

# Goodwill Impairment Losses and Corporate Debt Maturity

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## **Abstract**

*This study investigates whether goodwill impairment losses recognized by firms under Statement of Financial Accounting Standards No. 142 (SFAS 142, Goodwill and Other Intangible Assets) are associated with firms' choice of debt maturity. I hypothesize goodwill impairment losses are negatively associated with corporate debt maturity through the avenue of information asymmetry. Compared with firms that do not report goodwill impairment charges, firms recognizing goodwill impairment charges are likely to be perceived to have higher information asymmetry by creditors because of managers' unverifiable discretion in goodwill impairment tests granted by SFAS 142. Because goodwill impairment losses tend to worsen creditors' information asymmetry, creditors are likely to respond by granting short-maturity debt to firms with goodwill impairment charges in order to improve the efficiency of monitoring. Short-term debts mitigate information asymmetry problems by forcing more frequent information disclosure and renegotiation of contract terms. The results are consistent with the hypothesis. This study is important as it advances the research on goodwill impairments by providing evidence of the association between goodwill impairment losses and corporate financing decisions.*

Keywords: goodwill impairment, SFAS 142, debt maturity

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## **1. Introduction**

In 2001, the Financial Accounting Standards Board (FASB) issued Statement of Financial Accounting Standards No. 142 (SFAS 142, Goodwill and Other Intangible Assets) to reform the accounting treatment for goodwill. The issuance of SFAS 142 caused significant changes in the accounting for goodwill. The main goal of SFAS 142 is to make financial statements reflect the underlying economic value of goodwill. By issuing this new rule, the FASB aims to improve the quality of financial reporting and market participants' ability to predict future operating cash flows.

SFAS 142 removes the amortization of goodwill and requires periodic impairment testing at a reporting unit level. The impairment testing involves two steps. First, firms screen for potential impairment by comparing the estimated total fair value of a reporting unit with the reporting unit's total carrying value. Second, the firms determine the amount of goodwill impairment losses by

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comparing the implied fair value of the reporting unit's goodwill with the book value of the unit's goodwill.

Critics of the adoption of SFAS 142, which is one of the most controversial accounting changes, claim that this standard grant substantial managerial discretion in determining impairment amounts. Muller et al. (2010) state that the standard is controversial because of its dependence on subjective fair value estimates of mandatory annual goodwill impairment testing. Ramanna and Watts (2012) also claim that it is difficult to verify the value of goodwill because it relies on management's future actions such as managers' conceptualization and implementation of firm strategy. Furthermore, as empirical studies show managers avoid timely goodwill write-offs under SFAS 142, critics express their concerns with respect to untimely impairment because untimely impairment damages conservatism of the financial report.

Empirical studies suggest that the adoption of SFAS 142 leads to a decrease in the quality of financial reporting because managers use the increased discretion opportunistically. For example, Li and Sloan (2015) claim that firms exploit discretion allowed by SFAS 142 so as to postpone goodwill impairments, causing earnings and stock prices to be temporarily inflated. Chen, Krishnan, and Sami (2015) argue that goodwill impairment charges cause uncertainty in analysts' information environment because of the managerial discretion in determining the impairment amounts and the complexities of the rule, showing analysts' forecasts are less accurate and more dispersed for the firms that report impairment charges than for those that do not report impairment charges. Kim, Lee, and Yoon (2013) find that SFAS 142 damages accounting earnings' ability to timely reflect economic earnings.

Furthermore, Ramanna and Watts (2012) provide evidence that managers avoid timely goodwill write-offs under SFAS 142 because of agency-based motives, suggesting that financial reports do not represent economics reality related to goodwill under SFAS 142. Muller, Neamtiu, and Riedl (2010) present results that are consistent with recent SEC concerns that corporate insiders hold private information in regard to goodwill impairments that is not revealed to the market. Bens, Heltzer, and Segal (2011) document that the information content of goodwill write-offs is decreased after the SFAS 142 adoption because of the subjectivity and flexibility involved in the fair value estimates required under SFAS 142.

The purpose of this study is to examine whether SFAS 142 goodwill impairment charges are associated with firms' choice of debt maturity. Using a sample of 81,424 firm-year observations during the eight-year period from 2006 to 2013, I run the OLS regression to test the hypothesis that goodwill impairment losses are negatively associated with corporate debt maturity. I hypothesize that goodwill impairment charges are negatively related to debt maturity through the avenue of information asymmetry. Compared with firms that do not report goodwill impairment charges, firms recognizing goodwill impairment charges are likely to be perceived to have higher information asymmetry by creditors because of managers' unverifiable discretion in goodwill impairment tests granted by SFAS 142. Higher information asymmetry, in turn, is likely to lead to shorter debt maturity because lenders grant short-term debts to firms with high information asymmetry to improve the efficiency of monitoring [1]. Short-term debt mitigates information asymmetry problems by forcing more frequent information disclosure and renegotiation of contract terms (Ortiz-Molina and Penas, 2008).

