Goodwill Accounting Choices under Different Levels of Discretion

By

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To my family

Abbreviations

ASC – Accounting Standards Codification

EU – European Union

FASB – Financial Accounting Standards Board

GAAP – Generally Accepted Accounting Principles

IAS – International Accounting Standards

IASB – International Accounting Standards Board

IFRS – International Financial Reporting Standards

PPA – Purchase Price Allocation

RR – Redovisningsrådets rekommendation ("Swedish GAAP")

SEC – the United States Securities and Exchange Commission

SFAS – Statement of Financial Accounting Standards

UK – United Kingdom

U.S. – United States of America

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I. General Introduction to the Dissertation

1. Background to discretionary goodwill accounting choice

In this section, I will contextualize my dissertation by discussing the pros and cons of the additional discretion in accounting for goodwill that was introduced through the adoption of the impairment-only approach. I will further discuss why goodwill accounting has been a controversial topic for decades, and, as background, I will describe the political process leading up to the adoption of the impairment-only approach. I conclude the section with an analysis of whether the impairment-only approach theoretically enables goodwill to qualify as an asset and, thus, be useful for investors.

1.1 Introducing the issue of discretion in goodwill accounting

The international adoption of the impairment-only approach [1] to goodwill accounting in the early 2000's means that costs of corporate acquisitions are subject to significant discretion. Because of the unavailability of market prices for goodwill, its underlying value is unverifiable to investors and auditors upon initial recognition and in the subsequent periods since it is largely based on managerial expectations (e.g., Watts, 2003). Critics suggest that these conditions create a "perfect storm" in the sense that opportunistic managers are able to inflate future earnings by misusing the impairment test of goodwill (e.g., Shalev, Zhang & Zhang, 2013; Watts, 2003; Hlousek, 2002). This is possible if the acquiring firm, at the acquisition date, over-allocates the purchase price to the unspecific goodwill, and in the second stage avoids recognizing costs by incorrectly not impairing goodwill.[2] An over-allocation to goodwill under the prior historical-cost regime, however, did not make it possible to opportunistically inflate future earnings because, like other acquired assets, goodwill was amortized over time.[3] Hence, the implementation of the impairment-only approach has made it possible to reduce the 'drag' on future earnings by recognizing fewer costs from acquisitions, which

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[1] The impairment-only approach is commonly referred to as fair-value goodwill accounting in the literature. Thus, I use fair-value goodwill accounting and the impairment-only approach interchangeably in the three papers that make up this dissertation.

[2] Managers can inflate earnings even if they did not opportunistically over-allocate the purchase price to goodwill by not impairing goodwill when it is economically impaired.

[3] Under the amortization approach, goodwill was also impaired if its value after the mandatory accumulated amortizations exceeded its fair value.

may have even enabled overbidding activities in the competition for target firms (e.g., Ramanna, 2015; Bartov, Cheng & Wu, 2018).

On the other hand, additional discretion provides the acquiring firm with a channel to concurrently communicate private information about the payment and the prospects of an acquisition (e.g., Dye & Verrechia, 1995; Sankar & Subramanyam, 2001; Watts, 2003). International standard setters promulgate the discretion of the impairment-only approach "[to] improve the relevance and reliability of financial information" since the acquiring managers' private judgments will be disclosed (e.g., IASB, 2005b, p. 17). This is only made possible by permitting discretion because the dissemination of private information is reduced if accounting choices are rigorously regulated by standards (Fields, Lys & Vincent, 2001). By not permitting systematic yearly amortizations, the acquiring firm, under the impairment-only approach, is able to signal useful information to investors about whether, for example, acquired synergies and superior earnings incorporated in goodwill are valid or impaired over time. Thus, it is an empirical question whether acquiring firms use the discretion of the impairment-only approach to provide private information about the underlying economics of goodwill or to opportunistically enhance future earnings and private gains.

Studies of how corporate acquisitions are accounted for are of great importance because the accounting provides information about a significant investment entailing a substantial reallocation of resources between and across firms, industries, and countries (Golubov, Petmezas & Travlos, 2013). Well-executed corporate acquisitions can create substantial value for the acquiring firm since combined business activities can create synergistic gains, such as increased operational efficiency. However, ill-executed corporate acquisitions can be among the costliest mistakes a firm can make (Betton, Eckbo & Thorburn, 2009). In other words, the acquiring firm's accounting for corporate acquisitions shapes the external parties' understanding of the underlying economics of an acquisition.

In this dissertation, I investigate whether the level of discretion affects goodwill accounting choices and, thus, their usefulness to investors. In particular, I expect that goodwill accounting choices will provide a better representation of underlying economics when the economic setting reduces the level of discretion, which should make the information more useful to investors. My dissertation sheds light on whether goodwill accounting choices and their usefulness are affected by the level of discretion

in different settings through a collection of three papers. In particular, I explore whether managers' incentives to misuse the discretion by over-allocating to goodwill are curbed by strong controlling owners. Moreover, by comparing the impairment-only approach with more discretion to the amortization approach with less discretion, I explore whether the representational faithfulness of initially recognized goodwill depends on the level of discretion. Finally, I explore whether accounting choices and the usefulness of the discretionary goodwill-impairment test depends on the firm's industry-specific growth opportunities, assuming that the level of discretion to misuse goodwill is impaired by a plummeting macroeconomic outlook.

1.2 The political process leading-up to the impairment-only approach

The appropriate accounting method for corporate acquisitions has been a controversial topic for decades. Researchers and regulators have, in particular, been debating whether it is appropriate to capitalize the part of the purchase price that exceeds the acquired book value of net assets (i.e., the purchase premium) (Ding, Richard & Stolowy, 2008). Traditionally, two methods were subject to debate: the purchase method[4] and the pooling method. The main difference between them is whether the purchase premium over the book value of the acquired target firm's net assets is recognized on the balance sheet of the combined entity. The purchase method requires that any purchase premium paid with cash or stock should be allocated to the appropriate accounting items in the combined entity. Any unallocated unspecified residual of the purchase premium consisting of, for example future synergies, is normally recognized as goodwill. The pooling method, on the other hand, mandated that any purchase premium paid with cash or stock would not be part of the combined entity. When there is a cash payment, any excess payment is written off against reserves, so that only the book value of the target firm's net asset is added to the

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[4] The purchase method has been replaced by the acquisition method. Although the change of method is largely semantic, there are some subtle differences. While the purchase method views the target firm as the sum of the acquired assets and liabilities, the acquisition method views the target firm as a whole. This means, for example, that the acquiring firm must disclose any identified contingencies (e.g., lawsuits) in the target firm at the acquisition date. However, the impairment-only approach is applicable to both methods, and acquired non-separable intangibles assets with superior earnings, such as synergies, are recognized as goodwill. Because of the insignificance of the differences for the purposes of this dissertation, I will only refer to the purchase method with respect to the treatment of the purchase premium.

combined businesses. If the payment is based on a stock-for-stock merger, the balance sheets of the two entities were simply combined. Thus, the pooling of interest method did not permit any recognition of acquired goodwill.

Although the choice of method, *ceteris paribus*, did not have any impact on the acquiring firm's cash flows, it usually affected its current and future accounting earnings.[5] An important debate on the use of the appropriate method for acquisitions has focused on whether the effect on earnings would favor acquiring firms using the pooling method and allow them to successfully outbid competitors using the purchase method. Choi & Lee (1991), for example, find that UK acquiring firms outcompeted their U.S. peers in the competition for U.S. target firms when they could make discretionary goodwill write-offs against equity reserves. A key conclusion was that acquiring firms applying the accounting methods with no effect on future earnings were internationally more competitive in what Manne (1965) dubbed "the market for corporate control" because they were able to overpay.

In the 1990's, accounting standard-setters in Europe and the U.S. typically allowed acquiring firms to choose between the pooling method and the purchase method with yearly amortizations. However, the acquiring firm had to fulfill a number of criteria in order for the acquisition of a target firm to qualify for pooling accounting. For example, the acquisition could only qualify for pooling accounting if the acquiring firm paid with its own stock. Otherwise, the firm had to apply the purchase method. Despite these requirements, the opportunity acquiring firms had to apply either the pooling method or the purchase method was heavily criticized. In the U.S., the Securities and Exchange Commission (SEC) expressed concerns about opportunistic acquiring firms' misuse of the pooling method to inflate future accounting earnings (Ramanna, 2015). In fact, mounting evidence suggested that acquiring firms, in order to reduce the "drag" on future earnings, deliberately destroyed shareholder value by implementing costly measures to qualify the acquisition for the pooling method (e.g., Lys & Vincent, 1995; Ayers, Lefanowicz & Robinson, 2002).[6]

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[5] The purchase method will have an impact on future earnings if all accounting items are amortized subsequent to the acquisition, or impaired. However, the impairment-only approach enables acquiring firms to delay or avoid impairing goodwill, resulting in inflated earnings.

[6] For example, AT&T paid an additional USD 325 million of their stock just to qualify the acquisition of NCR for the pooling method (e.g., Walter, 1999).

To address the concerns voiced by the SEC and other critics, the FASB, together with the international group of standard setters G4+1, initiated a process of exploring alternatives to the pooling method. The initial proposal was intended to address acquiring firms' misuse of the pooling option by only permitting the purchase method based on the historical-cost regime of yearly goodwill amortizations (FASB, 1999). Hence, goodwill was to be considered an asset with a definite economic life that needs to be written-off within a preset period. However, the proposal to abolish the pooling method attracted much criticism from prominent business leaders, who argued in the U.S. Congress that the system offering a choice between the pooling method and the purchase method had ensured "competitive U.S. capital markets" (Ramanna, 2015). In response to the criticism and pressure from the U.S. Congress, the FASB proposed a revised version of the purchase method based solely on yearly goodwill-impairment tests. This won the acceptance of the pro-pooling firms (Ramanna, 2008). In other words, Ramanna (2008) argues that the lobbying by pro-pooling groups resulted in standard setters changing their view of the nature of goodwill from an asset with a definite economic life to an asset with indefinite economic life by favoring the impairment-only approach over the amortization approach.[7]

A potential reason why pro-pooling business leaders accepted the implementation of the impairment-only approach could be that it did not remove the possibility offered by the pooling method of reducing the 'drag' on future earnings (Ramanna, 2015). Academics and practitioners argue that the impairment-only approach is inappropriate in relation to resolving the consequences of managers' misuse of the pooling method due to the nature of goodwill (e.g., Ramanna, 2008; Hlousek, 2002). Because there are no active markets to verify goodwill, acquiring firms are able to misuse the impairment test, as they did with the pooling method, as a measure to reduce the 'drag' on future earnings and enhance private gains.[8] Managers with earnings-based compensation, for example, misused the pooling option over the purchase option with yearly amortizations in order to enhance their bonuses through inflated earnings (e.g., Aboody,

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[7] Skinner (2008) argues that pro-pooling firms did not necessarily lobby for fair-value measures in accounting for goodwill to inflate future earnings. Instead, He argues that it is more likely that the "pro-pooling firms" wanted to avoid costly yearly amortizations.

[8] However, it should be noted that managers can only achieve the "pooling effect" on future earnings by over-allocating the whole purchase premium to goodwill and then avoiding impairing it. If some parts of the purchase premium are allocated to assets that are amortized, earnings will be relatively less inflated under the impairment-only approach than under the pooling method.

Kasznik & Williams, 2000). Shalev et al. (2013) argue that this continues to be possible under the impairment-only approach by over-allocating the purchase premium to goodwill.

Thus, by over-allocating the purchase price to goodwill under the impairment-only approach, acquiring firms are able to continue (i) obscuring information about ill-executed acquisitions, and (ii) enhancing future earnings and earnings-based bonuses (Bartov et al., 2018; Shalev et al., 2013).

1.3 What should goodwill contain to provide useful information?

In essence, the main argument against allowing more discretion to goodwill accounting is that the accounting choices to a large extent depend on the managers' willingness to correctly report underlying economic values. Because goodwill is not verifiable, it could potentially contain a number of components that do not meet the criteria of an asset, or that should be part of another asset class. Johnson & Petrone (1998) discuss the potential composition of goodwill by analyzing the purchase premium. According to them, the purchase premium can consist of the following components: (1) the fair-value revaluation of the acquired assets of the target firm; (2) the fair value of identified assets not recognized by the target firm prior to the acquisition; (3) the fair value of the "going concern element" that comes from the synergies of combining the target firm's assets prior to the acquisition, which could be internally generated or acquired previously by the target firm; (4) the synergies that come from combining the acquiring firm's and the target firm's assets and businesses that would not be possible if the firms were stand-alone entities; (5) overvaluation of the consideration paid, such as the acquiring firm's own stock in an all-stock transaction; and (6) overpayment for the target firm.

Johnson & Petrone (1998) argue that the inclusion of the abovementioned components of the purchase premium in goodwill depends on two general perspectives. Under the top-down perspective, the whole purchase premium paid should be capitalized if the corporate acquisition in itself qualifies as an asset, and, then, broken down into its subsets. This means that goodwill would be the residual part of the purchase price not identified as the net assets of the target firm. That is, goodwill could potentially consist of all six components. The bottom-up perspective, on the other hand, does not view goodwill as a residual *per se*. Instead, each possible component should be

evaluated. According to Johnson & Petrone (1998), under the latter perspective, goodwill should only consist of the "going-concern element" of the target firm and acquired synergies, which are the only two components that qualify as assets. This is because these two components are not part of any other assets other than representing the additional earnings from combining assets. In particular, components 1 and 2 are either part of other assets or qualify as stand-alone assets, component 5 is a measurement error, and component 6 represents a loss. Thus, "core" goodwill should only comprise component 3 (i.e., going-concern goodwill) and component 4 (i.e., the combination goodwill).

While prior standards for goodwill accounting have to a larger extent applied the top-down perspective (Johnson & Petrone, 1998), the implementation of the impairment-only approach introduced an emphasis on the bottom-up perspective of evaluating the acquired components. According to existing international standards (i.e., IFRS 3 and SFAS 141), the acquiring firm is mandated through a set of detailed regulations to revalue acquired assets and identify any new assets before recognizing goodwill. In contrast to Johnson & Petrone (1996), however, current standards define goodwill as an asset that contains future economic benefits from intangible assets that are not individually identifiable, which would include more components than acquired synergies.[9] In other words, under the impairment-only approach, goodwill should represent more than just synergies and include acquired superior earnings from other non-separable intangible assets (FASB, 1999).

Thus, it is not *a priori* clear whether, under the impairment-only approach, goodwill would better reflect acquired synergies than goodwill under the amortization approach. The initial recognition based on the evaluation of each component of the purchase price under the impairment-only approach would enhance goodwill's reflection of acquired synergies relative to the amortization approach. This is because the amortization approach permitted goodwill to represent the purchase premium to a larger extent, with little or no evaluation of the acquired components. However, goodwill under the impairment-only approach is more likely to be inflated by components that do not qualify as "core" goodwill compared to goodwill under the amortization approach. This is because, under the impairment-only approach, it is only possible to enhance future

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[9] It should be noted that non-separable intangible assets such as employees' know-how are likely to be included in goodwill under prior and current accounting regimes.

earnings by over-allocating more components of the purchase premium to goodwill, which was not possible when goodwill was amortized over a preset period. The possibility of managing goodwill's effect on earnings under the impairment-only approach means it is also more lucrative for managers to overpay for the target firm (Bartov et al., 2018), suggesting that goodwill would contain a larger component of overpayment. In other words, goodwill's representation of underlying economics relative to the amortization approach depends to a large extent on whether managers use the discretion offered by the impairment-only approach fairly, or misuse it to enhance earnings. Hence, it is an empirical question whether different levels of discretion in the accounting for goodwill affect accounting choices and the usefulness of information to investors.

2. Review of the standards and the literature

In 2001, the FASB was the first standard setter to introduce the impairment-only approach. In 2004, the IASB followed suit by requiring at least yearly impairment tests for goodwill under IFRS. In 2005, the EU enacted the new standards for all European publicly listed firms. Despite the standard setters' implementation of detailed requirements for recognizing acquired intangible assets, goodwill balances have increased significantly as a result of the adoption of the impairment-only approach (e.g., Li & Sloan, 2017), to become the largest single asset-item. Wen & Burger (2015), for instance, report that about 15% of U.S. firms' balance sheets constituted goodwill during the period 2005–2013. Hamberg & Beisland (2014) report that goodwill balances relative to total assets increased from 8.2% to 15.1% in Sweden during the period 2001–2010. For Australian firms, Chalmers, Godfrey & Webster (2011) report similar increases in the proportion of goodwill balances (from 12.4% of total assets to 19.6%), and decreases in goodwill charges (from 3.1% to 1.3%).

These findings either suggest that the opportunities to acquiring synergies have significantly improved over time or that goodwill balances were heavily affected by the implementation of the impairment-only approach. The latter explanation does not necessarily suggest, as critics argue, that the acquiring firms misuse the discretion offered by the impairment-only approach to enhance earnings or obscure information about ill-executed acquisitions. It could also be the case that the previous amortization approach suppressed goodwill balances through economically incorrect yearly

amortizations. In order to determine which of the two explanations for the increased goodwill balances is more likely, I review the literature sequentially, starting with the motives driving acquisitions. Because the success of a corporate acquisition in the form of synergies should be directly related to the valuation of initially recognized goodwill, it is important to understand the acquiring firms' initial motives for engaging in acquisitions. Then, I explore how these or other motives can be linked to goodwill accounting choices. I provide a short introduction to each part of goodwill accounting and review how different motives affect accounting for goodwill at (i) the initial recognition of goodwill, and (ii) the subsequent impairment tests of goodwill. Finally, I discuss the literature that compares goodwill's predictability of future firm performance under the impairment-only approach and the amortization approach, and then conclude the section with a discussion about the usefulness of goodwill accounting under the impairment-only approach.

2.1 Motives for corporate acquisitions and goodwill accounting

The literature on finance suggests three general theories for corporate acquisitions: synergy, hubris, and agency (Berkovitch & Narayanan, 1993). The synergy theory contends that corporate acquisitions occur because the combination of firms yields higher economic value than the sum of their stand-alone values (e.g., Jensen & Ruback, 1983; Bradley, Desai & Kim, 1988). Synergy can come from (i) operational and financial efficiencies (for example, by sharing overhead costs, attaining higher growth than stand-alone entities would attain by themselves, and optimization of the distribution network), (ii) advantages such as tax efficiency, and (iii) increased market power (Seth, 1990a, 1990b). The hubris theory contends that acquisitions occur with the intention of creating synergy by combining two entities, but that managers mistakenly engage in acquisitions with no or limited synergy potential (Roll, 1986). The agency theory, on the other hand, contends that acquisitions occur because they enhance managers' private welfare at the expense of the shareholders (Jensen, 1986), suggesting that synergy is not the main goal. The firm is only able to curb managers' self-interest driven actions by implementing appropriate governance mechanisms (Jensen, 1986).

The literature has explored goodwill accounting choices under the impairment-only approach based on different motives for engaging in acquisitions. The main issue has concerned whether goodwill reflects the acquiring managers' private incentives or the

their private information. In line with the agency theory, studies have explored whether managers misuse the discretion offered by the impairment-only approach to enhance their private power and welfare (i.e., agency motives). In line with the synergy theory, on the other hand, studies have explored whether goodwill accounting reflects the managers' private information about estimated acquired synergies (i.e., information motives). To my knowledge, no studies have explored goodwill accounting choices based directly on the hubris theory.

A significant body of research has investigated the synergy theory by exploring whether acquiring firms are able to realize synergies. Studies find no evidence suggesting that acquiring firms are in general able to realize the synergies reflected in the purchase premium from a corporate acquisition. While synergies are a prime reason for the purchase premium, over time, acquiring firms tend nevertheless to overpay for target firms (e.g., Eckbo, 2009). For example, cash-rich firms are more prone to overpay for target firms (e.g., Harford, 1999), so that managers can engage in lucrative "empire-building" activities to enhance their power and prestige (Golubov et al., 2013). Managers with an outstanding track record tend to attribute prior success in M&As to themselves, which consequently leads to overconfidence and poorer future deals compared to non-overconfident managers (e.g., Doukas & Petmezas, 2007; Billett & Qian, 2008).

Moreover, Bartov et al. (2018) document a significant increase in overpayment for target firms after the adoption of the impairment-only approach in the U.S, which they find to be associated with inflated goodwill balances. In sum, the literature does not provide substantial evidence suggesting that the synergy motive is the main driver behind the documented increase in goodwill balances. In other words, there are more plausible explanations for the documented increased goodwill balances than just improved synergies. It may be that acquiring firms have, intentionally or unintentionally, gradually inflated goodwill under the impairment-only approach, as suggested by agency and hubris theory, respectively.

2.2 The PPA decision and the initial recognition of goodwill

The process of recognizing goodwill starts upon completion of an acquisition. Both U.S. GAAP and IFRS mandate the acquiring firm to apply the purchase method when the

ownership of the target firm exceeds 50%.[10] Under the purchase method, the acquiring firm is expected to first allocate the purchase price to the fair value of the acquired net assets before determining goodwill. This first part of the process requires the acquiring manager to identify and re-measure the fair value of the assets and liabilities of the target firm, including contingent liabilities and internally generated intangible assets. The acquiring firm has considerable discretion in identifying and determining the fair value of new assets, and, in particular, of separate intangible assets. By not recognizing, for example, separate intangible assets, goodwill will likely be inflated. This is because goodwill is the residual of the purchase price exceeding the fair value of the target firm's net assets (SFAS 141 and IFRS 3). Although the valuation of acquired assets at fair value can be misused, both SFAS 141 and IFRS 3 require far-reaching assessments to determine whether new assets have been acquired as well as in-depth disclosures about the purchase price allocation (PPA) decision.

Shalev (2009) was among the first to explore PPA disclosures under the impairment-only approach. Using U.S. data, he finds that acquiring firms withhold significant information about the PPA. In particular, only 43.1% of the S&P 500 acquiring firms disclosed separately the acquired assets and assumed liabilities, and full disclosures about the PPA were only available for 33.7% of all completed acquisitions. He also finds that the PPA disclosures decrease when an abnormal proportion[11] of the purchase price is allocated to goodwill, and that the reasoning behind the recognition of goodwill is only available for 13.4% of the completed acquisitions (Shalev, 2009). These findings, which show that information is obscured, suggest that the acquiring firms' PPA decisions and the recognition of goodwill are driven by agency rather than information motives.

However, studies exploring the PPA decision find mixed results as regards whether acquiring firms' recognition of goodwill is driven by agency or other motives. Yehuda, Vincent & Lys (2017) use stock market reactions of the acquiring firms with a long window around the announcement date for 2,123 completed acquisitions in order to

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[10] IFRS 10 stipulates a number of situations when the acquiring firm is in full control of the target firm even when the acquired ownership does not exceed 50%, making the acquiring manager mandated to apply the purchase method.

