.1695 | 0.3416 | 0.1891 | 0.2794 |

\*\*\*, \*\*, \* represent statistical significance at 1, 5, 10 percent levels (two-tails), respectively. All variables are defined in Appendix 1.

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**Appendix 1**
**Variable Definitions and Data Sources**

| Variable | Definition | Source |
|---|---|---|
| **Restatement variables:** | | |
| $RESTATEMENT_{j,t}$ | An indicator variable that equals to 1 if the firm $j$ is from treatment group, 0 otherwise. | Audit Analytics |
| $RESTATEDPOST_i$ | An indicator variable that equals to 1 if the loan facility $i$ issued in the post-restatement period, 0 otherwise. | Audit Analytics |
| *FRAUDREV* | An indicator variable that equals to 1 if RES_FRAUD equals to 1 or revenue recognition issue is listed as the reason for restatement with a single issue, or one of the reasons for restatement with multiple issues in RES_ACC_RES_TITLE_LIST. | Audit Analytics |
| **Renegotiation variable:** | | |
| $RENEGOTIATION_{i,t+1}$ | An indicator variable that equals to 1 if the facility $i$ is renegotiated within one year after restatement announcement ($t+1$), 0 otherwise. | SEC filings |
| **Borrower characteristic variables:** | | |
| *LNASSET* | The natural log of total book assets (#AT) in millions of dollars. | Compustat |
| *ROA* | The ratio of EBITDA (#EBITDA) to total assets (#AT). | Compustat |
| *LEVERAGE* | The ratio of total debt (#DLC + #DLTT) to total asset(#AT). | Compustat |
| *Market-to-Book* | Market-to-book ratio, measured as the sum of market value of equity and book value of debt (#LT + #PSTKL - #TXDITC + #PRCC_F * #CSHO) scaled by total assets (#AT). | Compustat |
| *TANGIBLE* | The ratio of net property, plant and equipment (#PPENT) to total asset (#AT). | Compustat |
| **Macroeconomic variables:** | | |
| *BANKLEVERAGE* | The ratio of total liabilities to total book assets for commercial banks in the United States. | FDIC |
| *CREDITSPREAD* | The difference between yield on BB-rated publicly traded bonds and the yield on AAA-rated publicly traded bonds to evaluate credit market conditions. | Global Financial Data |
| *GDPGROWTH* | The United States Real GDP in constant 2012 dollars. | Global Financial Data |
| *STOCKRETURN* | The quarterly market return on the value-weighted market portfolio. | CRSP |
| **Loan characteristic variables:** | | |
| *INTERESTSPREAD* | The interest rate is measured by all-in-drawn-spread charged by the bank over benchmark, typically LIBOR, for each loan facility $i$ in firm $j$. | Dealscan Current Facility Pricing & SEC filings |
| *LOANAMOUNT* | Loan amounts in millions of dollars for each facility $i$ in firm $j$. | Dealscan Facility &SEC filings |

| Variable | Definition | Source |
|---|---|---|
| *DEALAMOUNT* | Deal amounts in millions of dollars for each package *i* in firm *j*. | Dealscan Package & SEC filings |
| *SECURITY* | An indicator variable that equals to 1 if the lenders require loan facility to be secured, 0 otherwise. | Dealscan Facility & SEC filings |
| *LOANMATURITY* | Stated maturity in months of each facility *i* in firm *j*. | Dealscan Facility & SEC filings |
| *FINCOVENTIndex* | The total number of tightened financial covenants minus that of relaxed financial covenants using the 15 distinct financial covenants from "FinancialCovenant" and NetWorthCovenant" datasets | Dealscan (SAS) files & SEC filings |
| *GENCOVENTIndex* | The total number of tightened financial covenants minus that of total relaxed financial covenants using the four categories of general covenants | Dealscan Package & SEC filings |
| *NLEANDER* | The number of lenders in the lending syndicate for each loan facility *i* in firm *j*. | Dealscan Lender |
| *YOUNGLOAN* | An indicator variable that equals to 1 if 1 the facility *i* in firm *j* has elapsed less than half of the stated maturity. (Restated filing date-Facility beginning date)/statedmaturity <0.5 | Dealscan Facility |
| Covenant on cash flow | An indicator variable that equals to 1 if the covenant contains a covenant on any cash flow measure (e.g., Debt/EBITDA, fixed charge coverage, interest coverage, etc.) | Dealscan (SAS) files |