Consistent with my hypothesis, I find a negative relationship between goodwill impairment losses and corporate debt maturity. That is, the fraction of short-term debt in firms' capital structures rises with the presence of goodwill impairment losses. The results suggest that uncertainties related to the impairments are likely to increase information asymmetry of firms that report impairment charges and thus such firms tend to use more short-term debts. Creditors are likely to grant shorter maturity debt to firms reporting goodwill impairment charges in order to subject managers to more frequent monitoring because creditors view those firms as having less financial transparency.

Additionally, several supplemental analyses are performed. First, the alternative dependent variable of short-term debt is employed. Instead of using the proportion of total debt maturing in three years or less as a dependent variable, I use the proportion of total debt maturing in four years or less (Brockman, Martin, and Unlu, 2010). Second, an alternative sample excluding utilities and financial firms is used. Third, propensity score matching is used to control for a potential endogeneity issue. Lastly, I interact a goodwill impairment loss with the presence of a Big Four auditor to examine whether the relation between the impairment and debt maturity is mitigated by the presence of a Big Four auditor. To the extent that goodwill impairment losses are related to debt maturity through the avenue of information asymmetry, this relationship between goodwill impairment charges and debt maturity should be weakened in the presence of Big Four auditors because Big Four auditors improve the financial reporting quality of their client firms.

The study makes several contributions to the literature along the following dimensions. First, it advances the research on goodwill impairments by providing evidence of the association between goodwill impairment losses and corporate financial policy. It informs regulators, auditors, and financial statement users in regard to the potential effect of SFAS 142 impairment testing rules. Examining goodwill impairments is important as goodwill impairments are recently increasing in firms' financial statements (Darrough, Guler, and Wang, 2014; Chen, Krishnan, and Sami, 2015). The proportion of firms recording impairments among firms with goodwill on their balance sheets increased to 6.28 percent in 2013 from 0.4 percent in 1997 (Chen et al., 2015). Moreover, this study sheds light on how goodwill impairment losses reported by borrowing firms are interpreted by creditors who are important financial statement users.

Second, this article contributes to the stream of finance literature that examines the determinants of the maturity structure of the firm's debt. Debt maturity is determined by firm characteristics such as information asymmetries, auditor choice, tax avoidance, and managerial ownership (Custódio, Ferreira, and Laureano, 2013; Platikanova, 2015; Ghoul, Guedhami, Pittman, and Rizeanu, 2016). The empirical results in the current study extend this literature by finding that the recognition of goodwill impairment losses is an additional determinant of corporate debt maturity.

The rest of the paper is organized as follows. The next section presents background information. In section 3, literature review and hypothesis development are discussed. Section 4 includes methodology and descriptive statistics. Section 5 and 6 show empirical results and conclusion, respectively.

## 2. Background

Goodwill is defined as “the excess of the consideration transferred plus the fair value of any non-controlling interest in the acquiree at the acquisition date over the fair values of the identifiable net assets acquired” (FASB 2007). An acquiring company recognizes goodwill at the time of a business combination. Prior to SFAS 142, accounting for goodwill was governed by Accounting Principles Board (APB) No. 17 issued in 1970 and SFAS 121 issued in 1995. APB No. 17 included two main provisions. First, goodwill was required to be amortized over periods not exceeding 40 years. Second, impairment testing for goodwill would be conducted at the entity level. SFAS 121 issued in 1995 also governed accounting for goodwill, providing more guidance of impairment standards. Groups of assets acquired in a business combination were required to be considered for impairment testing when the assets were suspected of being impaired due to certain events. That is, only when the carrying value of the assets might not be recoverable due to certain events, goodwill impairments were evaluated.

In 2001, the U.S. Financial Accounting Standards Board (FASB) issued SFAS 142 to reform the accounting treatment for goodwill [2]. The main goal of SFAS 142 is to make financial statements reflect the underlying economic value of goodwill. Because SFAS 142 assumes goodwill has an indefinite life, it removes the amortization of goodwill. SFAS 142 requires goodwill to be written down when it is impaired, requiring periodic impairment testing at the reporting unit level. It requires firms to conduct impairment testing at least annually at the same time each year. The impairment testing involves two steps (Ramanna and Watts, 2012).