[11] An abnormal proportion of the purchase price allocated to goodwill is measured as the residual (i.e., what remains unexplained) from a regression on the ratio of goodwill to purchase price on industry segments of acquiring and target firms, respectively, and the acquiring firm's growth prospects.

measure whether an acquisition was an "economic profit" or an "economic loss". They document that 1,252 of the completed acquisitions indicate an "economic profit" and that 871 indicate an "economic loss". Based on this classification, they find that firms making "economic losses" on their acquisitions strategically allocate a larger proportion of the purchase price to goodwill, suggesting that overpayments, based on agency motives, are allocated to goodwill. However, the acquisitions that indicate an "economic profit" are positively related to future firm performance, suggesting that the discretion offered by the impairment-only approach is used, based on information motives, to enhance the usefulness of the information for investors.

Other studies have explored whether the discretion of the impairment-only approach, based on agency motives, is misused when it is potentially beneficial to the CEO. Shalev et al. (2013) conjecture that acquiring firms are more likely to over-allocate the purchase price to goodwill if the manager is likely to benefit privately from this. Using a sample of 320 completed acquisitions in the U.S., they find that acquiring firms governed by managers with a bonus package based on earnings are more likely to over-allocate the purchase price to goodwill. Detzen & Zülch (2012) replicate the study by Shalev et al. (2013) in a European setting. Using a sample of 123 completed acquisitions by the firms in the Stoxx Europe 600 in 2005–2008, they find that earnings-based bonuses have a positive impact on goodwill recognition. Because goodwill is no longer amortized, managers are able to enhance their earnings-based bonuses by over-allocating to goodwill and then avoiding recognizing any impairment.

Zhang & Zhang (2017) further investigate whether agency motives for over-allocating to goodwill when bonuses are based on earnings are only prevalent under the impairment-only approach. For the conjecture by Shalev et al. (2013) to hold, there should be no association between the allocation to goodwill and earnings-based bonuses under the amortization approach. This is because the managers were not able to use allocation to goodwill as a means of increasing post-acquisition earnings and bonuses due to mandatory yearly amortizations. Zhang & Zhang (2017) find that managerial earnings-based incentives are only related to excess allocation of the payment to goodwill under the impairment-only approach. Thus, their finding suggests that the increased goodwill balances are a result of agency motives and unfair application of the impairment-only approach. Bugeja & Loyeung (2015) also find that Australian firms increase their allocation of the purchase price to goodwill from the

shift from the amortization approach to the impairment-only approach in IFRS. This increase is attributed to earnings-based bonuses. Moreover, they find that allocation to goodwill is in general unrelated to the underlying economics of the target firm. Thus, the recognition of goodwill is more likely to be driven by agency than information motives.

In sum, the documented increase in goodwill balances under the impairment-only approach appears to be due to a mix of agency and information motives. Managers do use the discretion to provide information about their estimation of acquired synergies. However, when the managers' compensation is based on accounting earnings, the discretion is used to favor their private incentives over the information motive. The latter conclusion indicates that the increased goodwill balances could be a result of an over-allocation of the purchase price to goodwill under the impairment-only approach. It should be, however, noted that the studies documenting agency motives are mainly based on small subsamples of firms with depressed stock market values (e.g., Beatty & Weber, 2006; Ramanna & Watts, 2012), making them less representative of the whole population of publicly listed firms. Moreover, goodwill balances are not just a result of the initial recognition of goodwill, but also a result of the impairment testing procedure.

2.3 The goodwill impairment decision

Goodwill is impaired if its book value exceeds its fair value. The key task is thus to determine the fair value of goodwill, which is a complex procedure. Because there are no available market prices for goodwill, the firm has to estimate its fair value based on the guidance of the accounting standards. The procedure under U.S. GAAP and IFRS starts from different levels of the firm when determining whether goodwill is impaired, which could potentially lead to opposite impairment decisions concerning the exact same event. According to SFAS 142, the goodwill-impairment procedure contains two steps.[12] Step one is a quantitative assessment that tests whether goodwill may be impaired by comparing the net fair value of the reporting unit to which goodwill was initially allocated with its carrying amount (i.e., the book value of all assets). If the carrying amount exceeds the net fair value (in step one), the firm must, as a second step,

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[12] To reduce the level of complexity when testing goodwill for impairment, as of 2017, the FASB no longer mandates the second qualitative step. However, the second step remains optional and the procedure remains unchanged.

carry out a qualitative assessment by calculating the implied fair value of goodwill at the reporting-unit level. Goodwill is impaired by the amount that the book value of goodwill exceeds the implied fair value of goodwill. The second step, when calculating the implied fair value of goodwill, resembles the purchase price allocation when determining the fair value of initially recognized goodwill. According to IAS 36, on the other hand, the goodwill-impairment procedure contains only one step: goodwill is impaired if the carrying amount of the cash-generating unit (CGU), to which goodwill was allocated, exceeds its recoverable amount (i.e., the higher of fair value minus costs to sell or its value in use). Hence, the single step of IAS 36 is quite similar to the first step of SFAS 142.

The problem with the first step under U.S. GAAP and the single step under IFRS is that the evaluation of goodwill is based on fair-value estimates of several assets, liabilities, and units, which are unlikely to be comparable, and may not reflect the value of goodwill (Ramanna, 2015). If, for instance, other assets appreciate in value, goodwill is not going to be impaired even if it is economically impaired. On the other hand, if other assets sharply depreciate in value, the impairment decision may differ between U.S. GAAP and IFRS. While IFRS would mandate the firm to impair goodwill (even if goodwill is not economically impaired), U.S. GAAP mandates further investigation to evaluate whether goodwill is impaired. Thus, goodwill is less likely to be impaired based on the fair value of other assets under U.S. GAAP, but the second step provides discretion to not impair goodwill even when all indicators at the reporting-unit level suggest otherwise. In other words, the impairment procedure under SFAS 142 can be used to avoid impairing goodwill, while the impairment procedure under IAS 36 is less precise and more likely to incorrectly impair goodwill. However, because most assets normally appreciate in value, it is more likely that a "cushion" prevents goodwill from being timely impaired under both standards.

A large body of research has investigated the motives driving impairment and non-impairment decisions. In particular, these studies explore whether the impairment decision is motivated by the underlying economic value of goodwill or whether it reflects other motives. Beatty & Weber (2006) use the adoption year of the impairment-only approach in the U.S. to explore firms' motives when accounting for impaired goodwill. At that time, firms were only permitted to either (i) recognize impairment losses due to the adoption of SFAS 142 through the income statement as a special item,

or (ii) keep goodwill unimpaired in the balance sheet and, after the adoption year, recognize any impairments through the income statement as an operating expense. In other words, it was possible to either accelerate impairments through a below-the-line treatment, or postpone any impairment and risk future write-offs through an above-the-line treatment and a direct impact on earnings. Beatty & Weber (2006) identify 176 firms that are likely to write-off goodwill based on when the difference between the market and the book value of equity is smaller than recorded goodwill, which would be an indication of impaired goodwill under step one of SFAS 142. They find that these firms are more likely to impair goodwill in the adoption year, and the size of the write-off as a special item is more pronounced if the manager's bonus plan is not dependent on special items, if the managers tenure is shorter, if the firm has a slack debt covenant, or the earnings response coefficient is higher. Thus, according to Beatty & Weber (2006), the willingness to accelerate impairments to avoid an impact on future earnings is based on a combination of agency motives, debt motives, and market motives.

Most other studies have explored the motives in the period after the adoption year. Ramanna & Watts (2012) identify 124 U.S. firms with a high likelihood of impairing goodwill, measured as a book-to-market ratio of equity greater than 1 in two consecutive years during the period 2003–2006. They find that these firms' goodwill impairments are driven by agency rather than information motives. In particular, they find that firms with more accounting-based bonuses and longer CEO tenure are more likely to misuse the discretion by not impairing goodwill. AbuGhazaleh, Al-Hares & Roberts (2011) explore 528 UK firms with goodwill balances during the first two years with IFRS (2005–2006), of which there were 109 firm-years of impairment of goodwill. Although agency motives seem to drive the impairment decisions, they also find that goodwill impairments are reasonable given the firms' economic reality (AbuGhazaleh et al., 2011). Hamberg, Paananen & Novak, (2011) explore the determinants of goodwill impairments during the period 2001–2007 using a sample of 180 listed Swedish firms with goodwill on their balance sheet upon the adoption of IFRS 3, of which 43 firms made goodwill impairments. They only find weak evidence that agency motives, such as entrenchment concerns, affect the goodwill-impairment decisions. In particular, they find that CEOs with long tenure are less likely to recognize goodwill impairments.

Van de Poel, Maijoor & Vanstraelen (2009) use publicly listed firms from 15 Western European countries to explore the role of auditors and agency motivated

earnings management, as well as the legal environment, in accounting for goodwill under IFRS. They find that the likelihood of impairing goodwill increases with earnings management since earnings are unexpectedly high (i.e., earnings smoothing), or unexpectedly low (i.e., big bath). However, Big4 auditors are able to curb the earnings management behavior related to goodwill impairments. Moreover, based on the rule of law index of Kaufmann, Kraay & Mastruzzi (2006), they document that firms domiciled in countries with weaker legal systems are less likely to impair goodwill relative to firms domiciled in countries with a stronger legal system. Thus, the agency motive for misusing goodwill accounting under the impairment-only approach is reduced by the existence of a higher quality governance mechanism.

However, the manager's decision to impair goodwill may not necessarily be a fully rational action based on the agency motive of enhancing private welfare. Brochet & Welch (2018) investigate whether the experience gained by the CEO and the CFO had any impact on the impairment decision in the U.S. during the period 2002–2009. In particular, they categorize the managers' background based on experience of (1) corporate acquisitions, (2) investment banking, (3) management consulting, or (4) private equity and venture capital. Brochet & Welch (2018) document that CEOs and CFOs with prior experience of corporate acquisitions are more likely to impair goodwill, which is also more informative for investors. In another study, Shepardson (2013) builds on the conjecture that managerial decisions are influenced by imitation and learning from their peers (e.g., Chiu, Teoh & Tian, 2012). Using a sample of U.S. firms in the period 2004–2009, she finds that firms are more likely to impair goodwill if the members of the audit committee are interlocked with firms that have recently impaired goodwill, and this pattern is more pronounced if the member is a manager. This finding by Shepardson (2013) suggests that knowledge gained about goodwill impairment testing from the interlocked firm is transferred to the focal firm. Overall, these findings suggest that the goodwill-impairment procedure requires experience and that the documented increased goodwill balances are possibly the result of lack of experience of corporate acquisitions and of relevant accounting practice. In other words, the motive may be to provide accurate information, but the manager lacks sufficient knowledge, which could to some extent be in line with the hubris theory.

Some other studies have explored whether the deal structure of the acquisition can explain future goodwill impairments. Based on Shleifer & Vishny's (2003) conjecture

that acquiring firms, when possible, prefer paying for less overvalued target firms with overvalued stock, Gu & Lev (2011) explore whether impaired goodwill is related to overpriced targets. They use three proxies for overpriced target firms: (1) industry-adjusted price-to-earnings, (2) the amount of discretionary accruals, and (3) the incidence of prior equity issues. Gu & Lev (2011) find that (i) the larger goodwill balances under the impairment-only approach are associated with stock payments, and (ii) the acquiring firm is more likely to impair goodwill from the overpriced target firms subsequent to the completion date. For example, the ratio of goodwill impairments to total assets for the top (bottom) quintile of overpriced acquisitions is 10.5% (0.7%). These results suggest that, although the initial recognition may be based on the agency motives of obscuring information about overpayments, the impairment decision is not necessarily driven by agency motives.

In sum, research finds that a mix of motives and experience explains goodwill accounting choices from the initial recognition to the subsequent valuation in the impairment test. Critics claim that the documented increased goodwill balances are a result of inappropriate use of discretion under the impairment-only approach. Because the impairment testing is unverifiable, it is possible to enhance earnings and accounting-based compensation by misusing goodwill accounting. Most studies that have explored whether agency motives affect the impairment decision find that managers seem to avoid timely goodwill impairments when their bonuses are based on earnings. This finding is consistent with the conclusion by Shalev et al. (2013), that managers misuse the discretion offered by the impairment-only approach to inflate goodwill as a means of enhancing future earnings and bonuses. While managers delay or avoid impairing goodwill for agency reasons, some studies find that a high-quality governance mechanism, such as Big4 auditors, influences managers to impair goodwill in a timely manner. It should also be noted that these conclusions come from a coarse proxy for impaired goodwill based on the firm-level measure book-to-market ratio of equity. According to international standards, goodwill should be evaluated at the unit-level or at the goodwill-level, which is difficult to address in a research design because that is typically private information.

The literature review also indicates that the impairment decision is not entirely based on rational actions by managers aiming to enhance their private welfare. The managers' experience of acquisitions and the accounting for goodwill are also related to

the timeliness of impairing goodwill. Managers with relevant experience of acquisitions impair goodwill in a more timely manner. Moreover, the payment for the acquisition is associated with the impairment decision; impaired goodwill is more likely if the acquiring firm overpays for an acquisition. Hence, the main conclusion from the literature is that managers tend to misuse the impairment decision when it is beneficial to them, but, overall, the impairments tend to be driven by other motives and can reflect the underlying economics of the acquisition. This suggests that, on average, goodwill impairments may provide useful information for investors under the impairment-only approach.

2.4 Does discretionary goodwill provide more useful information?

A key contention among standard setters is that the impairment-only approach provides more useful information for investors than the amortization approach (e.g., IASB, 2005). The literature on goodwill accounting choices covering initial recognition and the impairment tests suggests that the increased goodwill balances are the result of managers' misuse of the discretion they have under the impairment-only approach, as well as of providing additional private information. However, these conflicting findings do not provide any guidance on whether goodwill's ability to provide useful information about future performance has improved with the adoption of the impairment-only approach. Only a few studies have explored goodwill's overall ability to predict future performance under the impairment-only approach.

Based on the standard setters' view, a few studies have investigated whether goodwill is able to predict future economic performance (e.g., SFAS 142, p.7). Yehuda et al. (2017) find, for instance, that the ability of initially recognized goodwill to predict future performance under the impairment-only approach depends on whether the acquiring firm overpaid for the target firm. In particular, they find that the acquiring firm's overpayment for the target firm is directly linked to over-allocation to goodwill, which impairs goodwill's ability to predict future economic performance. In contrast, when the acquiring firm engages in economically reasonable acquisitions, goodwill is able to predict future economic performance (Yehuda et al., 2017). In other words, goodwill under the impairment-only approach can provide useful information as well as economically insignificant information.

Jarva (2009) tests whether impaired goodwill is related to the firm's future

economic performance, using a sample of 327 firm-years of impairments and 9,960 firm-years of non-impairments in the U.S. In particular, he tests the association between goodwill impairments and future operating cash flows, and finds an association between current goodwill impairments and lower future cash flows in t+1 and t+2. Thus, Jarva's (2009) findings indicate that, on average, managers use the discretion of the impairment-only approach to make financial statements more informative and relevant to investors. However, he also documents that goodwill impairment tends to lag the economic impairment.

If goodwill under the impairment-only approach is able to predict future economic performance, then the documented increased balances suggest that the amortization approach had economically suppressed goodwill. Lee (2011) investigates the relationship between aggregated goodwill balances and future cash flows for the periods during which the amortization approach and the impairment-only approach applied. Based on cash flows one year and two years ahead as dependent variables, he finds that the ability of goodwill to predict future performance is significantly stronger during the period with the impairment-only approach. Lee (2011) also identifies firms that are more likely to benefit from managing goodwill based on either high levels of discretionary accruals or whether they meet or beat earnings benchmarks. He finds that the association between goodwill and future cash flows is less pronounced when firms are more likely to benefit from inflated goodwill. In sum, the findings by Lee (2011) suggest that, under the impairment-only approach, goodwill provides a more faithful representation of the underlying economic value than the amortization approach.

Chalmers, Clinch, Godfrey & Wei (2012) explore goodwill's ability to predict future performance by analyzing the accuracy and dispersion of financial analysts' earnings forecasts during the periods when the amortization approach and the impairment-only approach applied in Australia. Using a sample of 1,885 firm-years with 426 unique firms for the period 1993–2007, they find a negative association between goodwill and forecast error and dispersion, which is more pronounced under the impairment-only approach. According to Chalmers et al. (2012), this finding suggests that goodwill under the impairment-only approach provides a more faithful representation of underlying economics (i.e., is more useful) to investors relative to the amortization approach.

Li, Shroff, Venkataraman & Zhang (2011) explore whether goodwill impairments provide more information under the impairment-only approach relative to the

amortization approach. They use a sample of 1,584 goodwill impairments by U.S. publicly listed firms during the period 1996–2005. They find that for the whole period, goodwill impairments reflect managers' inability to realize expected synergies. That is, recognized goodwill impairments are negatively associated with sales growth and operating income two years after the completion of the acquisition. They conduct further tests and find that the introduction of the impairment-only approach did not improve the ability of goodwill impairments to predict future operating performance. Li & Sloan (2017) explore goodwill's ability to predict return on assets (ROA), using an indicator variable for the period with the impairment-only approach. They find, in contrast to Li et al. (2011), that the predictive value of goodwill impairments under the impairment-only approach is not significantly different from under the amortization approach.

In sum, the increased goodwill balances could be a result of the abolishment of the amortization approach, which has kept goodwill balances economically suppressed. However, studies also show that the ability of goodwill impairments to predict future performance did not improve after the introduction of the impairment-only approach, which suggests that goodwill does not provide useful information to investors. A few studies have explored whether investors value goodwill balances under the impairment-only approach, using a value relevance specification. Aharony, Barniv & Falk (2010) find that the adoption of the impairment-only approach under IFRS in Europe increased the value relevance of goodwill balances. In particular, their study shows that the value relevance of goodwill balances increased most in countries where the local GAAP was significantly different from IFRS, suggesting that the impairment-only approach improved the usefulness to investors. However, the results should be interpreted with care because most local GAAPs in Europe permitted firms to write-off goodwill immediately against the reserves, making any inferences about the difference between the amortization approach under local GAAP and the impairment-only approach under IFRS potentially biased. In other words, it has still not been established whether the additional discretion when accounting for goodwill under the impairment-only approach provides more useful information to investors.

3. Research aim and motivation

In this section, I will discuss how my three papers can add to the literature. In particular, I will identify and discuss gaps in the literature and describe how my three papers can use new settings to contribute to the literature on goodwill accounting under the impairment-only approach. I will also discuss the main considerations that were taken into account when collecting data for my studies.

3.1 Research gap and potential contributions to the literature

The literature has mainly focused on investigating the subsequent valuation of goodwill (i.e., the impairment test), and it has only quite sparsely explored the initial PPA decisions concerning recognizing goodwill. However, the decision to impair goodwill is likely to be endogenously related to the initial recognition of goodwill (e.g., Shalev et al., 2013). Acquiring firms that over-allocate the purchase price to goodwill may be more likely to avoid impairing goodwill. Thus, more studies are needed on the PPA decision and the initial recognition of goodwill.

Consistent with Jensen's (1986) agency theory, one fundamental takeaway from the literature review in Section 2 is that managerial incentives play a central role in accounting for goodwill under the impairment-only approach. This is despite the far-reaching requirements of the standard setters as regards allocating the purchase price to other assets and liabilities before goodwill. However, the findings are usually drawn from studies based on the U.S. setting, where the manager typically has significant power relative to the owners. Although strong family owners typically control most firms around the world (e.g., Faccio & Lang, 2002), the literature is quite sparse on goodwill accounting choices in the presence of strong controlling owners. Since corporate acquisitions are important corporate events, it is likely that controlling owners are significantly involved in the decisions regarding both corporate acquisitions and the PPA.

However, it is not *a priori* clear whether strong family owners would discipline the manager to provide information about the underlying economics or whether they would misuse the discretion under the impairment-only approach at the expense of the other owners. For instance, large controlling shareholders with limited ownership in cash flow rights (e.g., dual class shares) may expropriate minority owners by partaking in suboptimal corporate acquisitions (La Porta, Lopez-de-Silanes & Shleifer, 1999;

Claessens, Djankov & Lang, 2000; Faccio & Lang, 2002; Dyck & Zingales, 2004). In other words, the PPA decision may not necessarily reflect agency motives of enhancing managers' private gains, but rather large shareholders' motives for the corporate acquisitions.

The first paper (entitled: The Purchase Price Allocation Decision) explores the managerial and economic determinants of the PPA decision in a setting with strong controlling owners in Sweden, with the focus on the allocation to goodwill. The Swedish setting is unique in the sense that other governance mechanisms than strong managers are prevalent, which may have an effect on the initial recognition of goodwill. Sweden is a suitable setting to study the impact of ownership structures because it is the only country found to hold a top-three position in the categories: *one-share-one vote; cross holdings;* and *pyramids* (La Porta et al., 1999). Moreover, Sweden has among the highest ownership concentrations and separation of control from cash-flow ownership in the corporate world (Faccio & Lang, 2002; Institutional Shareholder Services, 2007). The Swedish institutional context is different from the U.S. context. Swedish firms have one-tier board structures, where managers can hold no more than one board position.[13] But while management cannot control board decisions, Swedish firms are renowned for having active controlling owners. Frank & Hamberg (2018) document that family ownership is widespread in Sweden, as in the rest of Europe (e.g., Maury, 2006; Barontini & Caprio, 2006), and that Swedish publicly listed firms often have non-founding family owners with a long-term perspective. Furthermore, the Swedish corporate environment is known to be transparent. Leuz, Nanda & Wysocki (2003) document that accounting numbers are in general of high quality. In a global comparison, La Porta et al. (1999) find that Swedish firms provide informative annual reports. Additionally, when the reputable UK consulting firm Reportwatch makes its annual ranking of global firms' annual reports, Swedish firms clearly outperform firms from all other countries (e.g., Reportwatch, 2017), in which seven of the top ten reports are from Swedish firms.

Since Sweden is a small and open economy with a relatively high number of large international companies, a historical growth strategy has been to acquire firms internationally to expand businesses outside Sweden. In fact, previous studies have

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[13] Swedish law requires boards to consist of a minimum of three individuals. In the examined time period, the average firm had a board consisting of six members, excluding employee representatives.

found Swedish firms to be among the more active acquirers, being one of the top acquirers in Europe (e.g., Detzen & Zülch, 2012). Furthermore, the hand-collected sample consists of both listed and private target firms, which adds more information about the PPA process, since the typical target firm is not publicly listed. Most other studies have focused on publicly listed targets, with the exception of Yehuda et al. (2017). Martin & Shalev (2016), for instance, find that acquisitions of target firms with higher quality information are related to a higher economic surplus for the acquirer. Thus, goodwill is presumably of higher quality and predicts acquired synergies better if the target firm is publicly listed. Hence, Sweden is also a suitable setting for testing the impact of economic factors such as acquisition experience and activities on the PPA decision with regard to large publicly listed firms and small private target firms.