**Fixed effects:**

| | | |
|---|---|---|
| *Year* | The year indicator variables | |
| *Industry* | Fama and French's 12-industry classification of Standard Industrial Classification (SIC) codes. | |
| *Deal purpose* | A categorical variable that consists of a series of the indicator variables for the purposes of each package, including takeover, corporate purposes, working capital, debt repayment, CP backup, and acquisition line. | Dealscan Package |
| *Credit rating* | An indicator variable with a value of 1 to rated firm and with a value of 0 to unrated firm | Moody's |

## Appendix 2

### Debt Covenant Standard Definition

| Dealscan covenants | Standard Definition | |
|---|---|---|
| **Panel A: Financial covenants (Demerjian and Owens, 2016)** | | |
| | Standard Definition | Compustat Implementation |
| **Capital covenants:** | | |
| *1) Net worth covenants* | | |
| Max. Debt to Tangible Net Worth | Total Debt/Tangible Net Worth | (#DLTT+#DLC)/(#AT-#INTAN-#LT) |
| Min. Net Worth | Net Worth | #AT-#LT |
| Min. Tangible Net Worth | Tangible Net Worth | #AT-#INTAN-#LT |
| *2) Leverage covenants* | | |
| Max. Debt to Equity | Total Debt/Net worth | (#DLTT+#DLC)/(#AT-#LT) |
| Max. Senior Leverage | Senior Debt/Total Asset | (#DLTT+#DLC-#DS)/#AT |
| Max. Leverage | Total Debt/Total Asset | (#DLTT+#DLC)/#AT |
| *3) Short-term covenants* | | |
| Min. Current Ratio | Current Assets/Current Liabilities | #ACT/#LTC |
| Min. Quick Ratio | (Account Receivable + Cash and Cash Equivalents)/Current Liabilities | (#RECT+#CHE)/#LCT |
| **Performance covenants:** | | |
| Min. Interest Coverage | EBITDA/Interest Expense | #EBITDA/#XINT |
| Min. Cash Interest Coverage | EBITDA/Interest Paid | #EBITDA/#INTPN |
| Min. Fixed Charge Coverage | EBITDA/(Interest Expense + Principal + Rent Expense) | #EBITDA/(#XINT+lag(DLC) + #XRENT) |
| Min. Debt Service Coverage | EBITDA/(Interest Expense + Principal) | #EBITDA/(#XINT+lag(DLC)) |
| Max. Debt to EBITDA | Total Debt/EBITDA | (#DLTT+#DLC)/#EBITDA |
| Max. Senior Debt to EBITDA | Senior Debt/EBITDA | (#DLTT+#DLC-#DS)/#EBITDA |
| Min. EBITDA | EBITDA | #EBITDA |
| **Panel B: General Covenants (Armstrong et al., 2010)** | | |
| Investment restrictions | Covenants restricting firms' capital expenditures for any purchases or other acquisition of any assets. | |
| Borrowing-based restrictions | Restrictions on the amount that the firm can borrow. This is similar to a security/collateral requirement. A borrowing-based restriction limits the amount to be borrowed to a percentage of receivables or inventory. | |
| Insurance proceeds, cash flow, asset sale and debt/equity sweeps | Provisions requiring the borrower to pay down debt if cash flows (EBITDA) are greater than a pre-specified level, or if a sale exceeds a pre-specified dollar amount, or if long-term debt or equity is issued. | |
| Payout restrictions | Covenants restricting firms' ability of payout to other stakeholders. | |