- Firms estimate the total fair value of a reporting unit and then compare it with the reporting unit’s total carrying value. If the fair value is less than the carrying value, an impairment loss is possible and the second step is taken. The fair value greater than the carrying value indicates no impairment loss and thus the second step is skipped. In sum, the first step is to screen for potential impairment.
- Firms estimate the implied fair value of the reporting unit’s goodwill, which is the reporting unit’s estimated fair value (from step 1) minus the estimated fair value of its identifiable net assets. Next, the implied fair value of the unit’s goodwill is compared with the book value of the unit’s goodwill. If the book value of goodwill is greater than the implied fair value of goodwill, the difference between these two is reported as the unit’s goodwill write-off. If the book value of goodwill is less than the implied fair value of goodwill, no loss is recognized. The sum of goodwill write-offs from all the reporting units is reported as a separate item in the income statement.

## 3. Literature review and hypothesis development

### 3.1 Goodwill impairment

The main goal of SFAS 142 is to make financial statements reflect the underlying economic value of goodwill. By issuing this new rule, the FASB aims to improve the quality of financial reporting and market participants’ ability to predict future operating cash flows. However, critics of the adoption of SFAS 142 claim that this standard grant substantial managerial discretion in determining impairment amounts. Muller et al. (2010) state that the standard is controversial because of its dependence on subjective fair value estimates of mandatory annual goodwill impairment testing. Ramanna and Watts (2012) also claim that it is difficult to verify the value of

goodwill because it relies on management's future actions such as managers' conceptualization and implementation of firm strategy.

Empirical studies examine the impact of SFAS 142 goodwill impairments on various firm characteristics such as information asymmetry, financial reporting quality, and audit. Information asymmetries exist between corporate insiders and outsiders with respect to goodwill impairments (Muller, Neamtiu, and Riedl, 2010; Chen, Krishnan, and Sami, 2015). For example, Muller, Neamtiu, and Riedl (2010) provide evidence of strategic selling of stock holdings by the insiders in the two years prior to formal announcement of goodwill impairments by using insider-selling activity as a proxy of corporate insiders' private information. Because goodwill impairment charges under SFAS 142 can be privately known to corporate insiders in advance of their market and accounting recognition, insiders face incentives to behave strategically regarding their trades prior to the public announcement of such losses. Their results are consistent with recent SEC concerns that corporate insiders hold private information in regard to goodwill impairments that is not revealed to the market.

Furthermore, Chen, Krishnan, and Sami (2015) examine whether goodwill impairment charges are associated with analysts' forecast accuracy and dispersion. They document that analysts' forecasts are less accurate and more dispersed for the firms that report impairment charges than for those that do not report impairment charges. They hypothesize that goodwill impairment charges can cause uncertainties in analysts' information environment because of the managerial discretion in determining impairment amounts and the complexities of the rule. Difficulties in forecasting earnings related to goodwill write-downs are likely to adversely influence forecast properties, suggesting goodwill impairment charges are complex to be understood by financial analysts.

Empirical studies also find that SFAS 142 goodwill impairment losses have a negative impact on firms' financial reporting quality (Li and Sloan, 2015; Filip, Jeanjean, and Paugam, 2015; Kim, Lee, and Yoon, 2013; Ramanna and Watts, 2012; Bens, Heltzer, and Segal, 2011; Sevin and Schroeder, 2005) [3]. Li and Sloan (2015) document that SFAS 142 leads to inflated goodwill balances and untimely impairments. In addition, they show that investors do not seem to fully predict the untimely nature of SFAS 142 goodwill impairments. Thus, they conclude that firms exploit discretion allowed by SFAS 142 so as to postpone goodwill impairments, causing earnings and stock prices to be temporarily inflated.

Filip, Jeanjean, and Paugam (2015) investigate whether firms manipulate cash flows as a way of delaying the recognition of SFAS 142 goodwill impairment. They hypothesize firms manipulate current cash flows upward in order to avoid recognizing an impairment loss because SFAS 142 requires firms to forecast future cash flows to support their decision regarding the recognition of an impairment loss. Consistent with their hypothesis, their findings show that firms suspected of delaying goodwill impairment charges display positive discretionary cash flows.

Kim, Lee, and Yoon (2013) examine the impact of SFAS 142 on asymmetric timeliness of earnings (i.e., accounting conservatism) and find SFAS 142 damages accounting earnings' ability to timely reflect economic earnings. Sevin and Schroeder (2005) find that the SFAS 142 adoption allows companies to engage in earnings management technique termed "big bath" because

managers are required to estimate the fair value of assets of the reporting unit under SFAS 142. Bens, Heltzer, and Segal (2011) document that the information content of goodwill write-offs is decreased after the SFAS 142 adoption because of the subjectivity and flexibility involved in the fair value estimates required under SFAS 142. Hence, they support the critics' claim that impairments under SFAS 142 are less informative.