A second takeaway from the literature review in section 2 is that it is not yet clear whether goodwill accounting improved the usefulness to investors after the implementation of the impairment-only approach relative to the amortization approach. There are only a few studies exploring the differences in accounting for goodwill between the impairment-only and the amortization approaches, and these have mainly been conducted in a U.S. setting (e.g., Lee, 2011; Zhang & Zhang, 2017). However, these studies suffer from the fact that U.S. firms could opportunistically choose between the pooling method and the amortization approach, making any comparison between the impairment-only approach and the amortization approach potentially biased.

The literature has documented that acquiring firms misused the pooling option over the amortization approach in the U.S. and most of Europe (e.g., Lys & Vincent, 1995; Ayers et al., 2002). MacDonald (1997), for instance, estimates that roughly 90% of all U.S. corporate acquisitions above USD 100 million were accounted for using the pooling method. This suggests that not recognizing goodwill was an opportunistic means of inflating earnings prior to the implementation of the impairment-only approach. Under the impairment-only approach, on the other hand, an opportunistic application of the standard to inflate earnings would be to inflate goodwill (e.g., Shalev et al., 2013). Thus, it is quite likely that managers recognized goodwill under the amortization approach for non-opportunistic reasons, while goodwill under the impairment-only approach is inflated for opportunistic reasons. If this is the case, then studies comparing goodwill between the two approaches should, *ceteris paribus*,

systematically find that goodwill is relatively less misused under the amortization approach. To avoid these methodological concerns, studies comparing the impairment-only approach with the amortization approach should be based on settings where the pooling option was not permitted or misused.[14]

The second paper (entitled: Did the Adoption of the Impairment-Only Approach Enhance the Representational Faithfulness of Initially Recognized Goodwill?) investigates whether the initial recognition of goodwill under the impairment-only approach provides a more faithful representation of acquired superior economic performance, as argued by standard setters (e.g., FASB, 1999). I address the potential problem of self-selection bias in prior studies by using the Swedish setting. Sweden is a suitable setting to test whether initially recognized goodwill under the impairment-only approach provides a more faithful representation of acquired economic performance relative to the amortization approach. This is because, prior to the adoption of the impairment-only approach, Swedish firms did not opportunistically misuse the pooling option. In the Swedish setting, acquiring firms were only permitted under local GAAP to use the pooling method for mergers of equals. Among Swedish publicly listed firms, very few used the pooling method, and all of them were domiciled outside Sweden. I note that only six acquisitions were accounted for using the pooling method during the period 2001–2004. Thus, a majority of all acquisitions by Swedish acquiring firms applied the purchase method with yearly amortizations rather than the pooling method under Swedish GAAP.[15] The Swedish setting is thereby suitable for evaluating goodwill accounting choices under the impairment-only approach relative to the amortization approach.

A third takeaway from the literature review in Section 2 is that goodwill write-offs have significantly decreased with the adoption of the impairment-only approach, and that the underlying economic factors are not as important as managerial and firm-level

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[14] However, as discussed in section 2, goodwill balances can be economically suppressed by yearly amortizations.

[15] As part of the harmonization of the European Union's (EU) single market, publicly listed firms in Sweden were mandated to use IFRS, as of January 2005. The shift from Swedish GAAP (or: RR 1:00) to IFRS had two major implications for listed Swedish firms' accounting practices with regard to corporate acquisitions, as mandated by IFRS 3: (i) goodwill was no longer the excess of the purchase price over the book value of the target's net assets, but the excess of the purchase price over the fair value of the target's net assets; (ii) instead of systematic yearly amortization of goodwill up to 20 years, goodwill would now be tested for impairment at least yearly.

factors. Most of the studies find evidence suggesting that managers opportunistically delay the impairment of goodwill, suggesting that goodwill accounting under the impairment-only approach does not provide useful information for investors. In contrast, Jarva (2009) argues that the lag between goodwill impairment and economic impairment cannot be explained by managerial opportunism. Other studies also find that, as opposed to managerial opportunism, the lack of experience of corporate acquisitions and accounting for goodwill could explain the lag (e.g., Brochet & Welch 2018; Shepardson, 2011).

However, a potential explanation for the lag between the goodwill impairment and the economic impairment could be that a fair application of SFAS 142 delays the impairment-test of goodwill during periods of economic growth. This is possible because the impairment test under SFAS 142 require managers to only test goodwill for impairment if the reporting unit to which goodwill was initially allocated is impaired. Thus, when other assets than goodwill of the reporting unit appreciate in value, goodwill is less likely to be tested for impairment. In other words, goodwill accounting in the period subsequent to the initial recognition may only be useful for investors during periods of diminishing macroeconomic outlook. Another argument why goodwill impairments may be more useful to investors in periods of diminishing growth opportunities is that investors are more inclined to scrutinize the firm, which makes the manager more likely to report underlying economics (Povel, Singh & Winton, 2007).

The third paper (entitled: Does the Usefulness of Fair-Value Goodwill Accounting Depend on Industry-Specific Growth Opportunities?) makes use of the U.S. setting to explore whether goodwill impairments by firms with diminishing industry-specific growth opportunities provide more useful information to investors relative to firms with non-diminishing industry-specific growth opportunities. What makes the U.S. setting interesting is that the impairment test of goodwill is subject to more discretion under U.S. GAAP than under IFRS because the manager is permitted to evaluate the underlying economics of the actual goodwill instead of using impairment at the reporting unit level (Ramanna, 2015). [16] Moreover, the U.S. setting provides a sufficiently large sample to identify firms with diminishing and non-diminishing growth opportunities, without being affected by varying country-specific institutional factors.

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[16] The first two paragraphs of Section 2.3 contain a more in-depth discussion about the differences between impairment testing procedures under U.S. GAAP and IFRS.

In particular, the study makes use of the financial crisis during 2007–2008 and the European sovereign debt crisis in 2010 to identify periods of diminishing growth opportunities for the industry sectors banks and financial institutions. I further identify firms in the industry sectors pharmaceuticals, and biotechnology as well as healthcare equipment and services as having non-diminishing growth opportunities during the periods of financial crisis.

3.2 Data collection and considerations

To explore the research hypotheses of the three papers, I collect data from different sources. The data collection for the paper on the usefulness of goodwill impairments during periods of industry-specific growth opportunities (i.e., the third paper) has been straightforward. All data come from the public data vendors *Datastream* and *Worldscope*. In particular, I have collected relevant data for firms listed on the U.S. stock markets and used the SEC's *EDGAR* database to clean data points with unavailable information.

The data collection for the other two papers has for the most part been straightforward. All control variables have been easily obtained from *COMPUSTAT* and from annual reports. However, the collection of the PPA data, including the data on the initial recognition of goodwill, are more complicated. I manually analyze 2,555 annual reports of publicly listed Swedish firms for the period 2001–2013, to record a number of important items in the PPA process, such as the purchase price, the revaluation of acquired assets and liabilities, and goodwill. I also record the ownership acquired from the completed acquisition. This is important because IFRS, unlike U.S. GAAP, has since 2009 given the manager the option of either disclosing the full or the partial goodwill when attaining an ownership interest of less than 100%.[17]

Under both the full goodwill method and the partial goodwill method, the acquiring firm is mandated to record goodwill as the difference between the paid purchase price and the fair value of the identified net assets in the target firm. If the acquiring firm attains an ownership interest of 100% of the target firm, the process is straightforward

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[17] U.S. GAAP mandates an acquiring firm that attains an ownership interest of less than 100% to disclose the full goodwill as if the acquired ownership interest was 100%. Thus, the recognized goodwill may differ depending on whether U.S. GAAP or IFRS is applied to an acquisition where the ownership interest attained is less than 100%.

and simply entails comparing the purchase price paid with the revaluated assets and liabilities. However, if the acquiring firm attains less than 100% ownership, the full goodwill method stipulates that purchase price allocation should be extrapolated to reflect an acquisition of 100% of the target firm. To reach an extrapolated price for the whole target firm, the acquiring manager must divide the purchase price by the acquired percentage share of the target firm's net assets. In that case, initially recognized goodwill will include the minority owners' part of the revaluated goodwill in the balance sheet of the acquiring firm.

Under the partial goodwill method, on the other hand, the acquiring manager is required to only recognize the part of goodwill that reflects the actual ownership of the target firm acquired, meaning that minority owners' part of goodwill is not revaluated or disclosed as it is under the full method. In particular, the acquiring manager is mandated to revalue the target firm's assets and liabilities, and then compare the purchase price paid with the revalued acquired net assets to identify goodwill. Thus, to avoid comparing full goodwill of an acquisition with an attained ownership interest of less than 100% to acquisitions with partial goodwill, I only include acquisitions with an attained ownership interest of 100% in all studies on the initial recognition of goodwill.

4. Summary of empirical findings and concluding implications

In this section, I will summarize the applied empirical methods and findings of the three papers of this dissertation. Then, I discuss the overall implications and potential guidance these papers offer to international standard setters' project of evaluating the impairment-only approach and alternative approaches.

4.1 Empirical methods and findings of the papers

Accounting is about using judgment to provide a more correct picture of a firm. However, a significant body of research provides evidence indicating that firms' discretionary accounting choices often reflect managerial opportunism (Fields et al., 2001). Despite these findings, international standard setters chose to allow significant discretion in accounting for corporate acquisitions, by permitting additional use of fair-

value measures through the implementation of the impairment-only approach.[18] In particular, they argued that acquiring firms would be able to provide private information to investors about the acquisitions regarding the value of the target and the acquired superior economic performance such as synergies (e.g., FASB, 1999, Watts, 2003). Critics contend, in line with agency theory, that managerial discretion in the valuation of unverifiable accounting items, such as goodwill, is frequently misused to enhance private gains (e.g., Watts, 2003, Shalev et al., 2013).

The three papers in this dissertation all investigate whether goodwill accounting choices depend on the level of discretion. A significant body of research documents that goodwill accounting choices are affected by misuse of the additional discretion under the impairment-only approach instead of providing insights about underlying economics. These studies have mainly used the U.S. setting with limited involvement of strong controlling owners during periods where economic growth has predominated. With this background in mind, the papers in this dissertation explore whether a higher level of managerial discretion has any impact on goodwill accounting choices and, thus, provides investors with more useful information.

The first paper (entitled: The Purchase Price Allocation Decision) uses a hand-collected sample of 1,112 PPA disclosures on the recognition of goodwill under IFRS 3 to explore whether the PPA decision is affected by the presence of strong controlling owners and other economic determinants. To test whether large controlling family owners are able to curb managers' misuse of the discretion under the impairment-only approach, a pooled OLS specification is applied. The dependent variable is defined as the recognized goodwill divided by the purchase price. The variables of interest include (1) a measure of the CEO's compensation in relation to total pay to test for managerial opportunism, (2) an indicator variable which takes the value 1 if the firm is owned by a family, (3) a test for excess price by taking the natural logarithm of the difference between the purchase price and the target firm's book value of equity, (4) an indicator variable that takes the value of 1 when the number of acquisitions by the acquiring firm exceeds the average number of acquisitions in the relevant industry, and (5) an indicator variable that takes the value of 1 if the target firm is not domiciled in Sweden.

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[18] However, the application of fair-value measures under the impairment-only approach is asymmetric in the sense that the firm is only permitted to account for fair-value depreciations, but prohibited from accounting for fair value appreciations and reversals.

In addition, a number of control variables for other factors that may affect the allocation of the purchase price to goodwill are included, such as the target firm's size, intangible assets, debt, and the acquiring firm's size, debt covenants, and ownership concentration.

While prior studies document that managers over-allocate to goodwill when their compensation is based on accounting earnings (e.g., Shalev et al., 2013), the first paper finds that the presence of controlling owners curbs managers incentives to over-allocate the purchase price to goodwill. However, after controlling for ownership concentration and dual-class shares, analyses show that family-dominated firms allocate a larger portion of the purchase price from smaller deals (below SEK 8 million) to goodwill. However, the effect of controlling families disappears when dropping small deals from the regression, which could be an indication that other owners are more aware of the deal quality and the potential synergies of larger target firms. The disappearing family-owner effect could also be in line with the findings by Martin & Shalev (2016) that acquisitions are more successful when the target firm is larger and provides higher quality information.

Thus, the findings of the first paper indicate that managerial incentives do not play a role in accounting for goodwill under the impairment-only approach in a setting with strong controlling family owners. However, the incentives of strong controlling owners may play a role in the over-allocation of the purchase price to goodwill. While large controlling family owners seem to curb managers' agency motives for misusing the discretion, they themselves appear to misuse discretionary goodwill accounting. The main implication of these findings is that international standard setters must consider the agency conflict between different types of owners, in addition to the agency conflict between the management and the owners, in fair-value goodwill accounting. In other words, goodwill accounting under the impairment approach is not necessarily more useful to investors when large controlling family owners are in place.

The second paper (entitled: Did the Adoption of the Impairment-Only Approach Enhance the Representational Faithfulness of Initially Recognized Goodwill?) investigates whether initially recognized goodwill provides a more faithful representation of the acquired economic performance under the impairment-only approach relative to the amortization approach. I do not expect initially recognized goodwill to provide a more faithful representation of acquired superior economic performance relative to the prior amortization approach. This is because I expect

managers to misuse the higher level of discretion under the impairment-only approach, so that goodwill will include more components than acquired synergies and intangibles assets with superior earnings. I hand-collect a sample of 1,040 firm-years with acquired goodwill, of which around 850 entailed acquiring a controlling stake of 100%. I document that goodwill balances of Swedish publicly listed firms as a share of total assets (equity) changed from 14.9% (36.5%) under the amortization approach to 22.7% (52.3%) under the impairment-only approach.

To investigate the hypothesis of the second paper, I test whether the interaction between IFRS and initially recognized goodwill is related to the acquired economic performance, which is approximated using four different economic measures that would indicate improved superior earnings. The first two measures include the change from t-1 to t+1 (or t+2) around the completion of an acquisition: (1) the change in the industry-adjusted return on assets (ROA), (2) the change in the acquiring firm's sales growth. The other two measures are: (3) the acquiring firm's abnormal post-acquisition stock return at t+1, and (4) Tobin's q in t+1. After controlling for firm-specific variables that can affect the firm's future economic performance, such as leverage, stock returns, and return on assets, I find no evidence that initially recognized goodwill is associated with any of the dependent variables that approximate the future superior earnings of the four models. This suggests that the adoption of the impairment-only approach relative to the amortization approach did not provide a more faithful representation of the acquired superior economic performance. In other words, the additional discretion offered by the impairment-only approach did not improve the representational faithfulness of initially recognized goodwill.

The findings of the second paper provide vital information to international standard setters in their evaluation of additional use of fair-value measures in accounting for goodwill under the impairment-only approach relative to the amortization approach. The FASB has considered different alternatives to the impairment-only approach in their evaluation of the treatment of goodwill and intangible assets, including a possible reintroduction of the amortization approach (FASB, 2017). Part of this process involves evaluating the outcome of the impairment-only approach (Zhang & Zhang, 2017). The findings of the second paper suggest that the additional discretion offered by the impairment-only approach has not improved the representational faithfulness, while the literature suggests that the agency cost has

increased significantly. Thus, initially recognized goodwill probably does not provide more useful information to investors under the impairment-only approach.

The third paper (entitled: Does the Usefulness of Fair-Value Goodwill Accounting Depend on Industry-Specific Growth Opportunities?) investigates whether a firm's industry-specific growth opportunities affect goodwill accounting choices and, thus, the usefulness of information about goodwill for investors. In particular, I test whether firms with diminishing industry-specific growth opportunities are more likely to impair goodwill relative to firms with non-diminishing growth opportunities. This setting is interesting because I expect that the macroeconomic environment will reduce the manager's discretion to avoid impairing goodwill, and, thus, present the underlying economics. There are two reasons why I expect this to occur. First, the second step of the goodwill-impairment test is less likely to be delayed when other asset classes are depreciating in value at the reporting unit level. Second, Povel et al. (2007) provide proof that accounting information improves when the firm's macroeconomic outlook is in decline because of increased monitoring activities, which reduces the manager's possibility to misuse the discretion. Thus, I hypothesize that when the firm's industry-specific growth opportunities are diminishing (1) the firm is more likely to impair goodwill, and, thus, (2) goodwill impairments provide more value-relevant information to investors. In other words, I expect that goodwill impairments will provide useful information to investors when a firm's industry-specific growth opportunities are diminishing.

To explore these expectations, I make use of the financial crisis in 2007–2008 and the sovereign debt crisis in 2010, focusing on the different goodwill accounting choices made by 777 firm-years of banks/financial institutions and pharmaceuticals. The former industry should be more affected by the crisis, whereas the latter should not be affected because of inelastic demand for their products and services (Myers & Howe, 1997; Harrington, 2012). That is, I expect that banks and financial institutions will be more likely to impair goodwill during the crisis, and that these impairments will provide more value-relevant information to inventors. Thus, the third paper investigates whether the usefulness of goodwill impairments depends on industry-specific growth opportunities by exploring (1) whether banks and financials are more likely to impair goodwill during financial crises, and (2) whether investors value them higher during periods when the firm's industry-specific growth opportunities are

diminishing. This is the only paper in the dissertation where I formally test the usefulness of goodwill accounting choices to investors thorough the value-relevance specification.

In the empirical analysis, I use two different empirical models. For the first research question, I use an OLS specification which testes whether firms with diminishing industry-specific growth opportunities are more likely to impair goodwill. In particular, I define the dependent variable as either (1) an indicator variable, which takes the value of 1 if the firm impairs goodwill and zero otherwise, or (2) I use the natural logarithm of total yearly goodwill impairments by the firm. The variable of interest in this study is the interaction between (1) the indicator variable that takes the value of 1 if the firm belongs to the banking or financial sectors, and (2) the indicator variable for the financial crises. I also use control variables such as the firms' size, relative goodwill balances, earnings, book-to-market value of equity, and losses. I find no convincing evidence that firms with diminishing industry-specific growth opportunities are more likely to impair goodwill. This suggests that past studies' documentation of delayed goodwill impairments cannot be explained by a fair application of SFAS 142, as an overall improved macroeconomic outlook is probably not the reason why the second step of impairing goodwill was delayed.

To explore the second research question, I use a panel-data specification to test the value relevance of goodwill impairments by firms with diminishing growth opportunities. The dependent variable is the change in abnormal stock return, which has been adjusted by each sector's value-weighted index. The variables of interest are defined as a "three-way" interaction between (1) the change in goodwill impairment from *t-1* to *t*, (2) an indicator variable of firms belonging to banking or financial sectors, and (3) an indicator variable for the financial crisis. I also control for goodwill impairments in general by all firms and different measures for earnings. I find that goodwill impairments by firms with diminishing industry-specific growth opportunities are positive and significantly associated with abnormal stock return, suggesting that investors attach more weight to goodwill impairments under these conditions. Thus, the results of paper three indicate (1) that delayed goodwill impairments are probably *not* a reflection of fair application of SFAS 142, and (2) that the impairment of goodwill is more useful to investors when the firm's industry-specific growth opportunities are diminishing.

4.2 Potential implications and guidance of the three papers

The three papers in this dissertation indicate that the level of discretion affects goodwill accounting choices, and, thus the usefulness of information about goodwill for investors. The empirical findings of these studies should provide useful input to international standard setters in their evaluation of the decision to allow fair-value measures in accounting for corporate acquisitions (e.g., FASB, 2017). Paper two should be of particular interest as it provides insights into the treatment of goodwill under different levels of discretion, by comparing the impairment-only approach to the amortization approach. However, paper two cannot by itself guide international standard setters on the optimal treatment, as its main conclusion is that neither the impairment-only approach nor the amortization approach provides a more faithful representation of acquired future economic performance. Thus, this finding is just one input that, together with studies on the potential costs of the impairment-only approach and the amortization approach, could guide standard setters. While a return to the amortization approach would mitigate the agency costs of managers' and large family owners' misuse of the impairment-only approach, the firm's costs of yearly amortizing goodwill must also be considered (e.g., Skinner, 2008). Given that there are few, if any, signs of an improved information environment under the impairment-only approach for goodwill accounting, the benefits of reintroducing an increased level of accounting conservatism using a goodwill-amortization approach is worth reconsidering.

However, the findings in paper three indicate that the impairment-only approach provides useful information to investors, at least when a firm's industry-specific growth opportunities are diminishing. This could be the result of misuse of the discretion, or that the first step of the impairment test delays the second step of testing goodwill for impairments. The first test in paper three finds an insignificant difference between impairments by firms with diminishing and firms with non-diminishing growth opportunities, which suggests that the impairment test is probably misused. However, it could also be the case that pharmaceuticals were as affected by the financial crisis as banks and financial institutions and therefore need to impair goodwill. In other words, the only certain conclusion that can be drawn from paper three is that the impairment-only approach can provide investors with useful information about the valuation of goodwill balances in a period of diminishing growth opportunities.

Overall, the potential implications of this study depend on what perspective standard setters prioritize. Papers one and two show some signs that the initial recognition of goodwill under the impairment-only approach does not provide a more faithful representation, indicating that the amortization approach is preferable as the agency cost can be mitigated, while the usefulness to investors remains unaffected. However, goodwill balances will likely be economically suppressed under the amortization approach, as the yearly amortizations are unlikely to reflect the economic depreciation of goodwill over time. In addition, the third paper also indicates that the discretion offered by the impairment-only approach provides more useful information about the valuation of goodwill balances through the impairments made during periods of diminishing growth opportunities. Thus, this dissertation does not provide evidence pointing in one direction that could guide standard setters towards a return to the amortization approach with limited discretion, because it is not certain from the three papers that this would be beneficial or preferable.
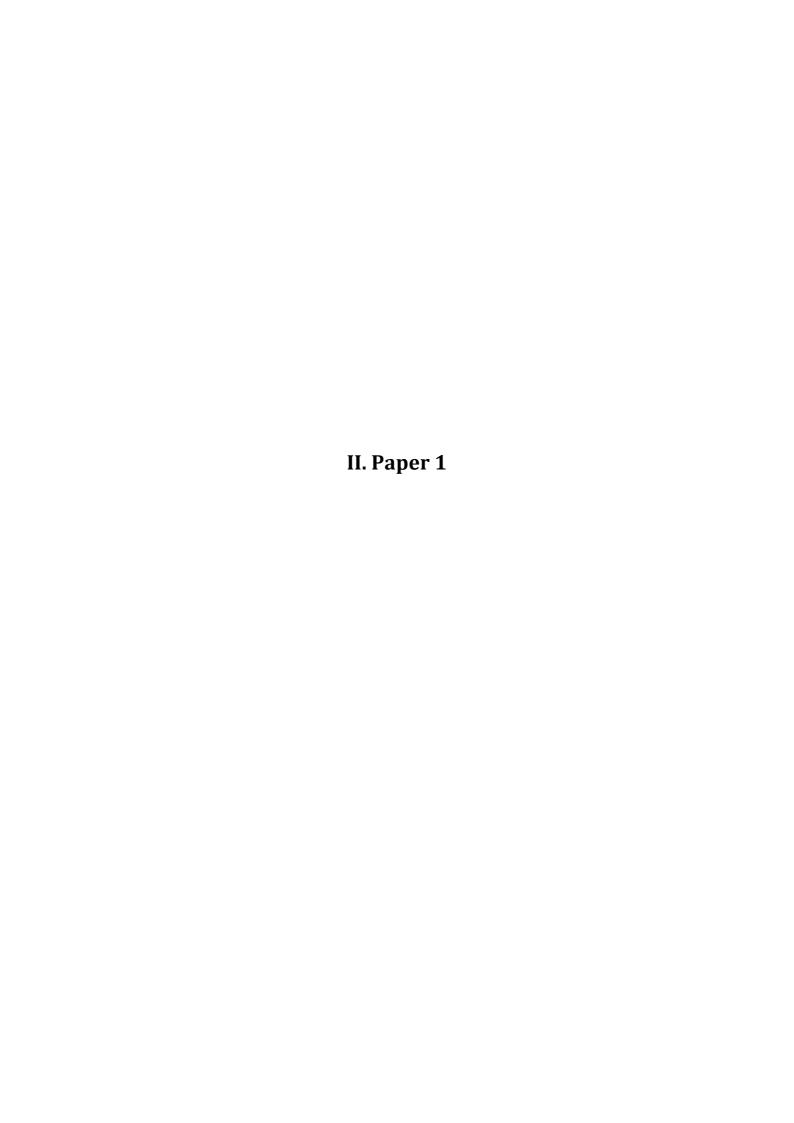
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II. Paper 1

The Purchase Price Allocation Decision

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&
Mattias Hamberg

ABSTRACT

Goodwill is a debated and criticized accounting item, but its origin; the purchase price allocation (PPA) decision, is largely unstudied. We hand-collect 1,112 PPA disclosures that apply IFRS 3 and document that acquisitions are frequent, material and they actually give rise to more goodwill than to revalued specific tangible and intangible assets together. We find that family firms are more prone to allocate the purchase price to goodwill than to specific assets and liabilities. In contrast to prior studies on the PPA decision, we find no indication that CEO bonus incentives should have any impact on the allocation of the purchase price to goodwill. These two findings indicate that strong controlling owners curb managers, while family owners might intentionally misuse the discretion of PPA decision. Furthermore, economic indicators such as acquisition uncertainty and experience affect the PPA decision. Interestingly, indicators used to study goodwill impairment decisions (e.g. purchase price in excess of the book value of acquired equity) are also important for discretionary PPA decisions. These findings suggest that the total level of discretion involved in the goodwill impairment decision has been underestimated in the literature.

1. Introduction

The accounting for goodwill has been extensively studied in the accounting literature. However, very little is known about its origin: the purchase price allocation (hereafter *PPA*) decision that is made in conjunction with corporate acquisitions. According to the International Financial Reporting Standards (IFRS) 3, the difference between the purchase price paid and the target firm's equity is allocated to specific and unspecific assets at the time of an acquisition. While prior studies document that CEO incentives play a significant role in the PPA decision to allocate the purchase price to goodwill (e.g., Shalev, Zhang & Zhang, 2013), no study has explored the role of the corporate ownership structure. Our objective is to investigate the allocation of the purchase price to goodwill in a setting dominated by strong controlling owners. To do so, we make use of a unique dataset containing PPA disclosures following the new IFRS 3 disclosure requirements as adopted by European public firms in 2005. Our analysis is based on hand-collected information on 1,112 PPA disclosures from the annual reports of Swedish publicly listed firms from 2005 to 2013.

Goodwill has received considerable attention in accounting research because it is a large and highly discretionary balance-sheet item. But despite all research on goodwill, few studies cover the PPA decision; possibly because there is little information on target firms and the acquisitions themselves. For a sample of 137 PPA decisions, Zhang & Zhang (2017) find that both economic motives and a CEO's personal incentives affect the allocation to goodwill. This corresponds to findings in Shalev et al. (2013) that CEOs allocate a greater portion of the purchase price to goodwill when compensation packages contain more variable components. It seems as if managers opportunistically use the discretion of PPA to control future earnings. Detzen & Zülch (2012) find similar results for a sample of 123 European PPA decisions. In contrast to these three studies, we conduct a much larger empirical study, including both public and private targets,[1] to explore a broader set of PPA determinants. This is particularly important given that most target firms are privately held.

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[1] The three aforementioned studies focus on the allocation of the purchase price to goodwill using samples of publicly listed target firms.

Since 2005, European publicly listed firms are mandated by IFRS 3 to make a fair-value assessment of their acquisitions and provide details on their acquired targets.[2] The main consequences of IFRS 3 include: (i) the regular impairment tests of goodwill, instead of yearly amortizations, (ii) the disclosure of detailed information on the target firms' equity, and (iii) the fair-value reassessment of assets and liabilities, including the residual value of goodwill. These three features form the basis of our empirical study.

Proponents of fair-valued goodwill – among them standard setters – promulgate that the process of allocating the purchase price to accounting items of the target firm makes the residual item *goodwill* more relevant to information users (e.g., FASB, 2001; Ramanna & Watts, 2012). By requiring an acquiring firm to allocate the purchase price to specific accounting items (such as tangible and intangible assets, as well as liabilities), goodwill should measure synergies coming from the combination of the acquirer and the target. Critics of fair-valued goodwill, however, argue that the discretion of the PPA decision is used opportunistically. Subsequent to the initial recognition, goodwill accounting relies on discretionary impairment-only decisions. Consequently, opportunistic managers can allocate those parts of the purchase price that are not based on synergies into goodwill and keep future earnings inflated. Thus, PPA disclosures on the separation between intangibles and goodwill under the fair-value regime may only be of limited use for investors (e.g., Skinner, 2008). Shalev et al. (2013), for example, find that 59% of the purchase price is allocated to goodwill. This would be a reason why goodwill balances are inflated and goodwill impairments are untimely (e.g. Li & Sloan, 2017). In short, the origin of fair-valued goodwill may not purely reflect underlying synergies coming from the business combination but an opportunistic unwillingness to specify target firm resources and reveal past overpayments.

Similar to Zhang & Zhang (2017), we believe there are multiple determinants of the PPA decision of which many have not yet been explored. In particular, we argue that managerial misbehaviors are contextual and can be curbed by controlling owners. There is no study of how ownership impacts the PPA decision. Powerful owners may curb managerial opportunism, but they may also hold similar opportunistic motives (e.g. Claessens, Djankov & Lang, 2000). For instance, large controlling shareholders with

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[2] Prior to the adoption of fair-value goodwill accounting under SFAS 142 and IFRS 3, accounting standards did not require substantial disclosures on the acquired target firms and PPA decisions. Consequently, studies on the PPA decision have been unfeasible due to lack of data.

limited cash flow rights may expropriate non-controlling owners by partaking in suboptimal acquisitions (Claessens et al., 2000; Faccio & Lang, 2002; Dyck & Zingales, 2004). Potentially, both controlling owners and managers have incentives to use the PPA decision opportunistically.

We use data on all public Swedish firms from 2005 to 2013 to explore the PPA decision. Swedish firms tend to have concentrated ownership (La Porta, Lopez-De-Silanes & Shleifer, 1999; Faccio & Lang, 2002) and many firms have a dual-class share system (Faccio & Lang, 2002). For this reason, we target ownership incentives in particular. Because Sweden is a small and open economy with many large international firms, corporate growth has often come through foreign acquisitions. In fact, prior studies show that Swedish firms are among the most active in the European takeover market (e.g., Detzen & Zülch, 2012; Francis, Huang & Khurana, 2016). Hence, Sweden also makes a suitable setting to investigate the impact of economic factors, such as acquisition uncertainty and experience, on the PPA decision.

The final sample consists of 2,214 acquisitions reported in 1,112 unique PPA disclosures conducted by 205 unique acquiring firms; all collected from 1,772 annual reports of all publicly listed firms domiciled in Sweden. About 64.5 % of the acquisitions were made outside of Sweden; in more than 70 different countries including all EU countries, as well as far-away countries like Nepal, Kazakhstan, Uruguay, Namibia, and the UAE. The sample is significantly larger than any prior PPA study because we include both public and private target firms. In total, less than five percent of the target firms were publicly listed. Descriptive statistics show that the average purchase price is roughly four times the target firm's book value of equity and 53.6 % of the difference between the purchase price and the book value of the target firm's equity (hereafter *excess purchase price*) is allocated to goodwill. These figures are quite similar to those of Shalev et al. (2013) and Detzen & Zülch (2012). The fact that the value of allocated goodwill is more than twice the target firms' pre-acquisition book value of equity stresses the economic significance of the PPA decision.

The propensity to allocate the purchase purchase price to goodwill is influenced by several economic motives. *First*, it increases with a larger difference between the purchase price and the book value of the target firm's equity (i.e, excess purchase price). This can be caused by a difficulty to relate large payments over the book value of acquired assets to specific assets, or potentially a desire to "disguise" overpayments.

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Second, the propensity is higher for acquisitions of uncertain target firms. This suggests that incremental uncertainty is dealt with by choosing more discretion. *Third*, the propensity is lower for experienced acquirers. This indicates that serial-acquirers may have become better able to attribute the purchase price to specific assets and liabilities.

We further find that family ownership has a positive effect on the goodwill allocation propensity, and it holds for controls of ownership concentration and dual-class shares. The result is not significant when excluding deals below SEK 8mn (roughly USD 1 million). This is, however, not surprising since family-dominated firms are proportionately more involved in smaller deals. In contrast to prior studies (e.g. Shalev et al., 2013), we find no convincing evidence that managerial incentives increase the propensity to allocate the purchase price to goodwill. This suggests that managerial motives are not important when managers cannot exploit the discretion of goodwill allocation.

Our study contributes to the existing literature in two ways. First, we add to the literature on initial recognition of intangible assets by exploring whether the frequently studied goodwill write-down decisions stem from a subjective PPA decision process. Prior literature has almost entirely focused on the post-acquisition valuation of goodwill under either SFAS 141 or IAS 38 (e.g. Ramanna & Watts, 2012; Hamberg & Beisland, 2014; Li & Sloan, 2017), and ignored that goodwill is endogenously determined before any impairment test is conducted. By misusing discretionary fair-value measurements in the PPA process, an acquiring firm can alter the likelihood of reporting future amortizations and impairments. We show that most of the purchase price is allocated to goodwill and that this allocation is significantly related to economic and ownership motives.

Research on goodwill impairment tests is, by construction, conditional on recognized goodwill. Our findings show that the value of goodwill is endogenously determined by a number of firm-specific factors. Focusing on goodwill and the impairment process alone underestimates the level of discretion that corporate insiders, such as managers and controlling owners, exercise in the accounting for goodwill. In specific, we show that a number of goodwill impairment indicators – such as the size of the excess purchase price – also determine the PPA decision (cf. Hayn & Hughes, 2006; Ramanna & Watts, 2012). These findings are useful for users of financial information and as inputs in evaluating fair-value-based accounting procedures.

Second, we add to the literature on how ownership affects accounting choices. The strong control exercised by family owners is usually thought to curb managerial misbehaviors and have net positive effects on the creation of value (Anderson & Reeb, 2003). Although agency theory predicts fewer owner-manager conflicts, a controlling family may use entrenched managers to maximize their private benefits by expropriating benefits from non-controlling owners. In particular, this can happen when families possess disproportionate voting rights relative to cash flow rights, which is the case in our Swedish sample. Our results indicate that family-controlled firms provide less transparent information; possibly because this is a way to exercise better control.

The paper is structured as follows. Section 2 contains the development of our research hypotheses on the motives for purchase price allocation decisions. In Section 3 we discuss methodological considerations surrounding the study of Swedish firms' PPA decisions. Section 4 contains empirical analyses and the fifth section concludes the paper.

2. Expected motives for the purchase price allocation decision

2.1 Purchase Price Allocations and the recognition of goodwill

The implementation of IFRS 3 *Business Combinations* significantly changed the accounting for business combinations in Europe. Under the new regime, the acquiring firm is required at the acquisition date to make a fair-value reassessment of the target firm's identifiable tangible/intangible assets and liabilities by allocating the purchase price to specific accounting items. This process we refer to as the purchase price allocation (PPA) decision. When the purchase price exceeds the fair value of acquired equity, the excess part is booked as goodwill. Because most assets and liabilities of the target firm lack observable prices from active markets, IFRS 3 provides significant discretion to management in the process of allocating the purchase price; the only constraint being that the fair value of equity cannot exceed the purchase price paid for the target firm.

Because accounting choices associated with the PPA decision are largely unverifiable, it is possible to opportunistically manage post-acquisition earnings by allocating the purchase price to assets for which accounting rules are more discretionary. For two reasons, goodwill is such an asset. First, most tangible and

intangible assets are expensed on a regular basis using depreciation and amortization expenditures. Goodwill, on the other hand, has an indefinite life and it is, therefore, subject to impairment tests, but not amortizations. Second, goodwill is an unspecific asset for which there is no market price to use as a benchmark in the impairment test. This stands in sharp contrast to e.g. inventories for which values are verifiable within a few months when inventories are sold in the market. By allocating the purchase price to goodwill, opportunistic managers can control future earnings related to acquisitions by subjecting goodwill to discretionary impairment tests instead of routine expenditures of goodwill amortizations.

A substantial body of empirical research documents problems with goodwill impairments. For example, Hayn & Hughes (2006) suggest that goodwill impairments lag economic impairments with as much as three to four years. Acquiring firms even neglect to report economically impaired goodwill at the acquisition date (Yehuda, Vincent & Lys, 2017). Beatty & Weber (2006) argue that the decision to report untimely goodwill impairments (primarily an excessive delay) mainly reflect equity market concerns and contracting incentives upon the initial adoption of SFAS 142. Goodwill accounting has also been studied in a Swedish context. Hamberg, Paananen & Novak (2010) find that firms, opportunistically, did not impair goodwill at the initial adoption of IFRS 3. Hamberg & Beisland (2014) find that with the adoption of IFRS 3, goodwill impairments became untimely in the sense that they are no longer associated with stock returns. One driver behind the decision to delay the reporting of economically impaired goodwill seems to be related to earnings. Ramanna & Watts (2012) find that acquiring firms that capitalize proportionately more goodwill report higher post-acquisition earnings, and that the likelihood of reporting goodwill impairment decreases with accounting discretion.

While there is substantial evidence that the implementation of an impairment-only approach to goodwill accounting has led to untimely impairments and inflated goodwill amounts (Li & Sloan, 2017; Hamberg & Beisland, 2014), only a few studies have explored the determinants of the PPA decision that cause the capitalization of acquired goodwill.

2.2 Managerial and ownership incentives

By allocating a larger part of the purchase price to assets with values that are largely unverifiable, it is possible to control post-acquisition earnings. This discretion can be used opportunistically by the reporting party. Previous research has mainly been conducted in Anglo-Saxon corporate environments where ownership has been rather dispersed. Zhang & Zhang (2017) study the change to discretionary and unverifiable fair-value goodwill measurements. They find that managerial incentives are only related to the allocation to goodwill when unverifiable fair-value measures are used. Shalev et al. (2013) document that CEOs allocate a greater portion of the purchase price to goodwill when their compensation packages are based on variable non-equity based components (i.e., earnings-based bonuses). In a similar vein, Detzen & Zülch (2012) report that increased CEO cash bonus intensity in Europe is related to the likelihood of allocating the purchase price to goodwill under IFRS 3. Bugeja & Loyeung (2015) find that Australian firms increased their allocation of the purchase price to goodwill as of the shift from the amortization regime to the fair value regime of IFRS 3.

The aforementioned studies were conducted in corporate environments where ownership is dispersed; and as a consequence, top management was quite powerful while the owners were not.[3] This is likely to be important for the research expectations. A separation of ownership and control of corporate resources causes information asymmetries between owners and managers (Jensen & Meckling, 1976). Self-interested managers are then likely to use their information advantages to act opportunistically. In Anglo-Saxon countries, large firms are often widely held and controlled by comparatively powerful CEOs. In addition, most widely held U.S. firms have CEOs with dual responsibilities as chairman of the board, providing them with significant power. And, their compensation packages often contain large variable components. These are three reasons for why CEOs in the Anglo-Saxon setting may act opportunistically and allocate a larger portion of the purchase price to goodwill (Shalev et al., 2013; Detzen & Zülch, 2012; Zhang & Zhang, 2017).

No prior research has, however, investigated the propensity to allocate the purchase price to goodwill in an institutional setting dominated by large controlling owners. It is well-known that most public firms around the world are directly or indirectly family-

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[3] Detzen & Zülch (2012) use a sample of European acquiring firms, including Sweden. However, the ending sample of 123 acquisitions is dominated by the UK setting.

controlled (Faccio & Lang, 2002). A controlling owner often has sufficient power to access information and curb managerial misbehaviors. But with the increasing power of controlling owners comes a risk that the controlling owner exploits the rights of non-controlling owners (Shleifer & Vishny, 1986). For example, a large controlling owner with disproportionally large voting rights, relative to cash flow rights, may choose to make value-destructive (or forego value-creating) corporate acquisitions (La Porta et al., 1999; Claessens et al., 2000; Faccio & Lang, 2002; Dyck & Zingales, 2004). There is an extensive literature on the association between ownership type and firm value. However, there are only a few studies that suggest that family owners expropriate value (e.g. Bertrand, Mehta & Mullainathan, 2002; Goa & Kling, 2007), Anderson & Reeb (2003) and many others document a positive association between founding family ownership and performance.

Regardless of whether controlling family owners create or destroy shareholder value, there are reasons to believe that they choose less transparent disclosure strategies. First, there are fewer incentives to disclose information when active ownership offers alternative information channels. Second, information can be used opportunistically relative to other stakeholders. By choosing when, what, and to whom information is disclosed can provide advantages. In this vein, Fan & Wong (2002) find that earnings management is more prevalent among firms with concentrated ownership.

Thus, it seems unlikely that findings from a corporate institutional setting characterized by exceptionally large U.S. firms also hold for other institutional settings in the world such as the Swedish context. In Sweden, family ownership is the norm, controlling owners dominate the board of directors, and CEO dual responsibilities are prohibited by law. Controlling owners might curb managerial misbehaviors and instead influence management to behave in the controlling owners' best interest. Thus, the PPA decision may not reflect compensation motives but family-control motives. Hence, we conjecture that:

H1: The goodwill allocation propensity does not increase with the CEO's level of performance-based compensation in a setting with strong controlling owners.

H2: The goodwill allocation propensity increases with family firm ownership.

2.3 Economic motives

Agency theory predicts that the goodwill allocation propensity is influenced by conscious opportunistic behaviors; but in addition, it is likely to also relate to non-opportunistic economic motives. According to the hubris hypothesis (Roll, 1986), acquisition decisions are influenced by management's excessive confidence in their ability to create value and synergies. In essence, managers believe that they build value through acquisitions, but rather they pay too much; and as a consequence, they destroy value (Malmendier & Tate, 2008). Similarly, managers with outstanding track records build overconfidence that potentially leads to worse future deals (Doukas & Petmezas, 2007; Billett & Qian, 2008). Thus, a significantly large difference between the purchase price and the book value of the target firm's equity (i.e., excess purchase price) may stem from intended or unintended overpayments. The consequence of an unmotivated large excess purchase price is that it is less likely to be allocated to specific assets and instead it is booked as goodwill. Thus, we expect that:

H3: The goodwill allocation propensity increases with the amount of excess purchase price.[4]

We expect acquisition experience to influence the goodwill allocation propensity. Some firms make dozens of acquisitions annually whereas others grow their business largely through internal investments. Research suggests that acquisition experience has a positive impact on acquisition performance. For example, experienced acquiring firms can be better at estimating potential synergies (Haleblian & Finkelstein, 1999; McDonald, Westphal & Graebner, 2008). In a similar fashion, accounting skills are likely to develop gradually over time. Any allocation of the purchase price to specific assets comes from a thorough understanding of how to allocate the value of future operations to specific assets of the target firm. Managers with little acquisition experience might not possess the knowledge to correctly make such allocations and, instead, they lump

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[4] It should be noted that the residual asset goodwill could be argued to mechanically reflect a larger excess purchase price payment. However, because IFRS 3 requires the acquiring firm to make revaluations of the (and identifying any new) acquired assets before concluding the acquired goodwill, it is not evident whether larger excess purchase price, by construction, translate into larger goodwill. The descriptive statistics in Table 3 also reveal that larger average excess purchase prices do not uniformly translate into larger goodwill allocations. In some periods with relatively larger excess purchase price, the percentage of excess purchase price allocated to goodwill is lower, and *vice versa*.

the difference between the paid purchase price and the book value of acquired equity. Based on these two strands of arguments we hypothesize that:

H4: The goodwill allocation propensity decreases with acquisition experience.

Acquisitions are uncertain as information is asymmetrically distributed between the two parties. The level of uncertainty is affected by many factors, including knowledge of the target firm's valuable resources, its markets and its accounting practices. For example, McNichols & Stubben (2015) find that the quality of the target firm's accounting information reduces acquisition uncertainty and the risk for the acquiring firm to overpay. It also seems as acquirers benefit from reduced information uncertainty by sharing auditors with the target (Dhaliwal, Lamoreaux, Litov & Neyland, 2016; Cai, Kim, Park & White, 2016). Based on these arguments, we expect that:

H5: The goodwill allocation propensity increases with acquisition uncertainty.

3. Research method

3.1 The institutional setting

We use the Swedish adoption of IFRS 3 in 2005 to investigate the PPA decision. Sweden has a well-functioning liquid equity market and in the studied time-period of 2005-2013, 375 firms were listed on the Stockholm Stock Exchange. Because Sweden is a small open economy, firms often grow outside of Sweden and expansion often comes through corporate acquisitions. In fact, Swedish firms are some of the most active in the European takeover market (Detzen & Zülch, 2012). For this reason, we expect that many Swedish firms are exposed to the PPA decision and that some firms are experienced serial-acquirers.

As for all publicly listed firms in Europe, the Swedish adoption of IFRS 3 coincided with the mandatory switch from local GAAP to IFRS in 2005. As discussed in Hamberg et al. (2010), the circumstances surrounding the initial adoption of IFRS 3 varied between local European contexts. Prior to the adoption of IFRS 3, the Swedish standard RR 1:00 mandated firms to use the purchase method with yearly amortizations over a period of maximum 20 years. However, Hamberg et al. (2010) find that in 2004, the median Swedish firm amortized goodwill over seven years only.