Ramanna and Watts (2012) provide evidence that managers avoid timely goodwill write-offs under SFAS 142 because of agency-based motives, suggesting that financial reports do not represent economics reality related to goodwill under SFAS 142. Managers' delay to report goodwill write-offs is possible because of the unverifiable discretion in the SFAS 142 goodwill impairment test.

Prior empirical research also finds that SFAS 142 goodwill impairment charges affect firms' audit and CEO compensation. Ayres, Neal, Reid, and Shipman (2016) provide evidence that the decision to report a goodwill impairment raises the likelihood of auditor dismissal. Their reasoning is that the decision to report a goodwill impairment damages the relationship between auditors and their client firms. Auditors have incentive to reduce the bias in management's goodwill impairment testing to lessen the possibility of financial statement misstatements. On the other hand, managers tend to prefer avoiding an impairment loss because a goodwill impairment loss is a signal of bad future performance. These potential misaligned incentives may cause major discrepancies between the parties about goodwill evaluations. As a result, it is possible auditors are dismissed by the client firms.

Jarva (2014) finds evidence that firms reporting goodwill write-offs pay higher audit fees to their audit firm. This finding suggests that auditors charge higher audit fees because of the extra audit effort related to decisions to recognize goodwill write-offs. Greater audit efforts are required in response to goodwill write-offs because auditors need to assess the total fair value of reporting units for the SFAS 142 impairment test. In addition, Darrough, Guler, and Wang (2014) investigate whether goodwill impairment losses are associated with CEO compensation. Their evidence suggests that when goodwill impairment losses are recognized, cash- and option-based CEO compensations are significantly reduced. They posit that compensation committees might decrease CEO compensation in response to goodwill impairment charges because goodwill impairments indicate unsuccessful acquisitions and/or ineffective post-acquisition management.

### **3.2 Debt maturity**

The structure of corporate debt maturity is an essential feature of the firm's financial policy that can have direct effects on real corporate behavior such as firms' investment decision. In particular, corporate finance literature identifies the maturity of corporate debt as a crucial mechanism to monitor corporate insiders. Short-maturity debt enables creditors to frequently evaluate a firm's ability to satisfy its debt, thereby providing the benefits of external monitoring by the debt market (Datta et al., 2005; Ghoul et al., 2016). Because short-maturity debt subjects managers to more frequent monitoring by outsiders, it is a powerful tool for monitoring corporate insiders. On the other hand, short-maturity debt increases flotation costs such as legal fees as well as the potential costs of illiquidity (Datta et al., 2005). Whether firms use short-term or long-term debt involves trade-off between the monitoring benefits of short-term debt and the cost of inefficient liquidation (Datta et al., 2005).

The debt maturity literature identifies information asymmetry as a main determinant of firms' maturity-structure choice among others. For example, Custódio, Ferreira, and Laureano (2013) document a significant decrease in the corporate use of long-term debt in the U.S. over the past three decades. They also examine the causes of the decrease in debt maturity and document that such a decrease was caused by firms with higher information asymmetry. Adverse selection models state that firms prefer a debt maturity that decreases the impact of private information on the cost of financing (Custódio et al., 2013). According to the models, firms with a higher level of information asymmetry are likely to employ short-term debts to evade locking in their cost of long-term debt financing because they anticipate borrowing at better terms in the future (Custódio et al., 2013).

Ortiz-Molina and Penas (2008) find that lenders grant more short-term debts to firms with high information asymmetry because short-term debts mitigate asymmetric information problems. Short-term debts mitigate information asymmetry problems by forcing more frequent information disclosure and renegotiation of contract terms. Berger, Espinosa-Vega, Frame, and Miller (2005) suggest that information asymmetries play an important role in debt maturity choices by finding that firms with higher information asymmetry tend to make greater use of short-term debt. Barclay and Smith (1995) empirically find that firms use more short-term debt if they have higher information asymmetry. If borrowers have less reliable financial statements, lenders grant more short-term debts to subject firms to more frequent monitoring and decrease agency costs.

In their theory paper, Flannery (1986) and Diamond (1991) argue that firms facing less information asymmetry are capable of keeping away from the transaction costs and refinancing risks related to short-term debt by borrowing long-term debt at appropriate rates. Flannery (1986) argues that firms with larger information asymmetries tend to employ more short term debts because of the higher information costs related to long term debts. Firms with lower information asymmetries tend to employ more long-term debts because they are less anxious about the signaling effects of their debt maturity.

Ghoul, Guedhami, Pittman, and Rizeanu (2016) examine whether the presence of a Big Four auditor is related to the debt maturity of a client firm and find that firms appointing a Big Four auditor use longer debt maturity. They suggest that higher-quality audits provided by Big Four auditors substitute for short-term debt for monitoring purposes. Auditors improve information asymmetry problems by providing an independent opinion on the accuracy of their clients' financial information. Because of the external monitoring provided by Big Four auditors, lenders relax monitoring and Big Four clients get to enjoy longer maturity. In the absence of reliable financial statements, lenders increase their monitoring by granting short-term debts which allow lenders to assess the firm's capability to service its debts regularly and to maintain a solid bargaining position through the threat to remove financing at the renewal stage.

Platikanova (2015) find that tax-avoiding firms have more short-term debts. They argue lenders tend to grant short-term debts to tax-avoiding firms in order to assess tax-related risks in debt contracting more frequently. Tax-avoiding firms have higher organizational complexity and lower corporate transparency. When tax-avoiding practices decrease the quality of financial information, lenders are likely to increase their monitoring by periodically renewing contracts with tax-avoiding firms.

Chang, Chen, and Dasgupta (2012) hypothesize and find that short-term institutional ownership is positively related to the likelihood of long-term debt issues relative to short-term debt issues through the avenue of information asymmetry. They reason that short-term institutional owners enhance the transparency of corporate information environment by engaging in informed trading and monitoring. Better information environment enables firms to borrow long-term debts at appropriate rates and avoid the transaction costs and refinancing risks related to rolling over short-term debts.

Graham, Li, and Qiu (2008) document that loans initiated after restatement announcements have significantly shorter maturities. Kim, Song, and Zhang (2011) show that lenders grant short-term debts to companies that report internal control weaknesses that cast doubt on the reliability of firms' financial information.

In addition to information asymmetry, other determinants are also found to affect corporate debt maturity. Huang, Tan, and Faff (2016) provide evidence that overconfident CEOs are likely to employ short-term debts. They reason that overconfident CEOs predict they can improve shareholder value by employing more short-term debts. Overconfident CEOs overestimate the possibility that they can renew short-term debts at a more favorable rate when they have positive news in the future. Brockman, Martin, and Unlu (2010) hypothesize firms with high managerial compensation risk use debt maturity structure to lessen compensation-related agency costs of debt. In line with their hypothesis, their findings show that short-term debt is inversely associated with the sensitivity of the CEO's portfolio stock prices (delta) and positively associated with the sensitivity of the CEO's portfolio to stock return volatility (vega). Benmelech (2006) finds that entrenched managers tend to finance with long term debt to avoid liquidation. Short-term debt is likely to cause early liquidation if the project goes awry and managers would prefer to carry on the project even when early termination is effective. Harford, Li, and Zhao (2008) hypothesize and find that firms with strong boards are more likely to finance with short-term debts. Short-term debts can be used to discipline managers because they subject managers to the monitoring of the financial market and the threat of default. They reason that strong boards force managers to employ a higher level of short-term debts to facilitate more frequent monitoring.

### **3.3 Hypothesis development**

Prior studies suggest that goodwill impairment losses recognized under SFAS 142 are detrimental to the information environment of firms. In spite of the FASB's argument that SFAS 142 would improve financial reporting quality, Li and Sloan (2015) claim and document that SFAS 142 actually worsens financial reporting quality because of highly subjective determination of the fair value of goodwill. The fact that the fair value estimation of goodwill in the post-SFAS 142 period is not based directly on actively traded market prices increases the concern that it is subject to opportunistic managerial discretion (Holthausen and Watts, 2001; Li and Sloan, 2015). The difficulty in verifying fair value estimates of goodwill allows managers to exploit the discretion granted by SFAS142 in order to postpone impairment (Ramanna and Watts, 2012; Li and Sloan, 2015).