The adoption of IFRS 3 mandated Swedish firms to measure the identifiable assets acquired and liabilities assumed at their acquisition-date fair values (IFRS 3, §18). In essence, the difference between the purchase consideration and the net of identifiable fair values is goodwill. IFRS 3 requires firms to disclose detailed information on material acquisitions and that makes our empirical study feasible. Swedish firms are known to be transparent with high-quality accounting numbers (e.g. Leuz, Nanda & Wysocki, 2003) and informative financial reports (La Porta et al., 1999). According to a recent global survey, the annual reports of Swedish firms are outstandingly informative (Reportwatch, 2017).

Previous studies on the PPA decision have predominantly been conducted in Anglo-Saxon countries where many firms have dispersed ownership and relatively powerful management teams. In contrast, the Swedish institutional setting is characterized by powerful controlling owners and fairly weak management teams. Sweden has among the highest ownership concentrations and separation of control from cash-flow ownership in the corporate world (Faccio & Lang, 2002; Institutional Shareholder Services, 2007). La Porta et al. (1999) rank Swedish firms at a top-three position in the categories: *one-share-one vote; cross holdings;* and *pyramids.* Frank & Hamberg (2016) document that Sweden is a typical European country in the sense that family ownership is widespread (cf. Maury, 2006; Barontini & Caprio, 2006). They find that owners of Swedish firms are often non-founding family owners that control firms through publicly listed investment companies, and they have a long-term perspective.[5] In this setting, management teams are often weaker, partly because of active controlling owners, and partly because Swedish law prohibits managers to possess more than one board position.[6]

3.2 Research model and empirical measures

The data covers purchase price allocations of all Swedish publicly listed firms in 2005 to 2013. We view acquisition disclosures as separate events, and thus we employ pooled OLS regressions that focus on disclosure-level data and with controls for firm-

[5] For example, the Wallenberg family controls *Investor AB*. In the sample, there are ten such investment companies. In an average year, they are the largest owners of sixty publicly listed firms, almost one-fourth of the total number of listed firms.

[6] Swedish Companies Act (Aktiebolagslagen) requires the board of directors to consist of a minimum of three individuals and only one of them can be a manager. The CEO cannot act as Chairman. In the examined period, an average board consists of six members, excluding employee representatives.

and year-effects. In addition to the test variables, we include a large number of acquirer-specific, target-specific and deal-specific control variables. To test the hypotheses, we employ the following base-line regression model:

$$\begin{aligned} GOODWILL_i = \ & \alpha_0 + \alpha_1\ BONUS_i + \alpha_2\ FAMILY_i + \alpha_3\ EXCESS\_PRICE_i + \alpha_4\ EXPERIENCE_i + \alpha_5 \\ & UNCERTAINTY_i + \alpha_6\ ACQ\_CFRIGHT + \alpha_7\ ACQ\_DVR + \alpha_8\ ACQ\_OWNCON + \alpha_9 \\ & OPTIONS_i + \alpha_{10}\ TOTPAY_i + \alpha_{11}\ NONCASH_i + \alpha_{12}\ ACTIVITY_i + \alpha_{13} \\ & PAST\_GOODWILL_i + \alpha_{14}\ ACQ\_ROA_i + \alpha_{15}\ ACQ\_DEBT_i + \alpha_{16}\ ACQ\_LIQUID_i + \alpha_{17} \\ & TRGT\_INTANGIBLE_i + \alpha_{18}\ TRGT\_DEBT_i + \alpha_{19}\ TRGT\_SIZE_i + e \end{aligned} \quad (1)$$

At the time of an acquisition, firms can recognize both goodwill and identifiable intangible assets. We distinguish between goodwill and identifiable intangibles for two reasons. First, the unspecific nature of goodwill makes it more susceptible to opportunistic post-recognition behaviors. Second, identifiable intangible assets are accounted for as having either indefinite or definite economic lives. Intangible assets with indefinite lives follow the same impairment-only procedures as goodwill; however, we find that firms do not disclose enough information to reliably identify the economic life of acquired specific intangible assets. For these reasons, we focus on goodwill alone and define *GOODWILL* as the value of goodwill arising as of a specific acquisition divided by the purchase price.[7]

According to hypothesis *H1*, we expect that the propensity to allocate the purchase price to goodwill is not related to management's performance-based compensation (*BONUS*) in a setting with strong controlling owners. We follow Shalev et al. (2013) and define *BONUS* as CEO bonus divided by CEO total pay. In the regression model, we expect α_1 to be statistically not significant in the Swedish institutional setting. To control for inter-firm differences in the level of compensation, we control for total CEO compensation (*TOTPAY*).

According to hypothesis *H2*, we expect that the propensity to allocate the purchase price to goodwill increases with family ownership (*FAMILY*). Family owners typically desire to control the firm in the long-term, we expect that families prefer growing the firm over, for example, paying dividends to non-controlling owners. This policy is likely

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[7] Purchase price does not include any cost related to due diligence, legal fees or other expenses related (transaction costs) to the acquisition. After 2010, these fees are no longer part of the purchase price and we, therefore, exclude them for the period 2005-2009.

to be associated with ill-executed deals, which suggest that family owners are more likely to allocate the purchase price to goodwill to gain control over accounting information through its unspecific nature. We measure *FAMILY* with a dummy taking the value of 1 when the largest owner, at the time of the acquisition, is a family and zero otherwise. In the regression model, we expect α_2 to be positive and statistically significant.

According to hypothesis *H3*, we expect that the propensity to allocate the purchase price to goodwill increases with the level of excess purchase price (*EXCESS_PRICE*). The more that is paid above the book value of the target firm's equity, the more likely it is that the acquirer overpays and is less able to explain what is acquired. Hence, the excess amount becomes goodwill. We measure *EXCESS_PRICE* as the natural logarithm of the difference between the purchase price and the target firm's book value of equity as a stand-alone entity, before any fair-value reassessment. We expect α_3 to be positive and statistically significant.

According to hypothesis *H4*, we expect the propensity to allocate the purchase price to goodwill decreases with acquisition experience (*EXPERIENCE*). More experienced acquirers are likely to better understand the values of specific resources and be more capable of allocating the purchase price to specific resources. We measure *EXPERIENCE* in relative terms. That is, we construct a dummy variable taking the value of 1 when the acquiring firm made more acquisitions than the average firm in its industry. In some empirical tests, we include a measure of the company's historical willingness to allocate the purchase price to goodwill (*PAST_GOODWILL*), measured as goodwill scaled with total assets. In the regression model, we expect α_4 and α_{13} to be positive and statistically significant.

According to hypothesis *H5*, we expect the propensity to allocate the purchase price to goodwill increases with acquisition uncertainty (*UNCERTAINTY*). Uncertainty about the acquisition arises from unfamiliarity with its critical resources, markets and culture. We measure *UNCERTAINTY* as foreignness with a dummy taking the value of 1 when the target firm is not domiciled in Sweden and zero otherwise. It is expected that an acquiring firm knows more about local target firm's resources, markets and culture. In the regression model, we expect α_5 to be positive and statistically significant.

We use a number of control variables that relate to acquiring-firm, target-firm, and deal-specific characteristics. In terms of the target firm, we control for its pre-

acquisition intangible assets (*TRGT_INTANGIBLE*), its pre-acquisition debt (*TRGT_DEBT*), and its relative size (*TRGT_SIZE*). Information on the target firm comes from mandatory disclosures in notes to the acquiring firm's financial statements. We include *TRGT_INTANGIBLE* because more of the purchase price might be allocated to goodwill in intangible-intensive target firms. We measure *TRGT_INTANGIBLE* as the target firm's total intangible assets scaled with its total assets prior to the acquisition. We include *TRGT_DEBT* to control for the effect of additional debt to the acquirer's balance sheet. It is possible that the more debt the target firm holds prior to the acquisition, the more likely is the acquiring firm to allocate a larger part of the purchase price to goodwill to mitigate the overall debt effect of the acquisition. We measure the amount of debt in the target firm *TRGT_DEBT* as the target firm's total debt scaled with its total assets prior to the acquisition. We include *TRGT_SIZE* because large acquisitions seem to destroy more value for the acquiring firm's shareholders (e.g., Loderer & Martin, 1990; Grinstein & Hribar, 2004; Harford & Li, 2007); for example, due to overpayments, managerial overconfidence or that they provide private benefits to agents of the acquiring firm. We measure TRGT_SIZE as the as the purchase price paid for the target firm scaled with the market value of the acquiring firm at the time of the acquisition.

In terms of the acquiring firm, we control for its profitability (*ACQ_ROA*), its indebtedness (*ACQ_DEBT*) its liquidity (*ACQ_LIQUID*), its concentration of power (*ACQ_OWNCONC*) and the existence of dual classes of shares (*ACQ_DVR*). We include *ACQ_ROA* to control for differences in the acquirer's capacity to withstand expenses associated with amortizations. We measure *ACQ_ROA* as the acquiring firm's net profit divided by its average total assets in the year prior to the acquisition. We include *ACQ_DEBT* to control for the impact of debt covenants on the PPA decision. We expect a positive association between *ACQ_DEBT* and the propensity to allocate the purchase price to goodwill. We measure *ACQ_DEBT* as total debt scaled by total assets in the year prior to the acquisition. We include *ACQ_LIQUID* to further control for the acquirer's capacity to withstand expenses associated with amortizations and measure it as cash and short-term investments scaled with total assets in the year prior to the acquisition. *ACQ_OWNCONC* is measured as the largest owner's percentage of voting rights. *ACQ_DVR* is a dummy variable taking the value of 1 when there are shares with differentiated voting rights; typically A- and B-shares.

Finally, we include two deal-specific control variables: the level of trading in the acquiring firm (*ACTIVITY*) and the payment form (*NONCASH*). ACTIVITY measures the value of the acquiring firm's traded shares scaled with the average market capitalization during the previous calendar year. *NONCASH* is a dummy variable taking the value of 1 when the acquiring firm the entire acquisition price is not paid entirely in cash.

We collect accounting information on the acquiring firm from the Compustat Global database. Capital market information comes from the Thomson Reuters Datastream database, with the exception of information on the value of traded shares *ACTIVITY*, which is hand-collected from the OMX Nasdaq Stockholm website. We also collect substantial amounts of information directly from annual reports that we download from the acquiring firms' corporate websites; this includes all deal-specific and target-specific information. It also includes information on the ownership of the acquiring firm, as well as the compensation to the CEO of the acquiring firm. Because both the number of acquisitions and the purchase price paid in acquisitions vary considerably between years, we include untabulated year-dummies in all regression analyses. We also include firm-dummies to control for the serial acquiring firms. In the regression modeling, we use robust standard errors clustered at the firm-level. Continuous variables are winsorized on both axes at the one-percent level.

3.3 Sample selection and a description of the PPA decision

We start the empirical assessment by identifying potential acquiring firms listed on the Stockholm Stock Exchange (SSE) in the period 2005-2013. Panel A of Table 1 shows that there are 2,299 available firm-years during the studied period. We exclude firms not reporting in accordance with IFRS (28 firm-years), and those that are not domiciled in Sweden (118 firm-years). We also exclude financially oriented firms including banks, insurance companies, real estate companies, and investment companies (371 firm-years). Only ten firm-year observations are excluded due to a lack of data. These restrictions reduce the initial sample of potential acquiring firms to 1,772 firm-year observations.

[Insert Table 1 about here]

For all of these 1,772 firm-year observations, we manually search the annual reports to identify acquisitions where the acquiring firm has reached an ownership of at least 50% of the target firm's shares. As shown in Panel B of Table 1, we identify 1,418 separate PPA disclosures containing information about 2,660 individual transactions where the acquiring firm has reached controlling ownership of a target firm. For all of the PPA disclosures, we collect detailed information on the target firm and the deal characteristics. As we do this, the sample size decreases further.

First, we find that the purchase price is either not specified, or the acquiring firms report that it is zero (in 64 and 9 acquisitions, respectively). Second, we find that the value of goodwill is either not specified or it is negative (101 and 21 firm-years, respectively). Overall, we find that the disclosures on purchase price allocations differ substantially between acquiring firms; and quite often, vital information such as asset revaluations, are missing. For this reason, we exclude another 132 PPA disclosures, leading to our final sample of 1,112 PPA disclosures containing 2,214 (1.99 acquisitions per firm-year) successful acquisitions where the acquiring firm reached controlling ownership. In our sample, 263 PPA disclosures comprise more than one successful acquisition. In the sample, one acquiring firm (Securitas) includes the largest number of 32 successful deal transactions in one PPA disclosure (not tabulated).

We emphasize, however, that the acquiring firm (Securitas), and other acquiring firms with multiple successful deals, always provide separate PPA disclosures for materially large acquisitions. As shown in Table 1, a number of the PPA disclosures in the early years lacked some of the necessary information. However, we find that purchase prices are less well disclosed in 2010 and onwards. In total, 78.2 % of the PPA disclosures contain enough disclosed information to be part of our sample. This high percentage indicates a fairly high level of reliability.

Panel A of Table 2 provides more detailed descriptive statistics on the final sample of the 1,112 PPA disclosures included in the analyses. These disclosures relate to 690 firm-years, meaning that an acquiring firm often provides more than one PPA disclosure in the same year. Throughout the entire sample period, there are PPA disclosures in 38.9% of the firm-year observations. Similar to global statistics on merger and acquisitions (M&A) activities, the years with the highest and the lowest number of successful acquisitions among listed Swedish firms are 2007 and 2009, respectively. We

note that in 2007, more than half of the listed firms engaged in acquisitions leading to a controlling ownership of a target firm.

[Insert Table 2 about here]

Sweden is a small and open economy, and the target firm is non-Swedish in 72.2% of the acquisitions. The acquiring firms do not always disclose the nationality of their acquisitions – especially when multiple acquisitions are bundled together – but untabulated results show that the 1,429 foreign acquisitions include target firms from at least 73 countries. Most of the PPA disclosures reflect the revaluations of a single acquisition (849 observations) of the 1,112 PPA disclosures. We also note that the number of toehold acquisitions (i.e. when the acquiring firm owned shares prior to reaching the controlling stake of the target firm) is quite small and seemingly disappearing with time. It should be stressed that our sample consists of unique data on acquisitions of private firms; as opposed to prior PPA studies, only 24 of the 1,112 separately reported acquisitions are acquisitions of publicly listed firms. Finally, we note that 130 (11.7 %) PPA disclosures contain no allocation to goodwill and that the purchase price for 128 (11.5%) target firms is below USD 1mn.[8] Panel B contains information on the sizes of acquisitions. It is interesting to note that our sample – consisting of mainly privately held target firms – contains considerably smaller deals than previous work. For example, the average deal in Shalev et al. (2013) is almost twenty times larger than that in our study. Panel C provide information about the size of the acquired goodwill during the studied period. We note that the largest total allocation to goodwill of SEK 98,205mn occurred in 2007, which was the year largest numbers of acquisitions. Further the year with lowest number of acquisitions, 2009, is also the year with the lowest amount of the purchase price allocated to goodwill: SEK 14,014mn.

In Table 3 we further analyze the data by focusing on the 765 observations (i.e., 68.8 % of the total sample of the 1,112 PPA disclosures) containing information about the

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[8] In addition, the sample contains 132 observations where the target company has negative equity at the time of the acquisition. For this reason, the measure TRGT_DEBT can be larger than 1 (i.e., total debt is larger than total assets) and EXCESS_PRICE can be negative (i.e., there is negative equity). We exclude all acquisitions when there is no purchase price. All results are qualitatively similar when excluding acquisitions of firms with negative equity.

target firms' initial book values and the fair-value reassessments. We note that the number of acquisitions with full disclosure of fair-value reassessments decreases with time, coinciding with the reduced disclosure requirements of the revised IFRS 3 (R), which came into effect as of 2010. This has no effect on any of the main analyses because the test variable *GOODWILL* is the value of goodwill divided by the purchase price, two items that are fully disclosed throughout the studied period.

[Insert Table 3 about here]

Table 3 contains novel insights on the allocation of the purchase price. Overall, the average purchase price paid for a target firm during the period is SEK 526mn. The highest price was paid in 2007 (SEK 991mn), and the lowest was paid in 2010 (SEK 144mn). The average target firm had a pre-acquisition book value of equity (BVE) of SEK 132mn, with an average high of SEK 263mn in 2007, and an average low of SEK 39mn in 2010. Thus, the average acquisition was made with a market-to-book ratio of 4.0: acquiring firms paid on average four times the target firm's book value of equity. Table 3 also shows that firms paid the highest premium for target firms in 2005 with a market-to-book ratio of 10.6, and paid the lowest average premium for a target firm with a market-to-book ratio of 2.8 in 2008.

We define excess purchase price as the difference between the purchase price and the book value of target firm's equity. Table 3 shows that the average excess purchase price paid during the period is SEK 395mn, with an average high of SEK 728mn in 2007, and an average low of SEK 181mn in 2008. We also find that the acquiring firms on average allocate about 27.1 % (SEK 107mn) of the excess purchase price (SEK 395mn) to assets and liabilities. The remaining 287mn (about 72.7 %) is classified as goodwill. It is only in 2006 that acquiring firms allocate less than 50 % of the excess purchase price to goodwill. We note that in 2008, when market-to-book value is the lowest, the relative allocation of excess purchase price to goodwill is at its highest of 93.4 %. Goodwill is 100 % (or more) for 29% of the firm-year observations (untabulated) as many firms routinely allocate the entire excess purchase price (i.e., 100 %) to goodwill. Furthermore, a negative revaluation of the target firm's equity in years with poor

economic outlooks means that it is possible to allocate more than 100 % of the excess purchase price to goodwill (the maximum in the sample is 212.5 %).

Overall, Table 3 provides novel insights into the allocation of excess purchase price to goodwill, explaining why goodwill as a percentage of total assets has increased from 12.8 % to 19.2 % in the studied period (untabulated). Specifically, we find that acquiring managers allocate a substantial part of the excess purchase price to goodwill, and less to specific assets and liabilities. For this reason, specific intangible assets as a percentage of total assets have increased in the studied period, but only from 2.5 % to 5.1 % (untabulated). In the main sample, only 11.7 % (130 observations) of the acquirers allocate the entire excess purchase price to specific assets and liabilities.

4. Empirical analysis

4.1 Descriptive statistics

Table 4 presents descriptive statistics for the variables used in the regression analyses. The total sample is 1,112 observations of PPA disclosures by publicly listed non-financial Swedish acquiring firms in the period 2005-2013. The dependent variable *GOODWILL* displays an equal-weighted average value of 0.591, which is fairly close to the value-weighted average shown in Table 2 (0.53). Thus, for the average acquisition, goodwill represents 59.1 % of the purchase price. For a few acquisitions, goodwill is substantially larger than the purchase price, with a maximum value of 212.5 %. This is because the target firms' book value of equity was negative at the acquisition date.

[Insert Table 4 about here]

Among the test variables, *BONUS* is on average 0.331 (median: 0.244) which indicates that variable compensation is a small part of the CEO's total compensation. The test variable *FAMILY* captures family ownership. Among the acquiring firms in Sweden, the percentage of firms with a family owner is high: 74.9 %, suggesting that family firms are quite active on the Swedish M&A market. Thus, the typical Swedish acquiring firm has a family owner, which is quite the opposite from the setting studied by e.g. Shalev et al. (2013).

EXCESS_PRICE has a mean value of 0.748, suggesting that 25.2 % of the excess purchase price in a typical deal reflects the target firm's book value of equity. A minimum value of -11.5 and a maximum value of 12.3, as well as a standard deviation of 0.866, indicates that the excess purchase price is often considerably different from the target firm's book value of equity. *EXPERIENCE* captures the acquiring firm involved in above-average number of acquisitions within its industry year, and we find that only 21.9 % acquiring firms are involved in serial-acquisitions over the years. We find that *UNCERTAINTY* is 62.2 % of the transaction deals, meaning that more than half of the acquisitions are made outside of Sweden.[9]

Among the other independent variables, *ACQ_OWNCONC* with a mean of 33.4 % (and a median of 29.7 %) suggests that the controlling owner on average hold about one-third of the voting rights of the acquiring firm. This, together with the low standard deviation of 17.7, suggests that strong owner(s) are in control of the Swedish acquiring firms. We also note that the lowest ownership level is 5.1 %, clearly indicating few Swedish acquiring firms have dispersed ownership. Furthermore, we observe that options (*OPTIONS*) are uncommon in Swedish firms (19.0 %), acquisitions are usually made by profitable firms (*ACQ_ROA)* and most acquisitions (90.7 %) are paid directly in cash (*NONCASH*). As expected from a sample of predominantly private target firms, we find that the typical target firm's size (*TRGT_SIZE*) is quite insignificant (mean: 7.4% and median: 2.1%) to the acquiring Swedish firms.

[Insert Table 5 about here]

Table 5 presents pairwise correlations for the sample used in the regression analyses. In Column 1, we find that excess purchase price (*EXCESS_PRICE*) is positively correlated with foreign acquisitions (*UNCERTAINTY*), the acquiring firms' past goodwill allocation (*PAST_GOODWILL*) the target firm's book value of intangibles (*TRGT_INTANGIBLE*) and the book value of debt (*TRGT_DEBT*). These correlations indicate that the acquiring firm pays a higher excess purchase price, relative to the book

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[9] This is slightly lower than the reported *Foreign acquisitions* (%) of 65 % in Table 2. The difference is caused by different sample restrictions in the main regression analyses where all deals have to be confirmed non-Swedish.

value, when the target firm is domiciled outside of Sweden, it is more intangible intensive, and more indebted. An acquiring firm's goodwill allocations propensity associates with a higher excess purchase price paid for the book value of target firm's equity. One explanation might be that firms who are willing to misuse goodwill also pay a higher excess purchase price because they intend to allocate more to goodwill anyhow. Alternatively, these firms are better at finding firms with potentials for synergies.

In Column 2, we find that more uncertain acquisitions (*UNCERTAINTY*) are positively correlated with family acquiring firms (*FAMILY*) and the target firm's book value of intangibles (*TRGT_INTANGIB*). However, foreign acquisitions (*UNCERTAINTY*) are negatively correlated with the acquiring intensive firms' past experience (*EXPERIENCE*), cash flow rights (*CF_RIGHTS*), non-cash payments (*NONCASH*) and the target firm's relative size to the acquiring firm (*TRGT_SIZE*). Overall, these correlations indicate that acquiring firms governed by a family are more prone to successfully complete a deal with a target firm outside of Sweden. However, acquiring firms with an above-average acquisition experience and owners with more cash flow rights are less interested in acquiring target firms outside of Sweden.

Column 3, displays that intensive acquiring firms (*EXPERIENCE*) are positively correlated with differentiated voting rights (*ACQ_DVR*), options (*OPTIONS*), and the acquiring firm's return on assets (*ACQ_ROA*). *EXPERIENCE* is also negatively correlated with cash flow rights (*CF_RIGHTS*), variable compensation (*BONUS*), non-cash payment (*NONCASH*), and the target firm's level of book value intangibles (*TRGT_INTANGIB*). Thus, acquiring intensive firms seem to be affected by the governance of the firm, but there is not a uniform direction; earnings-based compensation is positively related with above average acquisitions, while overall variable compensations are negatively correlated with above average acquisition intensity.