The debt maturity literature emphasizes the role of information asymmetry in determining corporate debt maturity. Prior studies suggest that higher information asymmetry surrounding firms is associated with shorter debt maturity. Berger, Espinosa-Vega, Frame, and Miller (2005) suggest that information asymmetries play an important role in debt maturity choices by finding



that firms with higher information asymmetry tend to make greater use of short-term debt. Barclay and Smith (1995) empirically find that firms use more short-term debt if they have higher information asymmetry. If borrowers have less reliable financial statements, lenders grant more short-term debts to subject firms to more frequent monitoring, thereby decreasing agency costs. Ortiz-Molina and Penas (2008) find that lenders grant more short-term debts to firms with high information asymmetry because short-term debts mitigate the problems related to information asymmetry. Short-term debts mitigate information asymmetry problems by forcing more frequent information disclosure and renegotiation of contract terms. I hypothesize that the likelihood of goodwill impairment is negatively related to debt maturity through the avenue of information asymmetry. Compared with firms that do not report goodwill impairment charges, firms recognizing goodwill impairment charges are more likely to be perceived to have higher information asymmetry by creditors because of managers' unverifiable discretion in goodwill impairment test granted by SFAS 142. Creditors are likely to view firms that report goodwill impairment loss as having higher information asymmetry because of uncertainties surrounding the disclosure.

Higher information asymmetry perceived by creditors, in turn, is likely to lead to shorter debt maturity granted to borrowing firms because lenders grant more short-term debts to firms with high information asymmetry. If firms reporting goodwill impairments are perceived to have lower quality of financial reporting, creditors are likely to increase their monitoring ability by granting short-term debt. Short-term debts mitigate information asymmetry problems by forcing more frequent information disclosure and renegotiation of contract terms (Ortiz-Molina and Penas, 2008). Furthermore, Filip, Jeanjean, and Paugam (2015) claim that debt holders are net losers of untimely impairments because postponing the recognition of goodwill impairment charges not only decreases protection against inappropriate investment decisions and the effectiveness of debt covenants but also raises the possibility to distribute firms' wealth to shareholders because of inflated earnings. Taken together, because goodwill impairment losses tend to worsen creditors' information asymmetry, creditors are likely to respond by granting short-maturity debt in order to more closely monitor managers. Thus, I hypothesize:

H: Goodwill impairment losses are negatively associated with corporate debt maturity.

## 4. Methods and data

### 4.1 Empirical specification

The model employed to test the hypothesis is the OLS regression as follows:

$$STDEBT3 = \beta_0 + \beta_1 GWI + \beta_2 BIG4 + \beta_3 LnTA + \beta_4 DEBT + \beta_5 ROA + \beta_6 MB + \beta_7 CarryForward \quad (1)$$

STDEBT3 = short-term debt maturing in three years or less / total debt

GWI = 1 if a firm reports a goodwill impairment charge, =0 otherwise

BIG4 = 1 if a firm appoints a Big Four Auditor, = 0 otherwise

LnTA = natural logarithm of total asset

DEBT = total debt / total asset

ROA = operating income before depreciation / total asset

MB = (market value of equity + long-term debt) / total asset

CarryForward = 1 if a firm reports a net operating loss carryforward, =0 otherwise

Following prior studies (Datta, Iskandar-Datta, and Raman, 2005; Harford, Li, and Zhao 2008 Brockman, Martin, and Unlu, 2010; Huang, Tan, and Faff, 2016), I use the proportion of total debt maturing in three years or less as a dependent variable to measure the maturity structure of a firm's debt. Short-term debt is defined as the proportion of total debt maturing within three years from the end of the fiscal year. The variable of interest is GWI which measures the likelihood of reporting a goodwill impairment loss. GWI is an indicator variable that is equal to 1 if a firm reports a goodwill impairment charge and 0 otherwise (Chen, Krishnan, and Sami, 2015). According to the hypothesis, I expect a positive association between the likelihood of reporting a goodwill impairment loss (GWI) and the use of short-term debt (STDEBT3). A positive coefficient on GWI suggests that firms with a higher likelihood of reporting a goodwill impairment charge is more likely to use short-term debt than firms with a lower likelihood of reporting a goodwill impairment charge. Therefore, a positive coefficient on GWI indicates that goodwill impairment losses are negatively associated with corporate debt maturity.

Following previous debt maturity literature, I use several control variables that are known to affect debt maturity. A negative coefficient on firm size is expected because larger firms have higher credit quality and thus are better able to obtain long-term debt (Diamond, 1991; Datta, Iskandar-Datta, and Raman, 2005). DEBT is predicted to have a negative coefficient because firms with higher leverage have higher default risk and thus use more long-term debt so as to minimize suboptimal liquidation (Diamond 1991). MB is expected to be negatively related to the dependent variable as Johnson (2003) argues that firms with higher growth opportunities trade off the costs related to underinvestment against those of increasing liquidity risk in deciding their debt maturity. Consistent with Platikanova (2015), ROA is expected to show a negative coefficient.

#### **4.2 Sample and descriptive statistics**

I use Compustat and select the years 2006-2013 to investigate the association between goodwill impairment losses and corporate debt maturity. The number of firm-year observation is 81,424. Table 1 reports descriptive statistics of regression variables, displaying mean, standard deviation, first quartile, median, and third quartile. The dependent variable is STDEBT3, which is the ratio of short-maturity debt maturing in three years or less to total debt. STDEBT3 has a mean value of 48%. Table 2 shows Pearson correlation among variables with significant correlation coefficients at 5% level in bold. The continuous variables are winsorized at the 1% and 99% level. Industry and year dummy variables are included and standard errors are clustered at the firm level.

#### **5. Results and discussion**

Table 3 displays the main results testing the hypothesis that goodwill impairment losses are negatively associated with corporate debt maturity. The dependent variable is the proportion of short-maturity debt, which is defined as debt maturing in three years or less. The variable of interest is GWI which measures the likelihood of reporting a goodwill impairment loss. According to the hypothesis, I expect a positive coefficient on GWI. In line with my hypothesis, the variable of interest, GWI, is positive and significant at the 1 percent level, indicating that firms reporting goodwill impairment losses are related to a higher proportion of short-term debt due within three years or less. The results are economically significant as well. The estimated coefficient on GWI indicates that firms with goodwill impairment charges increase the proportion of short-maturity debt by 3%.

**Table 1: Descriptive Statistics of Regression Variable**

<i>Variable</i>	<i>Obs</i>	<i>Mean</i>	<i>StDev</i>	<i>First quartile</i>	<i>Median</i>	<i>Third quartile</i>
STDEBT3	65721	0.48	0.39	0.11	0.40	0.95
GWI	81424	0.07	0.25	0.00	0.00	0.00
BIG4	81049	0.61	0.49	0.00	1.00	1.00
LnTA	79796	5.76	2.78	3.95	6.02	7.66
DEBT	79796	0.28	0.51	0.02	0.15	0.36
ROA	79796	-0.14	0.87	-11.34	0.02	0.11
MB	79796	1.82	5.24	0.24	0.74	1.46
CarryForward	81424	0.37	0.48	0.00	0.00	1.00

**Table 2: Pearson Correlations Among Variables**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) STDEBT3	1.00							
(2) GWI	<b>0.01</b>	1.00						
(3) BIG4	<b>-0.24</b>	<b>0.07</b>	1.00					
(4) LnTA	<b>-0.42</b>	<b>0.09</b>	<b>0.50</b>	1.00				
(5) DEBT	<b>0.02</b>	<b>0.02</b>	<b>-0.05</b>	<b>-0.15</b>	1.00			
(6) ROA	<b>-0.19</b>	<b>0.04</b>	<b>0.21</b>	<b>0.46</b>	<b>-0.38</b>	1.00		
(7) MB	<b>0.14</b>	<b>-0.04</b>	<b>-0.16</b>	<b>-0.36</b>	<b>0.22</b>	<b>-0.52</b>	1.00	
(8) CarryForward	<b>0.13</b>	<b>0.07</b>	<b>0.01</b>	<b>-0.18</b>	<b>0.04</b>	<b>-0.09</b>	<b>0.10</b>	1.00

**Table 3: Main Regression**

	<i>coeff.</i>	<i>p-value</i>
GWI	0.030	0.000
BIG4	-0.026	0.000
LnTA	-0.052	0.000
DEBT	-0.093	0.000
ROA	-0.034	0.000
MB	-0.002	0.003
CarryForward	0.012	0.017
Industry Dummies	Included	
Year Dummies	Included	
N	62725	
R <sup>2</sup>	0.244	

Dependent variable: the proportion of total debt maturing in three years or less

The results suggest that corporate debt maturity is shorter in the presence of goodwill impairments. Firms reporting goodwill impairment charges have significantly lower debt maturity

than firms without impairments. Uncertainties related to the impairments are likely to increase information asymmetry of firms that report impairment charges and thus such firms tend to use more short-term debts. Creditors tend to lend debt with a shorter maturity to firms with goodwill impairments because of uncertainties surrounding the impairments. By issuing shorter-term debt, creditors can force more frequent information disclosure and renegotiation of contract terms. In general, control variables in the regressions are signed as expected.

## 6. Supplemental Analyses

In addition to the main debt maturity regression, I conduct several supplemental analyses. First, I use the alternative dependent variable of short-term debt (Brockman, Martin, and Unlu, 2010). Instead of using the proportion of total debt maturing in three years or less as a dependent variable, I use the proportion of total debt maturing in four years or less (STDEBT4). In this regression, the coefficient on GWI is significantly positive.