In Column 4, family firms (*FAMILY*) are positively correlated with ownership concentration (*ACQ_OWNCON*), differentiated voting rights (*ACQ_DVR*), the acquiring firm's past experience with goodwill (*PAST_GOODWILL*), and acquirer's level of debt (*ACQ_DEBT*). *FAMILY* is also negatively correlated with the CEO's total salary (*TOTPAY*), the market activity of the acquiring firm (*ACTIVITY*), and the acquiring firm's pre-acquisition liquidity level (*ACQ_LIQUID*). Hence, family firms have more concentrated ownership through control enhancing mechanisms, this can lead to strong owners with limited incentives to align their strategy with non-controlling owners. Family firms are

also more prone to use goodwill in the PPA process, and less prone to pay their CEOs high salaries. Finally, in column 8 in Table 5, the variable compensation (*BONUS*) correlates positively with non-cash payments (*NONCASH*), and negatively with the existence of CEO option plans (*OPTIONS*), the CEO's total salary (*TOTPAY*), and the acquiring firm's level of debt (*ACQ_DEBT*). Overall, this suggests that CEOs with more variable compensation are more prone to pay for the target firm with noncash components such as the acquiring firm's stock.

4.2 Regression analyses

Table 6 presents the results from the main analyses of the acquiring firm's propensity to allocate the purchase price to goodwill. Specifically, we present results from univariate regressions (see column Univariate in Table 6), and five multivariate models (see columns 1-5 in Table 6). Model 1 is our baseline model, and Models 2 and 3 come with slight differences in the specification of the control variables related to ownership structures. Models 4 and 5 both hold the same specification as Model 1, but are restricted to only include PPA disclosures of purchase price payments above the threshold of SEK 8mn (i.e., Model 4), which is common in the M&A literature to reduce statistical noise, and Model 5 also only includes PPA disclosures of single deal transactions. All multivariate models are based on robust standard errors, adjusted for year-fixed effects, and all continuous variables are winsorized at the 1%-level. There are no signs of problems with multicollinearity; most variables have a VIF score well below 5, and the mean VIF score is 1.59. *CF_RIGHTS* has a VIF score of 4.55, and *ACQ_OWNCON* has a VIF score of 4.45.

[Insert Table 6 about here]

Starting with the managerial motives and the PPA decision, we find *BONUS* to be consistently unrelated with the allocation of purchase price to goodwill, with the exception of Model 4, where we find a significant *negative* impact on the allocation to goodwill. These results are in stark contrast with the findings of prior studies on the PPA decision (Shalev et al., 2013; Detzen & Zülch, 2012; Zhang & Zhang, 2017); all of which find that managerial incentives have a significant positive impact on the allocation of the

purchase price to goodwill. Thus, we find support for the first hypothesis, suggesting that managers' impact on the PPA decision is limited in our institutional setting. We attribute this to three important differences between the U.S. (Anglo-Saxon) and the Swedish institutional settings. First, managers in Sweden are by the Corporate Act not allowed to take on a leading role on the corporate board. Second, the Swedish boards are dominated by active owners and it is more likely that CEOs act in their interests. Third, CEOs of Swedish firms are less likely to benefit from controlling profit using goodwill impairments because less of their compensation is performance-based (Fernandes, Ferreira, Matos & Murphy, 2013).

Next, we turn to ownership motives and the PPA decision. In support of the second hypothesis, we find that *FAMILY* is positively related to the allocation of purchase price to goodwill for all model specifications, suggesting that family-owned acquiring firms allocate more to goodwill. The only exceptions are when we exclude deals below the threshold of SEK 8mn (i.e., Model 4) and reduce the sample to only those disclosures that contain one deal (i.e., Model 5). This is probably because family-dominated Swedish firms are behind most of the small deals in the sample. Overall, the family firm effect appears to be robust to controls for other ownership structures. Regardless of whether we control for ownership concentration (i.e., *ACQ_OWNCON* and *CF_RIGHTS*) and differentiated voting rights (*ACQ_DVR*), the family firms are still positively related to the goodwill allocation. Given that 74.9 % of our sample consists of family firms, it might be more appropriate to claim that the goodwill allocation propensity is smaller within the one-fourth of the firms not owned by families.

Altogether, the results indicate that strong controlling owners, such as families, eliminate managerial incentives to misuse unverifiable fair-value measures, reducing the agency conflict between managers and owners. However, the agency conflict between controlling and non-controlling owners might be problematic given that strong family owners allocate more of the purchase price to goodwill. Prior studies on the PPA decision focus on Anglo-Saxon settings with considerably larger acquirers. Thus, we provide evidence that managerial incentives may not prevail, but instead, they are context-specific.

In support of the third hypothesis, we find that *EXCESS_PRICE* has a positive significant association with the propensity to allocate the purchase price to goodwill. When the acquiring firm pays a higher excess purchase price (i.e, a premium) for the

target firm, it is more likely to allocate a larger portion of the purchase price to goodwill. Although the argument could be that excess purchase price is due to resources not possible to capitalize, it is more likely, based on prior findings in the M&A literature, that managers allocate larger excess purchase price payments to goodwill because they believe in synergies that in reality lack economic substance. Also, managers that pay excessively for a target firm but have no personal motives may want to stay in control of future expenses by allocating large portions of it to goodwill. Allocating a large amount of the excess purchase price to goodwill helps management achieve such objectives, and, thus, diminishing the likelihood of being questioned by outside stakeholders.

There is also support for the fourth hypothesis. *EXPERIENCE* has a significant negative coefficient in all six regression models. This suggests that serial-acquirers learn how to attribute purchase prices to specific assets and liabilities. In addition, Table 5 reports that the correlation between *EXPERIENCE* and *EXCESS_PRICE* is negative and statistically significant. This suggests that serial-acquirers are also paying less excess purchase price for their acquisition targets. However, only a few firms are experienced acquirers. Perhaps using knowledge from experienced third-parties, including auditing firms and investment banks, could increase the proportion of the purchase price allocated to non-goodwill items.

We also find, in support of the fifth hypothesis, that *UNCERTAINTY* is positively associated with the allocation of purchase price to goodwill over all model specifications. Acquiring firms seem to counteract the higher level of uncertainty in foreign acquisitions with a proportionately larger allocation to unspecific goodwill instead of specific assets. Allocating more to goodwill might be an option-of-last-resort, but it raises the question of whether acquiring firms perhaps should devote more time to learn about their foreign acquisition strategies. Similar to the analysis of *EXCESS_PRICE* above, the results indicate that management chooses more discretion, which is desirable if the target firm's future performance turns out to be unexpectedly weak.

Among the control variables, we find that *NONCASH* is positively associated with the willingness to allocate the purchase price to goodwill. This finding is coherent with the findings in the corporate finance literature that firms paying with non-cash are more likely to overpay, and the overpayment then ends up in goodwill. A potentially important variable to control for is the previous willingness to allocate purchase price to

goodwill. For this reason, we included the variable *PAST_GOODWILL* in the analysis. This variable is highly statistically significant in all our tests, which suggests that firms who have made acquisitions with goodwill allocations in the past will do so in the future. In fact, this variable has the highest t-stat of all independent variables; thus indicating a strong serial dependence in the PPA decision. In the analysis, this variable is statistically significant, but dropping it has no material effect on any of the test variables in any of the regression models. This is confirmed by directly comparing the coefficients of independent variables in Models 1 and 3.

we also use a number of acquirer- and target-specific control variables. In the five multiple regression models, two variables stand out: profitable firms are more willing to allocate the purchase price to goodwill (*ACQ_ROA*). We note that these firms are also more willing to pay a higher purchase price. We also find that the propensity to allocate the purchase price to goodwill is lower when the target firm prior to the acquisition had specific intangible assets on their balance sheet (*TRGT_INTANGIBLE*). We attribute this willingness to the higher visibility of specific intangibles at the time of the acquisition.

5. Conclusions

In this paper, we investigate the purchase price allocation (PPA) decision. With the implementation of fair-value measures to the PPA process and goodwill accounting, critics have argued that managers may misuse the discretion of the PPA and overallocate to goodwill in order to control future earnings. Yet, standard setters have pushed for an increased level of fair-value measurements, arguing that managerial discretion provides more relevant information. Empirical studies show that goodwill has increased in relative importance (as well as in absolute value) over the years with fair-value measurements (Ramanna & Watts, 2012). In the Swedish institutional setting, goodwill as a percentage of total assets increased from 12.8% to 19.2% with the implementation of fair-value measures. In 2007, goodwill became the largest individual asset for the average firm; a position it has maintained until the end of the studied period in 2013.

Although the implementation of IFRS 3 provided management significant discretion, it also mandated acquiring firms to disclose detailed information about their corporate acquisitions. We make use of this change in the Swedish institutional setting to further explore the underlying factors to why goodwill has rapidly increased in value over the past years. We manually collect the PPA data by going through 1,772 annual reports,

identifying a sample of 1,112 PPA disclosures. This is the by far largest study on the PPA decision, and it offers several novel insights.

We explore the PPA decision using a broad range of potential explanatory variables, based on prior literature and the Swedish institutional setting. We find that family ownership increases the level of purchase price allocated to goodwill. Furthermore, and in contrast to prior studies on the PPA decision (Shalev et al., 2013; Detzen & Zülch, 2012; Zhang & Zhang, 2017), we find that the CEOs' compensation is unrelated to the allocation of the purchase price to goodwill. These two findings suggest that although the agency conflict between owners and management is curbed, the controlling family owners may misuse the discretion of the PPA procedure for their own opportunistic motives. We also find evidence suggesting that the propensity to allocate the purchase price to goodwill is dampened by managerial experience. At the same time, there is no time trend suggesting that the average firm allocates less to goodwill by the end of the studied period. Furthermore, we find that larger payments, and foreign acquisitions, are associated with a larger allocation to goodwill. Our interpretation, which builds on much of the existing M&A literature, is that the more the acquirer pays, the harder it is to justify the paid amount, especially when the target firm is foreign. As a consequence, the acquiring firm's management "disguises" any overpayment in discretionary accounting items, which effectively puts them in control of future expenses.

Our study contributes to the literature in several ways. First, we add to the limited literature on recognized intangible assets by exploring the acquiring firm's initial valuation of goodwill. Our findings clearly indicate that the book value of goodwill is endogenously determined before any impairment test is conducted. Second, we add to the literature on agency conflicts. In particular, we show that the discretion of fair-value measurements may not just reflect managers' opportunistic motives, but also family owners' opportunistic motives. Thus, it should be stressed that the appropriateness of fair-value measures depends on the institutional setting. Third, our findings have implications for research on recognized goodwill. Focusing on the impairment process alone may underestimate the amount of discretion managers can exercise in accounting for goodwill. We show that a number of factors found to determine goodwill impairments also determine the allocation of the purchase price to goodwill. Our study should be of interest for international standard setters as it provides evidence that

controlling family owners have an impact on the PPA decision in a setting relevant to international accounting policy.

We encourage more research on purchase price allocation decisions. In particular, we need to further explore the motives driving the PPA decisions, and how different institutional settings may relate to the use of fair-value measures. Moreover, we need to understand potential remedies that can lower corporate insiders' (i.e. management or controlling owners) propensity to overallocate to goodwill, as well as advance our understanding about the factors incentivizing high-quality disclosures about corporate acquisitions in terms of payment and the underlying acquired businesses. A possible future avenue of research beyond the PPA decision could be to study the acquiring firm's performance conditioned on the amount of purchase price allocated to goodwill. It is plausible that firms making very large acquisitions, and classifying all or most of it as goodwill, perform worse in subsequent years.

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Table 1 - Sample Description

	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Panel A: Sample Selection										
Initial sample:	266	268	267	256	251	242	249	249	251	2,299
Non-IFRS reporting firms	*3*	*3*	*4*	*3*	*3*	*3*	*3*	*3*	*3*	*28*
Other foreign firms	*13*	*12*	*13*	*12*	*12*	*13*	*14*	*15*	*14*	*118*
Financial firms*	*42*	*45*	*46*	*45*	*41*	*38*	*38*	*36*	*40*	*371*
Missing data	*3*	*2*	*2*	*0*	*2*	*0*	*0*	*1*	*0*	*10*
Number of included sample firm-years	205	206	202	196	193	188	194	194	194	1,772
Panel B: Sample of PPA Disclosures										
Total number of PPA disclosures:	160	180	228	192	107	134	154	147	116	1,418
Missing price	*3*	*6*	*4*	*7*	*4*	*11*	*10*	*12*	*7*	*64*
Zero price	*2*	*0*	*0*	*2*	*2*	*0*	*2*	*1*	*0*	*9*
Missing GW (but not price)	*13*	*20*	*15*	*14*	*3*	*7*	*4*	*13*	*12*	*101*
Negative goodwill identified	*4*	*5*	*3*	*2*	*3*	*4*	*0*	*0*	*0*	*21*
Other disclosure missing	*22*	*18*	*22*	*13*	*17*	*14*	*5*	*12*	*9*	*132*
Number of studied PPA disclosures	120	136	187	156	81	102	133	109	88	1,112

Table 1 shows the sample selection of this paper. Panel A reports the initial sample of publically listed firm years available on the Stockholm Stock Exchange (SSE) in the period 2005-2013, and the exclusions of unsuitable firms, leading to the final sample of 1,772 publically listed firm-years. Panel B reports the total number of PPA disclosures identified after going through the annual reports of the 1,1772 sample firm-years in the period 2005-2013, and the exclusion of PPA disclosures not containing price goodwill and/or other relevant information to conduct the study, leading to a final sample of 1,112 PPA disclosures.

 * Financial firms include banks, insurance companies, real estate companies, and investment companies.

Table 2 – Descriptive Statistics for the PPA Sample

	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Panel A: PPA Disclosure Details										
Number of PPA disclosures	120	136	187	156	81	102	133	109	88	1112
Firms reporting acquisitions (#)	85	88	102	85	57	65	74	73	61	690
Firms reporting acquisitions (%)	41.50%	42.70%	50.50%	43.40%	29.50%	34.60%	38.10%	37.60%	31.40%	38.90%
Number of acquisitions (#)	221	244	379	349	155	187	269	237	173	2214
Foreign acquisitions (#)	78	94	125	108	60	68	109	78	75	795
Foreign acquisitions (%)	65.00%	69.10%	66.80%	69.20%	74.10%	66.70%	82.00%	71.60%	85.20%	72.20%
Foreign acquisitions (# firms)	152	153	217	212	98	110	195	158	134	1429
Single disclosures (#)	89	106	148	121	60	81	103	76	65	849
Single disclosures (%)	74.20%	77.90%	79.10%	77.60%	74.10%	79.40%	77.40%	69.70%	73.90%	76.35%
Toehold acquisitions (#)	23	14	19	15	12	12	6	7	3	111
Toehold acquisitions (%)	19.20%	10.30%	10.20%	9.60%	14.80%	11.80%	4.50%	6.40%	3.40%	9.98%
Public firms (#)	2	1	8	2	0	1	6	2	2	24
Public firms (%)	1.70%	0.70%	4.30%	1.30%	0.00%	1.00%	4.50%	1.80%	2.30%	2.16%
Panel B: Acquisition Deal Values										
Purchase price (total)	51,327	60,191	169,330	41,810	32,207	47,981	60,888	71,005	53,534	588,272
Purchase price (avg)	428	443	906	268	398	470	458	651	608	514
Price to TotA (avg)	19.50%	15.20%	13.50%	6.40%	5.00%	7.60%	6.20%	9.80%	7.70%	10.1%
Panel C: Goodwill										
Goodwill (total)	32,693	21,201	98,205	24,455	14,014	29,194	32,170	30,100	33,500	315,530
Goodwill (avg)	272	156	525	157	173	286	242	276	381	274
Goodwill / Price (avg)	63.70%	35.20%	58.00%	58.50%	43.50%	60.80%	52.80%	42.40%	62.60%	53.10%

Table 2 shows descriptive statistics for the PPA sample on the disclosure details, the purchase price (deal value), and the amount of purchase price allocated to goodwill, in panel A, B, and C, respectively. All items are reported in total (#), average (avg) and relative (%) terms.

Table 3 – Descriptive Statistics for the Sample of PPA Revaluations

	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
PPA disclosures with revaluations	95	112	163	131	71	53	64	44	32	765
Purchase price (avg)	510	430	991	281	436	144	376	480	744	526
Acquired BVE (avg)	48	90	263	100	99	39	62	162	310	132
Market-Book (avg)	10.6	4.8	3.8	2.8	4.4	3.7	6.1	3	2.4	4
Excess purchase price (avg)	462	341	728	181	337	105	314	318	434	395
Revalued (avg)	133	195	146	12	149	27	80	108	10	107
Classified as goodwill (avg)	329	146	582	169	188	78	234	210	424	287
Goodwill_%	**71.20%**	**42.70%**	**79.90%**	**93.40%**	**55.70%**	**74.60%**	**74.50%**	**65.90%**	**97.70%**	**72.80%**

   Table 3 shows descriptive statistics for the sample consisting of PPA disclosures with full information on the historical values and the revaluations of the target firm's important accounting items, including assets, liabilities, equity and goodwill. *Acquired BVE (avg)* is average target firm's book equity (i.e, the value of equity) at the acquisition date. *Market-Book (avg)* is the average book value of equity to the purchase price paid. *Excess purchase price* is the part of the purchase price paid over the book value of target firm's equity. *Revalued (avg)* is the part of the excess purchase price that is allocated to other accounting items than goodwill (i.e., *Classified as goodwill (avg)*), which takes the residual value of excess purchase price after revaluation. *Goodwill _%* is the average percent of excess purchase price allocated to goodwill.

Table 4 – Summary Statistics

	Mean	Median	Std. Dev.	Min.	Max.	N
Dependent Variable						
GOODWILL	0.591	0.596	0.392	0.000	2.125	1,112
Variables of Interest						
BONUS	0.331	0.244	0.450	0	5	1,112
FAMILY	0.749	1.000	0.434	0.000	1.000	1,112
EXCESS_PRICE	0.748	0.601	0.867	-11.500	12.300	1,112
EXPERIENCE	0.219	0.000	0.414	0.000	1.000	1,112
UNCERTAINTY	0.622	1.000	0.485	0.000	1.000	1,112
Control Variables						
ACQ_OWNCON	0.334	0.297	0.177	0.051	0.893	1,112
OPTIONS	0.190	0.000	0.392	0.000	1.000	1,112
TOTPAY	10.5	5.848	44.26	0.861	1460.2	1,112
NONCASH	0.093	0.000	0.233	-0.279	1.000	1,112
ACTIVITY	0.835	0.576	0.848	0.000	7.838	1,112
PAST_GOODWILL	-1.650	-1.372	1.245	-7.691	1.439	1,112
ACQ_ROA	0.063	0.066	0.111	-0.740	1.179	1,112
ACQ_DEBT	0.562	0.592	0.163	0.048	1.252	1,112
ACQ_LIQUID	0.101	0.074	0.112	0.000	0.943	1,112
TRGT_INTANGIBLES	0.288	0.230	0.278	-.0714	1.558	1,112
TRGT_DEBT	0.563	0.394	2.258	-4.207	67.000	1,112
TRGT_SIZE	0.074	0.021	0.157	0.000	2.377	1,112

Table 4 shows the mean, median, standard deviation and the minimum and maximum value of the most relevant variables in the empirical model(s) of this paper. The dependent variable *GOODWILL* is the PPA-reported goodwill divided by the paid purchase price.

The explanatory variables : *BONUS* is the CEO's variable compensation scaled by the value of the fixed compensation at the end of the year; *FAMILY* is an indicator variable taking the value of one when the largest owner of the acquiring firm is a family; *EXCESS_PRICE*, which we measure as the natural logarithm of the difference between the purchase price and the target firm's book value of equity; *EXPERIENCE* is an indicator variable for the acquiring firms involved in acquisitions its industry average on a yearly basis; *UNCERTAINTY* is an indicator variable taking the value of one if the target firm is domiciled outside of Sweden.

Control variables: *ACQ_CFRIGHT* is the percentage of cash flow rights controlled by the largest owner; *ACQ_OWNCON* is the percentage of voting rights owned by the largest owner; *ACQ_DVR* is an indicator variable taking the value of one if the acquiring firm has multiple classes shares; *OPTIONS* is an indicator variable taking the value of one if the CEO own stock options; *TOTPAY* is the CEO's total compensation; *NONCASH* is an indicator variable taking the value of 1 when the acquiring firm does not pay the entire amount of the purchase price in cash; *ACTIVITY* is the level of trading in the acquiring firm as the value of all shares traded divided with the average market capitalization during the accounting period; *PAST_GOODWILL* is the acquiring firm's book value of goodwill divided by beginning of the year total assets; *ACQ_ROA* is the acquiring firm's net profit divided by its average total assets in the year prior to the acquisition; *ACQ_DEBT* is the acquiring firm's the total debt divided by total assets in the year prior to the acquisition; *ACQ_LIQUID* is the acquiring firm's amount of cash and short-term investments divided by total assets in the year prior to the acquisition; *TRGT_INTANGIBLE* is the target firm's intangible assets scaled by the total assets of the target firm prior to the acquisition; *TRGT_DEBT* is the target firm's total debt scaled by the total assets of the target firm prior to the acquisition; *TRGT_SIZE* is the bid price of the target firm relative to the market value of the acquiring firm at the time of the acquisition.