Second, I use an alternative sample, excluding regulated firms. Utilities (SIC codes 4900-4999) and financial firms (SIC codes 6000-6999) are excluded from the main sample. As in the main sample, GWI is significantly positive in this alternative sample. Third, I use propensity score matching to control for a potential endogeneity problem. The endogeneity problem is possible because management influences decisions about both goodwill impairment charges and debt maturity. In this regression, GWI is entered with a significantly positive coefficient.

Lastly, I include an interaction term between a goodwill impairment loss and the presence of a Big Four auditor. A long stream of research shows that appointing a Big Four auditor improves a firm's financial reporting quality. To the extent that goodwill impairment losses are related to debt maturity through the avenue of information asymmetry, this relationship between goodwill impairment charges and debt maturity should be mitigated in the presence of Big Four auditors because Big Four auditors enhance financial reporting quality of their client firms. The coefficient on the interaction term is significantly negative, suggesting the presence of a Big Four auditor weakens the association between impairments and the use of short-term debts. The result shows that the effect of a goodwill impairment loss on debt maturity is stronger for firms that do not appoint a Big Four auditor. In sum, the four supplemental analyses support the main results.

## 7. Conclusion

This study examines whether goodwill impairment losses under SFAS 142 are associated with a firm's choice of debt maturity. In 2001, the FASB issued SFAS 142 to reform the accounting treatment for goodwill. Critics of the adoption of SFAS 142 claim that this standard is harmful to the quality of financial reporting because it grants substantial managerial discretion in determining impairment amounts. I posit that firms' decision to record goodwill impairment is negatively related to their debt maturity through the avenue of information asymmetry. Compared with firms that do not report goodwill impairment charges, firms recognizing goodwill impairment charges are likely to be perceived to have higher information asymmetry by creditors because of managers' unverifiable discretion in goodwill impairment test granted by SFAS 142. Higher information asymmetry, in turn, is likely to lead to shorter debt maturity because lenders grant short-term debts to firms with high information asymmetry to improve the efficiency of monitoring.

Empirical results support my hypothesis. Supplemental tests also support the main findings. This study is important as it advances the research on goodwill impairments by providing evidence of the association between goodwill impairment losses and corporate financial policy. It informs regulators, auditors, and financial statement users in regard to the potential effects of SFAS 142 impairment testing rules by contributing to the stream of literature that examines the effects of SFAS 142 on firm characteristics.

**Table 4. Supplemental Analyses**

	(1)		(2)	
	<i>Regressand: STDEBT4</i>		<i>Regressand: STDEBT3</i>	
	coeff.	p-value	coeff.	p-value
GWJ	0.035	0.000	0.034	0.000
BIG4	-0.015	0.036	-0.042	0.000
LnTA	-0.047	0.000	-0.065	0.000
DEBT	-0.087	0.000	-0.107	0.000
ROA	-0.023	0.000	-0.019	0.000
MB	-0.001	0.064	-0.002	0.000
CarryForward	0.026	0.000	0.006	0.266
Industry Dummies	Included		Included	
Year Dummies	Included		Included	
N	62725		39286	
R <sup>2</sup>	0.233		0.249	

(1) Alternative dependent variable: the proportion of total debt maturing in four years or less

(2) Alternative sample: utilities and financial firms are excluded.

**Table 5: Supplemental Analyses**

	(1)		(2)	
	<i>Regressand: STDEBT3</i>		<i>Regressand: STDEBT3</i>	
	coeff.	p-value	coeff.	p-value
GWJ	0.020	0.010	0.049	0.000
GWJ*BIG4			-0.027	0.041
BIG4	-0.047	0.000	-0.024	0.001
LnTA	-0.055	0.000	-0.052	0.000
DEBT	-0.091	0.000	-0.093	0.000
ROA	-0.047	0.000	-0.034	0.000
MB	-0.007	0.000	-0.002	0.003
CarryForward	0.008	0.400	0.012	0.017
Industry Dummies	Included		Included	
Year Dummies	Included		Included	
N	9644		62725	
R <sup>2</sup>	0.280		0.244	

(1) Propensity score matching to control for a potential endogeneity

(2) An interaction term between an impairment loss and the presence of a Big Four auditor

**Notes:**

1. Following prior studies, I refer to debt that matures in three years or less as short-term debt throughout this paper. Debt that matures in more than three years is referred as long-term debt.
2. SFAS142 is replaced by FASB Accounting Codification Section (ASC) 350.
3. There are some studies that argue SFAS 142 improves financial reporting quality (Ahmed and Guler, 2007; Lee, 2011; Li et al., 2011). However, a large body of research claims that SFAS 142 damages financial reporting quality because of the flexibility and subjectivity in the fair value estimates allowed in SFAS 142.

## 8. References

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