Table 5 – Pairwise Correlation Matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
EXCESS_PRICE (1)																		
UNCERTAINTY (2)	0.069**																	
EXPERIENCE (3)	-0.0426	-0.179***																
FAMILY (4)	0.001	0.080***	-0.039															
ACQ_OWNCON (5)	-0.036	0.017	0.000	0.157***														
ACQ_CFRIGHT (6)	-0.044	-0.117***	-0.053*	-0.070**	0.707***													
ACQ_DVR (7)	0.006	0.095***	0.084***	0.369***	0.370***	-0.177***												
BONUS (8)	0.047	-0.027	-0.053*	-0.007	0.014	0.008	0.068**											
OPTIONS (9)	-0.037	0.036	0.054*	-0.000	0.036	-0.082***	0.118***	-0.057*										
TOTPAY (10)	0.015	0.013	-0.007	-0.056*	0.006	-0.028	0.010	-0.211***	0.011									
NONCASH (11)	0.028	-0.196***	-0.049*	-0.011	-0.118***	0.006	-0.139***	0.064**	-0.021	-0.051*								
ACTIVITY (12)	0.042	0.127***	0.010	-0.082***	-0.230***	-0.336***	0.013	0.035	0.0108	0.061**	-0.067**							
PAST_GOODWILL (13)	0.125***	0.106***	0.021	0.133***	-0.168***	-0.246***	-0.030	-0.026	-0.104***	-0.022	0.022	0.033						
ACQ_ROA (14)	-0.036	-0.020	0.066**	-0.002	0.071**	-0.009	0.129***	-0.033	0.006	0.023	-0.089***	0.031	-0.088***					
ACQ_DEBT (15)	0.007	0.137***	0.018	0.125***	-0.056*	-0.250***	0.125***	-0.054*	0.020	0.099***	-0.134***	0.156***	0.055*	-0.013				
ACQ_LIQUID (16)	-0.016	-0.015	-0.045	-0.105***	-0.116***	-0.070**	-0.039	-0.006	0.034	-0.006	0.119***	-0.016	-0.096***	-0.089***	-0.368***			
TRGT_INTANGIB (17)	0.118***	0.086***	-0.070**	0.016	-0.104***	-0.099***	0.034	0.021	0.024	0.049	-0.034	0.115***	0.177***	0.057*	0.008	0.085***		
TRGT_DEBT (18)	0.208***	-0.039	-0.041	0.041	-0.010	0.010	0.046	0.038	-0.034	-0.007	0.105***	-0.006	0.008	-0.003	-0.019	-0.024	-0.071**	
TRGT_SIZE (19)	-0.007	-0.073**	-0.027	-0.008	-0.074**	0.012	-0.106***	0.027	-0.012	-0.034	0.249***	0.007	-0.011	-0.054*	-0.080***	0.054*	0.042	-0.030

Table 5 shows the pairwise correlations for independent variables. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively. All variables are defined in Section 3.2 Research Design and Variable Definitions, and summarized in Tables 4 and 6.
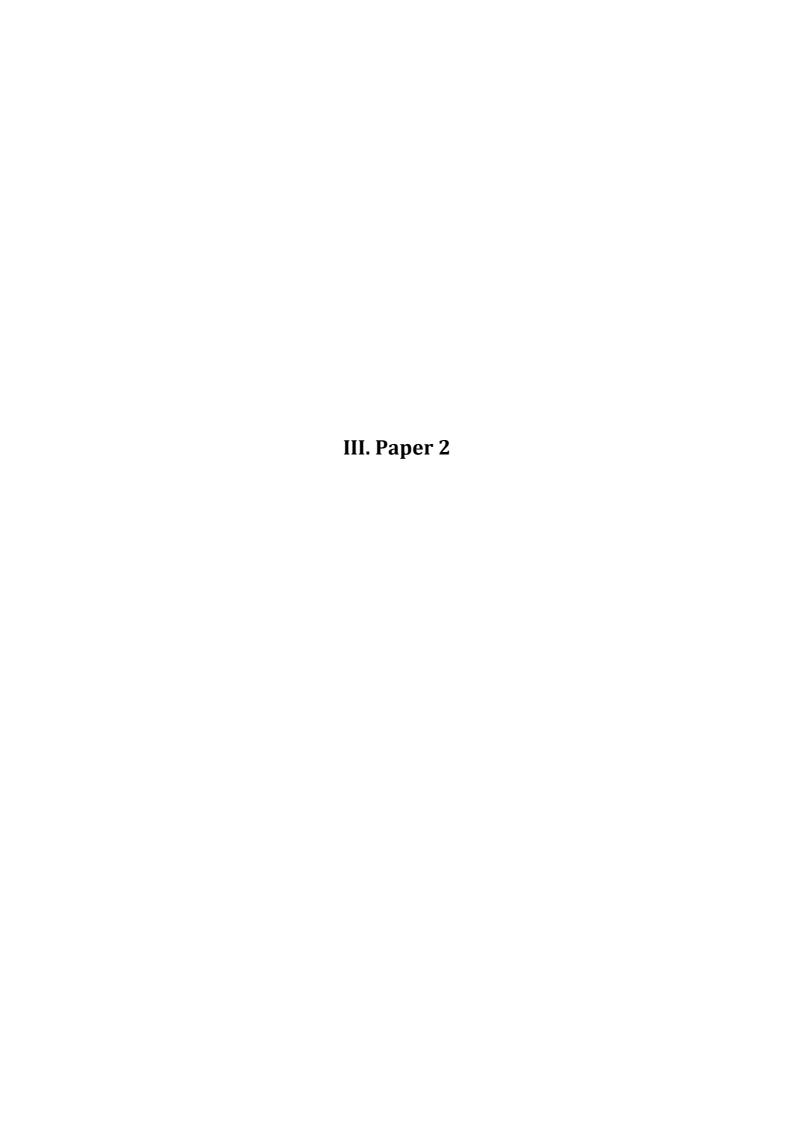
Table 6 – Goodwill Allocation Propensity Determinants

	Univariate	Model 1	Model 2	Model 3	Model 4	Model 5
BONUS	0.011	0.0003	-0.0003	-0.002	-0.016**	-0.013
	(0.0125)	(0.0106)	(0.0100)	(0.0107)	(0.0081)	(0.0088)
FAMILY	0.064**	0.047**	0.050**	0.063***	0.015	0.004
	(0.0270)	(0.0221)	(0.0212)	(0.0218)	(0.0179)	(0.0225)
EXCESS_PRICE	0.242***	0.233***	0.233***	0.238***	0.425***	0.347***
	(0.0114)	(0.0454)	(0.0456)	(0.0458)	(0.0670)	(0.0710)
EXPERIENCE	-0.091***	-0.074***	-0.073***	-0.066***	-0.059***	-0.357**
	(0.0283)	(0.0196)	(0.0194)	(0.0198)	(0.0224)	(0.158)
UNCERTAINTY	0.085***	0.044**	0.046**	0.053***	0.032*	0.050**
	(0.0241)	(0.0191)	(0.0190)	(0.0194)	(0.0167)	(0.0212)
ACQ_CFRIGHT	-0.342***	-0.197***		-0.298***	-0.092	0.012
	(0.0828)	(0.0716)		(0.0709)	(0.0566)	(0.0726)
ACQ_DVR	0.006	-0.018		-0.032	-0.009	-0.016
	(0.0238)	(0.0213)		(0.0211)	(0.0169)	(0.0192)
ACQ_OWNCON	-0.167**		-0.103*			
	(0.0661)		(0.0567)			
OPTIONS	-0.061**	-0.032	-0.027	-0.049**	-0.014	0.012
	(0.0299)	(0.0243)	(0.0238)	(0.0245)	(0.0194)	(0.0260)
TOTPAY	0.029**	0.00004		0.00002	-0.0001	-0.00001
	(0.0137)	(0.0001)		(0.0001)	(0.0001)	(0.0001)
NONCASH	0.101**	0.085**	0.084**	0.097**	0.035	0.049
	(0.0504)	(0.0400)	(0.0402)	(0.0400)	(0.0354)	(0.0367)
ACTIVITY	0.038***	0.028**	0.033***	0.026**	0.024**	0.028**
	(0.0138)	(0.0112)	(0.0112)	(0.0113)	(0.0102)	(0.0111)
PAST_GOODWILL	0.064***	0.042***	0.046***		0.040***	0.038***
	(0.0092)	(0.0083)	(0.0082)		(0.0078)	(0.0086)
ACQ_ROA	0.101	0.289***	0.298***	0.254***	0.249***	0.254***
	(0.1051)	(0.0962)	(0.0972)	(0.0957)	(0.0725)	(0.0720)
ACQ_DEBT	0.061	-0.024	0.005	-0.048	-0.115*	-0.178***
	(0.0722)	(0.0683)	(0.0677)	(0.0681)	(0.0619)	(0.0643)
ACQ_LIQUID	-0.138	-0.002	0.0213	-0.060	0.0042	-0.006
	(0.1052)	(0.0891)	(0.0888)	(0.0869)	(0.0754)	(0.0795)
TRGT_INTANGIBLE	-0.114***	-0.265***	-0.269***	-0.236***	-0.243***	-0.184***
	(0.0421)	(0.0413)	(0.0410)	(0.0412)	(0.0423)	(0.0392)
TRGT_DEBT	0.032***	0.010	0.010	0.010	0.167*	0.403***
	(0.0051)	(0.0103)	(0.0103)	(0.0105)	(0.0871)	(0.0502)
TRGT_SIZE	-0.018	-0.002	-0.005	-0.013	0.020	0.017
	(0.0751)	(0.0512)	(0.0515)	(0.0496)	(0.0468)	(0.0614)
Constant	-	0.564***	0.521***	0.525***	0.392***	0.304***
		(0.0812)	(0.0766)	(0.0806)	(0.0650)	(0.0707)
Observations	1,112	1,112	1,112	1,112	984	727
Adj. R-square	-	0.360	0.359	0.347	0.544	0.623
Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Table 6 shows the results of the univariate and multivariate regression. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively. Robust standard errors in parentheses. All continuous variables are winsorized on both axes at the one-percent level. The dependent variable *GOODWILL* is the PPA-reported goodwill divided by the paid purchase price.

The explanatory variables: *BONUS* is the CEO's variable compensation scaled by the value of the fixed compensation at the end of the year; *FAMILY* is an indicator variable taking the value of one when the largest owner of the acquiring firm is a family; *EXCESS_PRICE*, which we measure as the natural logarithm of the difference between the purchase price and the target firm's book value of equity; *EXPERIENCE* is an indicator variable for the acquiring firms involved in acquisitions its industry average on a yearly basis; *UNCERTAINTY* is an indicator variable taking the value of one if the target firm is domiciled outside of Sweden.

Control variables: *ACQ_CFRIGHT* is the percentage of cash flow rights controlled by the largest owner; *ACQ_OWNCON* is the percentage of voting rights owned by the largest owner; *ACQ_DVR* is an indicator variable taking the value of one if the acquiring firm has multiple classes shares; *OPTIONS* is an indicator variable taking the value of one if the CEO own stock options; *TOTPAY* is the CEO's total compensation; *NONCASH* is an indicator variable taking the value of 1 when the acquiring firm does not pay the entire amount of the purchase price in cash; *ACTIVITY* is the level of trading in the acquiring firm as the value of all shares traded divided with the average market capitalization during the accounting period; *PAST_GOODWILL* is the acquiring firm's book value of goodwill divided by beginning of the year total assets; *ACQ_ROA* is the acquiring firm's net profit divided by its average total assets in the year prior to the acquisition; *ACQ_DEBT* is the acquiring firm's the total debt divided by total assets in the year prior to the acquisition; *ACQ_LIQUID* is the acquiring firm's amount of cash and short-term investments divided by total assets in the year prior to the acquisition; *TRGT_INTANGIBLE* is the target firm's intangible assets scaled by the total assets of the target firm prior to the acquisition; *TRGT_DEBT* is the target firm's total debt scaled by the total assets of the target firm prior to the acquisition; *TRGT_SIZE* is the bid price of the target firm relative to the market value of the acquiring firm at the time of the acquisition.

III. Paper 2

Did the Adoption of the Impairment-Only Approach Enhance the Representational Faithfulness of Initially Recognized Goodwill?

Peter Frii

ABSTRACT

This study investigates whether initially recognized goodwill under the impairment-only approach provides a more faithful representation of acquired superior economic performance relative to the amortization approach. While standard setters promulgate the impairment-only approach with additional fair-value measures to provide a better representation of underlying economics, it has been suggested in the literature that discretionary goodwill accounting can be misused to inflate future earnings. While some studies suggest that, under the impairment-only approach, goodwill balances provide a better representation of future cash flows, I argue that the opposite may apply to initially recognized goodwill. This is because it is not possible to misuse initially recognized goodwill as a means of inflating future earnings under the amortization approach. Using hand-collected data from a Swedish setting, I test and find that initially recognized goodwill under the impairment-only approach does not provide a more faithful representation of acquired superior economic performance relative to the amortization approach. This suggests that the additional managerial discretion offered by the impairment-only approach has not improved the representational faithfulness of initially recognized goodwill.

1. Introduction

For the past two decades, international standard setters have promulgated fair-value accounting over historical-cost accounting to enhance the representational faithfulness of the economic reality (e.g., FASB, 2004; SEC, 2003). Based on this new order, current international standards for goodwill accounting mandate yearly impairment tests instead of yearly systematic amortizations. However, the discretion offered by the impairment-only approach can be misused by inflating goodwill upon initial recognition in order to inflate future earnings (Watts, 2003; Shalev, Zhang & Zhang, 2013). This criticism suggests that initially recognized goodwill does not faithfully represent acquired superior economic performance, as it can include other acquired asset classes, and overpayments. Under the amortization approach, on the other hand, initially recognized goodwill cannot be misused as a means of inflating future earnings because, like all other acquired assets, it is amortized over time, suggesting that goodwill will probably not be inflated. In other words, when the subsequent valuation does not provide for any discretion, initially recognized goodwill could provide a more faithful representation of acquired superior economic performance. In this study, I explore whether initially recognized goodwill under the impairment-only approach is able to provide a more faithful representation of acquired superior economic performance relative to the amortization approach.

It is important to further study whether goodwill accounting under the impairment-only approach provides a more faithful representation of acquired superior performance relative to the amortization approach. This is because Ramanna (2008) suggests that the impairment-only approach was introduced to accommodate the interests of lobby groups instead of adopting the "more suitable" amortization approach (Ramanna, 2015). While standard setters favor the purchase method based on impairment tests, academics and practitioners have been more critical and tend to favor the purchase method based on yearly amortizations (e.g., Ramanna, 2015). In particular, critics argue that the additional discretion the impairment-only approach provides for paves the way for managers to inflate earnings by over-allocating overpayments and other acquired assets to goodwill, because managerial consequences are unlikely. This is possible under the impairment-only approach because the underlying value of goodwill is unverifiable for investors and auditors (e.g., Watts,

2003; Hlousek, 2002). Hence, the acquiring firm is able to inflate future earnings by over-allocating the purchase price to goodwill and then, in the subsequent period, avoiding impairing it. While the value of goodwill is also unverifiable under the amortization approach, it is not possible to inflate earnings through over-allocation to goodwill because it is amortized yearly. Thus, the underlying argument among critics of the impairment-only approach is that the amortization approach is better suited for the initial recognition of goodwill (e.g., Ramanna, 2008; Zhang & Zhang, 2015).

To the best of my knowledge, no prior studies have explored whether initially recognized goodwill under the impairment-only approach provides a more faithful representation of acquired superior economic performance than the amortization approach. Thus, I intend to add to the literature by investigating whether initially recognized goodwill's representation of acquired superior economic performance is more pronounced under the impairment-only approach than under the amortization approach.

To do this, I make use of the Swedish institutional setting, which is an advantageous setting for comparing the impairment-only approach to the amortization approach. Like most international settings prior to the adoption of the impairment-only approach, Swedish Generally Accepted Accounting Principles (GAAP) permitted acquiring firms to apply either the pooling method or the purchase method with yearly goodwill amortizations. However, the well-documented international misuse of the pooling option did not occur in Sweden. Swedish GAAP contained strict requirements whereby acquiring firms could only apply the pooling option to mergers of equals. The Swedish business press even contended that the strict application of the standards to qualify an acquisition for the pooling option was disadvantageous for Swedish firms in the international competition for corporate control (Schuster, 2002). Thus, the methodological advantage of using the Swedish setting is that initially recognized goodwill under the purchase option with yearly amortizations is not likely to be biased by the misuse of the pooling option. In most other settings, goodwill is likely to suffer from self-selection bias because managers could easily structure the acquisition so that it qualified for the pooling option when they wanted to inflate future earnings.[1] In other

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[1] A number of studies document that the pooling option was misused under the amortization approach in the U.S. and most EU countries. See, for example, Lys & Vincent, 1995; Walter, 1999; Aboody, Kasznik & Williams, 2000.

words, the Swedish setting can offer insights into different approaches to the purchase method (i.e., impairment-only vs. amortization), thereby making it possible to establish which (if any) approach is better suited to providing a faithful representation of acquired superior economic performance.

I start the empirical investigation by manually reviewing 2,555 publicly listed Swedish firms' annual reports for the period 2001–2013, identifying 1,264 firm-years with reported acquired goodwill.[2] I collect data on firm-level information about the purchase price, the proportion of it allocated to goodwill, and any divestments of goodwill. I document that publicly listed Swedish firms in the period 2001-13 acquired target firms for a total of SEK 941.8 billion, and allocated SEK 553.7 billion (58.8%) to goodwill, ranging from SEK 0.1million to SEK 30.5 billion. I employ data from COMPUSTAT Global to construct my four empirical models approximating acquired superior economic performance, including (i) return on assets (ROA), (ii) sales growth, (iii) stock return, and (iv) Tobin's q. In particular, I estimate the first two measures based on the change around a window before and after completion of the acquisition, and the latter two measures are estimated one year after completion. After controlling for a number of known factors that affect the success of an acquisition, I find that initially recognized goodwill under the impairment-only approach does not provide a more faithful representation of future economic performance relative to the amortization approach. Specifically, I find that the interaction between initially recognized goodwill and the impairment-only approach (i.e., the variable of interest) is not statistically significantly associated with the four measures in any of the four models. Thus, I conclude that the impairment-only approach does not provide additional information about acquired superior economic performance relative to the amortization approach.

This study contributes to the literature in several ways. Overall, it contributes to the literature on the initial recognition of intangible assets. While the vast majority of studies on goodwill accounting have explored the implications of impairment testing (e.g., Beatty & Weber, 2006; Ramanna, 2008; Ramanna & Watts, 2012), relatively few studies have investigated its initial recognition. By focusing solely on managerial

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[2] However, I only include 850 deals in the regression analyses because I restrict the sample to only include the materially most significant acquisition with an attained ownership of 100% for each acquiring firm and year.

discretion relating to impairment testing, a significant body of research has overlooked that goodwill may have been recognized endogenously before any impairment tests of goodwill were conducted. For example, Shalev et al. (2013) find that acquiring managers in the U.S. are more likely to over-allocate to goodwill under the impairment-only approach when their bonuses are linked to the impairment decision through accounting earnings. Moreover, Zhang & Zhang (2015) show that the finding by Shalev et al. (2013) is only true when goodwill is recognized under the impairment-only approach, but not under the amortization approach. Thus, goodwill is probably recognized endogenously so that managers can enhance future earnings and bonuses. This study explores whether, relative to the amortization approach, the potential endogenous over-allocation to goodwill under the impairment-only approach has consequences for its representation of acquired superior economic performance. If managers misuse initial recognition as a tool to enhance future earnings, goodwill should provide a less faithful representation of acquired superior performance under the impairment-only approach than under the amortization approach.

This study also contributes to the small but growing literature investigating whether goodwill is a valid predictor of acquired superior performance under the impairment-only approach. Yehuda, Vincent & Lys (2017) show that the relationship between initially recognized goodwill and future economic performance depends on the success of the individual acquisition. When the acquiring firm over-allocates because the acquisition was an economic loss, goodwill is negatively related to acquired superior economic performance. However, the majority of the firms in their study did not over-allocate because they were able to acquire targets at an economic profit, and goodwill was thus positively related to acquired superior economic performance. These findings suggest that the additional discretion offered by the impairment-only approach is misused when it is palatable for the acquiring manager. This study complements Yehuda et al. (2017) by testing whether initially recognized goodwill's representation (or prediction) of acquired superior economic performance was hampered by the additional discretion of the impairment-only approach.

To my knowledge, only one study has explored whether goodwill provides a more faithful representation of future economic performance under the impairment-only approach than under the amortization approach. Lee (2011) explores whether goodwill balances provide a more faithful representation of future cash flows under the

impairment-only approach relative to the amortization approach. In particular, he finds that the ability of goodwill balances to predict future cash flows is more pronounced under the impairment-only approach than under the amortization approach, which indicates a more faithful representation of the underlying economics.

This study adds new insights into goodwill's representation of future economic performance. I focus on the initial recognition of goodwill as opposed to the goodwill balances, with the aim of exploring goodwill's representation of acquired superior economic performance upon the completion of an acquisition. The main reason why it is important to separate the studies of the initial recognition of goodwill and goodwill balances is that the write-offs may have opposite effects on the representation of the underlying economics. Goodwill balances are more likely to be economically suppressed under the amortization approach because this approach does not take into account that acquired synergies may not systematically depreciate in value over time. Thus, goodwill balances are more likely to faithfully represent future economic performance under the impairment-only approach. However, and as discussed, initially recognized goodwill can only be misused under the impairment-only approach to enhance future earnings and bonuses. Hence, initially recognized goodwill under the amortization approach may provide a more faithful representation of future acquired economic performance, while goodwill balances will over time be suppressed and, thus, do not provide a faithful representation of the underlying economics.

This study also adds new insights for international standard setters on whether the impairment-only approach to accounting for goodwill provides a more faithful representation of the underlying economics. Because this study is better able to address the potential self-selection bias of goodwill accounting under the amortization approach because it uses Swedish data, the results of this study should be more reliable. My results indicate that initially recognized goodwill under the impairment-only approach does not add relevant information for investors about acquired future economic performance relative to the amortization approach. This finding should be useful input for standard setters in their evaluation of alternatives to the impairment-only approach (FASB, 2017). However, this study does not provide any guidance on the net benefits or costs of implementing the impairment-only approach relative to the prior two-option regime, which permitted the acquiring manager to either apply the purchase method with yearly amortizations or the pooling method.

The remainder of this paper is organized as follows. In section 2, I start by providing the relevant background and then develop the hypothesis of this study. In section 3, I present the sample selection and the research setting, as well as the empirical models. In section 4, I report the empirical results of this study, while section 5 concludes the paper.

2. Background and hypothesis development

An acquiring firm is mandated to apply the purchase method when the attained ownership of a target firm exceeds 50%.[3] The procedure typically starts by allocating the purchase price to the fair value of the acquired and newly identified assets of the target firm, and any residual should be allocated to goodwill if the preset criteria in the standard are met. One important component of the residual that meets the criteria for qualifying for goodwill is acquired synergies (Johnson & Petrone, 1998), which is when the value of combining the firms is higher than the sum of their stand-alone values (e.g., Jensen & Ruback, 1983; Bradley, Desai & Kim, 1988). This additional value of future superior earnings can come from (i) operational and financial efficiencies (for example, by sharing overhead costs, attaining higher growth than stand-alone entities would attain by themselves, and optimization of the distribution network), (ii) advantages such as tax efficiency, and (iii) increased market power (Seth, 1990a, 1990b). However, accounting standards have traditionally permitted the inclusion of more components in goodwill than acquired synergies, including other unidentifiable intangible assets that provide future superior earnings, such as branding and reputation (e.g., FASB, 1999). Thus, under the impairment-only approach, goodwill should reflect the superior economic performance that would not have been attained without the combination of the acquiring and the target firms' intangible assets.

Johnson & Petrone (1998) argue that the perspective of the accounting method can explain the composition of goodwill, and thus its potential to faithfully represent acquired superior economic performance. Under the 'top-down' perspective, goodwill is viewed purely as a residual of the purchase price minus the book value of acquired net assets. Thus, goodwill contains the whole purchase premium, including synergies,

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[3] In this study, I only include acquisitions with an attained ownership of 100% in the regressions, which will be further discussed in the section *3.1 Research Setting*.

overpayment, and any unrecognized and/or upward revaluation of the target firm's other assets. This suggests that initially recognized goodwill is not able to faithfully represent the acquired superior economic performance. The "bottom-up" perspective, on the other hand, views goodwill as an asset in itself. That is, the acquiring firm is expected to value the goodwill as an asset, and to only include synergies from the acquisition. All other items such as overpayment and upward revaluation of the target's initial assets should not be included in goodwill. In other words, initially recognized goodwill should fully represent the acquired superior economic performance.

While standard setters have traditionally mixed these two perspectives, until the adoption of the impairment-only approach, goodwill accounting has emphasized the "top-down" perspective (Johnson & Petrone, 1998). The implementation of the impairment-only approach under International Financial Reporting standards (IFRS) 3 provided further guidance on the identification of acquired intangible assets before determining goodwill compared to the amortization approach under International Accounting Standards (IAS) 22. Hence, under the impairment-only approach, goodwill should provide a better representation of future economic performance because it should contain fewer non-synergistic components relative to the amortization approach.

Critics of the impairment-only approach, on the other hand, contend that the discretion that can be exercised in the subsequent valuation of goodwill can have real consequences for the initial recognition of goodwill. Because the impairment test is subject to managers' expectations and assumptions about the future, it is possible to inflate future earnings by initially inflating goodwill (e.g., Hlousek, 2002; Watts, 2003). The reason why the impairment-only approach can be misused to inflate initially recognized goodwill is that it is unverifiable due to the lack of active market prices. Thus, it is possible to inflate future earnings by over-allocating the purchase price to goodwill instead of to other amortizable assets, and then avoiding any impairments (Watts, 2003). Critics therefore implicitly argue that the amortization approach is a more efficient means of reducing any incentives to over-allocate to goodwill because it is not possible to inflate future earnings since all acquired assets are amortized over time (Ramanna, 2015). Goodwill under the impairment-only approach can therefore include more components than acquired synergies, and even overpayments. In other words, under the amortization approach, goodwill could potentially provide a more

faithful representation of acquired superior economic performance because it is not advantageous to over-allocate the purchase price to goodwill.

Hence, whether initially recognized goodwill provides a more faithful representation of acquired superior economic performance under the impairment-only approach depends on whether the standard is fairly applied or misused. Yehuda et al. (2017) show that acquiring firms can both misuse the impairment-only approach and provide economically relevant information, depending on the success of the acquisition. Specifically, they report that acquiring firms with "economic losses" allocate a significantly larger proportion of the purchase price to goodwill, relative to acquiring firms with "economic profits",[4] suggesting misuse of the impairment-only approach. However, they also show that, in 59% of their sample of completed acquisitions with "economic profits", goodwill is positively correlated with future economic profit. This suggests that non-opportunistic acquiring firms provide relevant information to investors. However, these two findings do not provide any guidance on whether the accounting for goodwill provides a more faithful representation of future economic performance under the impairment-only approach relative to the amortization approach.

Lee (2011) investigates whether goodwill balances under the impairment-only approach provide a more faithful representation of future cash flows relative to the amortization approach. In particular, he explores goodwill balances' ability to predict future cash flows under the amortization and the impairment-only approaches in the U.S., comparing the periods 1996–1998 to 2004–2006. He finds that goodwill balances' ability to predict future cash flows is more pronounced under the impairment-only approach, suggesting that goodwill balances with additional fair-value measures provide a more faithful representation of the underlying economics. This finding is likely related to the fact that systematic amortizations are by construction not intended to reflect the underlying economics of goodwill after its initial recognition. That is, the amortization approach tends to economically suppress goodwill balances over time. The impairment-only approach, on the other hand, permits the manager to signal the underlying economic value of the goodwill balances by using impairment tests (Watts,

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[4] Yehuda et al. (2017) define the concepts "economic profit" ("economic loss") based on positive (negative) cumulative stock market returns in the period between the announcement date and the completion date of the acquisition.

2003). Thus, goodwill balances under the impairment-only approach should provide a more faithful representation of future economic performance over time as long as the underlying economic value of goodwill does not systematically depreciate.

However, under the amortization approach, initially recognized goodwill may still provide a more faithful presentation of acquired superior economic performance relative to the impairment-only approach. This is because it is more likely that acquiring managers will misuse the initial recognition of goodwill under the impairment-only approach in order to obscure overpayments. It is therefore important to understand the acquiring manager's intention by exploring how the underlying motives for an acquisition can affect goodwill-accounting choices. While corporate acquisitions are typically motivated by synergies (e.g., Jensen & Ruback, 1983; Bradley et al., 1988), two other theories in the literature contend that acquiring managers never fully realize the synergies (Berkovitch & Narayanan, 1993). The agency theory contends that acquisitions occur because managers want to enhance their own power and remuneration (Jensen, 1986). In particular, it is argued that, since the manager's compensation is typically geared towards the size of the firm, it is more attractive to expand the firm at any cost (Jensen, 1986). That is, the acquiring manager's interest is not necessarily aligned with the shareholders' interest in synergy gains when undertaking an acquisition. The hubris theory, on the other hand, contends that managers do not use acquisitions as an instrument to strengthen their own power and remuneration at the expense of the shareholders. Instead, by undertaking an acquisition, managers intend to create synergistic gains, but they tend to fail because of excessive confidence in their ability to create additional value (Roll, 1986).

The assumption that managers, intentionally or unintentionally, do not realize synergies and superior earnings suggests that initially recognized goodwill will not provide a faithful representation of acquired superior economic performance. However, if acquiring managers inflate goodwill in the belief that they are able to realize more synergies than economically possible, as the hubris theory suggests, goodwill should be inflated both during the periods with the amortization approach and during the periods with the impairment-only approach. If managers opportunistically misuse the accounting system and acquisitions to enhance their own power, as the agency theory suggests, initially recognized goodwill is more likely to be more inflated under the impairment-only approach relative to the amortization approach. Prior studies on the

initial recognition of goodwill find, in line with agency theory, that opportunistic acquiring firms only misuse goodwill under the impairment-only approach. Bartov, Cheng & Wu (2018), for example, document a significant increase in overpayments for corporate acquisitions after the adoption of the impairment-only approach in the U.S, which they find to be associated with inflated goodwill balances. Moreover, Zhang & Zhang (2015) find that managers with earnings-based compensation only over-allocate the purchase price to goodwill under the impairment-only approach when it is possible to enhance future earnings and bonuses.

Overall, these arguments suggest that initially recognized goodwill under the impairment-only approach is more likely to be misused by opportunistic acquiring managers. Therefore, I will test the following hypothesis stated in the alternative form:

> *Initially recognized goodwill under the impairment-only approach does not provide a more faithful representation of acquired superior economic performance relative to the amortization approach.*

3. Method

3.1 Research setting

To explore initially recognized goodwill's representation of acquired superior economic performance, I employ data from the Swedish institutional setting. Sweden is one of few settings were acquiring managers did not have the option to choose "freely" between the purchase method with yearly amortizations and the pooling method, during the period prior to the adoption of impairment-only approach. Although Swedish GAAP was based on IAS 22, its application was much stricter and only permitted Swedish firms to apply the pooling option to mergers of equals.[5] In the U.S. and most of Europe, on the other hand, acquiring firms could relatively easily offset goodwill directly against reserves, by misusing the pooling option (e.g., Lys & Vincent, 1995).

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[5] Most of the Swedish listed merging firms that reported that they applied the pooling method were domiciled in Finland. Finnish GAAP applied more flexible requirements as regards a deal qualifying for pooling accounting. Examples of major reporting of pooling deals between Finnish and Swedish firms include the merger between Tieto and Enator, and the merger between Fazer and Cloetta. There are also examples of how Finnish acquiring firms restructured the target in order to later qualify the deal for pooling, a practice that was strictly prohibited under Swedish GAAP. By only including the Swedish listed firms domiciled in Sweden, I am able to reduce the problem of self-selection bias of prior studies comparing the impairment-only approach to the amortization approach.

Bartov et al. (2018), for example, document that U.S. acquiring firms applied the pooling option when they overpaid for the target firm in order to obscure any effect on earnings when it was possible to choose accounting method. This suggests that, when acquiring firms overpaid for target firms prior to the impairment-only approach, no goodwill was recognized, since the pooling option was misused. However, Bartov et al. (2018) find that acquiring firms inflate the initial recognition of goodwill under the impairment-only approach when they overpaid to reach the same outcome. As a consequence, goodwill in most other settings is not directly comparable before and after the introduction of the impairment-only approach. The Swedish setting is able to overcome these concerns.

Until 2005, Swedish GAAP mandated firms to apply either the purchase method with yearly amortizations or the pooling method. Because of the strict requirements of Swedish GAAP as regards an acquisition qualifying for pooling, I document that only six deals were reported as using pooling accounting. In the vast majority of completed acquisitions, Swedish acquiring firms applied the purchase method, with systematic goodwill amortizations over a period that typically could not exceed 20 years (RR 1:96). However, if the acquiring firm could provide convincing evidence that future synergies from the acquisition could be sustained for a longer period than 20 years, it was possible to amortize goodwill on a straight-line basis over a 40-year period. In the sample in this study, only two firms (8 deals) report an amortization-period of 40 years for at least one of their acquisitions.

With the European ratification of IFRS in 2005, Swedish listed firms were required to comply with the impairment-only approach of IFRS 3 and IAS 36. This change had two major effects on goodwill accounting. First, the excess payment in relation to the target firm's book value of net assets should to a larger extent be allocated to other assets of the target firm before being allocated to goodwill. In other words, relative to Swedish GAAP goodwill and all else being equal, initially recognized goodwill under IFRS should better reflect acquired synergies, since the excess payment related to specific assets would no longer be allocated to goodwill. Second, acquiring firms are no longer allowed to amortize goodwill. Instead, goodwill ought to be tested for economic impairment at the cash generating unit (CGU) level on a yearly basis. This latter change would incentivize opportunistic managers to over-allocate to goodwill, as discussed in the previous section.

In 2009, IFRS 3 underwent a number of revisions with the intention of making goodwill accounting more stringent. The main change of relevance to this study was that acquiring mangers were permitted to also apply the full method when recognizing goodwill. Prior to the revision, IFRS 3 required acquiring firms to only apply the partial method, so that only the part of goodwill that represented the attained ownership of the target-firm's net assets was recognized. Under the full method, acquiring managers are allowed, when acquiring less than 100% of the target firm, to recognize the goodwill of the non-controlling owners as if they had acquired 100%. Because the different applications of the full method and partial method will have a real effect on the size of goodwill, which will likely bias the study, I will only include initially recognized goodwill from acquisitions with an attained ownership of 100% for the whole period. Thus, this study will not be affected by different goodwill accounting choices about whether to include the fair-value of non-controlling owners' part of goodwill.

3.2 Empirical models

I use four different empirical models to test whether initially recognized goodwill provides a faithful representation of acquired superior economic performance under the impairment-only approach *vs.* the amortization approach. The overall empirical strategy is to test whether the acquiring firm's initially recognized goodwill reflects acquired superior economic performance, which should be reflected in the form of superior earnings from synergies and other unidentifiable intangible assets (Johnson & Petrone, 1998; FASB, 1999). I will proxy future superior earnings as the change in the acquiring firm's financial performance from the year *t-1* (i.e., prior to the acquisition) to the year *t+1* or *t+2* (i.e., after the acquisition), using two different dimensions that relate to superior earnings in the year *t+1*: (i) change in industry-adjusted ROA, (ii) change in firm growth. I also use two other proxies for two other dimensions related to superior earnings: (iii) the acquiring firm's abnormal post-acquisition stock return, and (iv) the acquiring firm's post-acquisition Tobin's q. Thus, I use these four proxies to evaluate whether the allocation of purchase premium to goodwill (i.e., the initial recognition of goodwill) is a faithful representation of the acquired superior economic performance. Over-allocation to goodwill would weaken the association with the four proxies, while a

correct estimation of future acquired economic performance would strengthen the association with the four proxies.

I start by investigating the differences in the association between initially recognized goodwill and the change in future operating performance[6] (i.e., ROA) using the following OLS model:

$$\Delta ROA_{t-1;\ t+1} \text{ or } \Delta ROA_{t-1;\ t+2} = \alpha_0 + \alpha_1 GDWL\_PPA_t + \alpha_2 IFRS_t + \alpha_3 GDWL\_PPA_t * IFRS_t +$$
$$\alpha_4 Materiality_t + \alpha_5 SIZE_{t-1} + \alpha_6 \Delta SALE_{t;\ t+1\ or\ t+1;\ t+2} + \alpha_7 RET_t + \alpha_8 RET_{t+1}$$
$$+ \alpha_9 MTB_{t-1} + \alpha_{10} LEV_{t-1} + \alpha_{11} ROA_{t-1} + \alpha_{12} \Delta ROA_{t-2;\ t-1} + \alpha_{13} GDWL\_Ac_{t-1} +$$
$$\alpha_{14} \ln(Deal)_{t-1} + \text{Year fixed effects} + \text{Industry fixed effects} + \varepsilon_t \qquad (1)$$

where (t is the acquisition year):

$\Delta ROA_{t-1;\ t+1}$	= industry-mean-adjusted ROA (EBITDA divided by lagged total assets) one year after completion of the acquisition minus industry-mean-adjusted ROA one year before completion of the acquisition (COMPUSTAT Global). Industry is defined as 1-digit SIC code;
$\Delta ROA_{t-1;\ t+2}$	= industry-mean-adjusted ROA (EBITDA divided by total assets in year t-1) two years after completion of the acquisition minus industry-mean-adjusted ROA one year before completion of the acquisition (COMPUSTAT Global). Industry is defined as 1-digit SIC code;
$GDWL\_PPA_t$	= goodwill resulting from the materially most significant transaction of the acquiring firm in year t divided by total purchase price (Annual reports);
IFRS	= 1 when the acquisition was accounted for using IFRS, and 0 otherwise (Annual reports);
$Materiality_t$	= purchase price divided by the acquiring firm's total assets in year t-1 (Annual reports and COMPUSTAT Global);
$SIZE_{t-1}$	= natural logarithm of the acquiring firm's total assets at the end of year t-1 (COMPUSTAT Global);
$\Delta SALE_{t;t+1\ or\ t+1,\ t+2}$	= change in acquiring firm's sales one year after completion of the transaction (from t to t+1). Alternatively, the average change in sales in the two years following completion of the acquisition if $\Delta ROA_{t-1;\ t+2}$ is used as the dependent variable (COMPUSTAT Global).
RET_t	= acquiring firm's stock return in year t. (I also include RET_{t+1} if $\Delta ROA_{t-1;\ t+2}$ is used as the dependent variable) (COMPUSTAT Global);
MTB_{t-1}	= acquiring firm's market-to-book ratio of equity at the end of year t-1 (COMPUSTAT Global);
LEV_{t-1}	= acquiring firm's long-term and short-term interest-bearing debt at the end of year t-1, divided by total assets at the end of year t-1 (COMPUSTAT Global);

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[6] Prior studies have measured ROA in year *t-1* as the asset-weighted ROA of the acquiring firm and the target firm. However, I only use the acquiring firm's ROA in *t-1* because the ROA in *t-1* of most sample private target firms is unavailable.

ROA$_{t-1}$ = industry-mean-adjusted ROA (EBITDA divided by lagged total assets) in year t-1 (COMPUSTAT Global). Industry is defined as 1-digit SIC code;

GDWL_Ac$_{t-1}$ = goodwill in the acquiring firm's balance sheet at the end of year t-1, divided by total assets at the end of year t-1 (COMPUSTAT Global);

The main coefficient of interest is α_3, which measures the incremental association of initially recognized goodwill (GDWL_PPA) under the impairment-only approach (IFRS), with the change in operating performance around the time of the acquisition. A positive and significant α_3 indicates that, relative to the amortization approach, the impairment-only approach provides a more faithful representation of acquired economic performance in the form of superior earnings, and is incrementally positively associated with increasing future economic performance of the combined businesses. However, a negative or insignificant α_3 indicates that initially recognized goodwill does not provide a more faithful representation under the impairment-only approach. Coefficient α_1 measures the association of the amortization approach with the change in operating performance from pre- to post-completion of the acquisition. Coefficient α_2 measures the difference in operating performance between the impairment-only approach and the amortization approach when initially recognized goodwill is zero.[7] I also conduct analyses for the change in operating performance in a larger time window spanning the period between year *t-1* and year *t+2* because the realization of future synergies may take time (e.g., Goodman, Neamtiu, Shroff & White, 2013).

I control for several factors that are likely to have an impact on the acquiring firm's change in operating performance, including the relative size of the acquisition (Materiality$_t$), acquiring firm size (SIZE$_{t-1}$), change in sales of the acquiring firm (ΔSALE), news affecting the acquiring firm's value over time *t* (and t+1 for ΔROA$_{t-1; t+2}$) (ΔROA$_{t-1;}$ ΔROA$_{t+1}$), market-to-book ratio of equity of the acquiring firm (MTB$_{t-1}$), the acquiring firm's leverage (LEV$_{t-1}$), level of industry-adjusted ROA in year *t-1* (ROA$_{t-1}$), change in industry-adjusted ROA prior to the acquisition (ΔROA$_{t-2; t+q}$), amount of goodwill in the acquiring firm's balance sheet at *t-1* (GDWL_Ac$_{t-1}$). The model also controls for industry and year fixed effects.

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[7] Because the reported acquired goodwill is mainly different from 0 in the sample, it is not possible to make any direct interpretations of the coefficient α_2. Hence, I do not draw any empirical conclusions about α_2 when including interactions between *GDWL_PPA* and *IFRS*.

In addition to the model testing for changes in operating performance (ROA), I also include alternative models measuring acquired superior economic performance in the form of sales growth, stock returns, and Tobin's q; all with similar control variables. In the test where future synergies are measured in terms of sales growth, I employ the following OLS model:

$$\Delta SALE_{t-1;\,t+1} \text{ or } \Delta SALE_{t-1;\,t+2} = \beta_0 + \beta_1 GDWL\_PPA_t + \beta_2 IFRS_t + \beta_3 GDWL\_PPA_t * IFRS_t +$$
$$\beta_4 Materiality_t + \beta_5 SIZE_{t-1} + \beta_6 RET_t + \beta_7 RET_{t+1} + \beta_8 MTB_{t-1} + \beta_9 LEV_{t-1} +$$
$$\beta_{10} ROA_{t-1} + \beta_{11}\Delta SALE_{t-2;\,t-1} + \beta_{12} GDWL\_Ac_{t-1} + \text{Year fixed effects} +$$
$$\text{Industry fixed effects} + \varepsilon_t \qquad\qquad (2)$$

where (t is the acquisition year):

$\Delta SALE_{t-1;\,t+1}$ = sales in the year following the completion of the acquisition minus sales in the year prior to the completion of the acquisition scaled by the acquiring firm's lagged total assets (COMPUSTAT Global);

$\Delta SALE_{t-1;\,t+2}$ = sales two years following the completion of the acquisition minus sales in the year prior to the completion of the acquisition scaled by the acquiring firm's lagged total assets (COMPUSTAT Global);

$\Delta SALE_{t-2;\,t-1}$ = sales one year prior to the completion of the acquisition minus sales two years prior to the completion of the acquisition scaled by the acquiring firm's lagged total assets (COMPUSTAT Global).

The main coefficient of interest is β_3, which measures the incremental association of initially recognized goodwill under the impairment-only approach versus under the amortization approach with future sales growth following the completion of an acquisition. A positive β_3 would indicate that, relative to the amortization approach, initially recognized goodwill under the impairment-only approach is incrementally associated with future sales growth, which would suggest a more faithful representation of the acquired superior economic performance in the form of sales. On the other hand, a negative or insignificant β_3 suggests that initially recognized goodwill does not provide a more faithful representation of acquired superior earnings under the impairment-only approach. I also include a number of controls that are likely to affect the sales growth, including past sales growth in the year prior to the completion of the acquisition, which are the same control variables as in model 1.

I also explore the difference in association between initially recognized goodwill under the impairment-only approach, relative to the amortization approach, and future stock returns using the following OLS model:

$$\text{RET}_{t+1} \text{ or } \text{ARET}_{t+1} = \delta_0 + b_1\text{GDWL\_PPA}_t + \delta_2\text{IFRS}_t + \delta_3\text{GDWL\_PPAt} * \text{IFRS}_t + \delta_4\text{Materiality}_t$$
$$+ \delta_5\text{SIZE}_{t+1} + \delta_6\text{MTB}_{t+1} + \delta_7\text{LEV}_{t+1} + \delta_8\text{ROA}_{t+1} + \delta_9\Delta\text{ROA}_{t;\ t+1} + \text{Year}$$
$$\text{fixed effects} + \text{Industry fixed effects} + \varepsilon_t \qquad\qquad (3)$$

where (t is the acquisition year):

RET_{t+1} = the acquiring firm's stock return one year after completion of the transaction (COMPUSTAT Global);

ARET_{t+1} = the acquiring firm's stock return one year after completion of the transaction minus the average stock return of the COMPUSTAT firms for the same year (COMPUSTAT Global);

$\Delta\text{ROA}_{t;t+1}$ = the acquiring firm's change in ROA (EBITDA divided by its lagged total assets) in year t+1 (COMPUSTAT Global).

The main coefficient of interest is δ_3, which measures the incremental association under the impairment-only approach, relative to the amortization approach, with future stock returns in the year following the completion of the acquisition. A positively estimated δ_3 would indicate that initially recognized goodwill under the impairment-only approach, relative to the amortization approach, provides a more faithful representation of acquired future economic performance in the form of increased stock market value. If δ_3 is negative or insignificant, then initially recognized goodwill under the impairment-only approach does not provide a more faithful representation of acquired future superior economic performance. I also include a number of controls that are likely to affect the acquiring firm's stock market returns, including relative size of the transaction (Materiality$_t$), acquiring firm size (SIZE$_{t-1}$), market-to-book ratio of equity (MTB$_{t-1}$), leverage (LEV$_{t-1}$), the acquiring firm's operating performance (ROA$_{t+1}$), change in the acquiring firm's operating performance (ROA$_{t+1}$). The model also controls for industry and year fixed effects.

Lastly, I explore the difference in the association between initially recognized goodwill under the impairment-only approach, relative to the amortization approach, and the acquiring firm's Tobin's q, using two different calculations. I estimate the relationship using the following OLS model:

$$TQ_{t+1} \text{ or } TQalt_{t+1} = \lambda_0 + \lambda_1 \text{ GDWL\_PPA}_t + \lambda_2 \text{ IFRS}_t + \lambda_3 \text{ GDWL\_PPA}_t * \text{IFRS}_t + \lambda_4$$
$$\text{Materiality}_t + \lambda_5 \text{ SIZE}_{t+1} + \lambda_6 \Delta\text{SALE}_{t;t+1} + \lambda_7 \text{ LEV}_{t+1} + \lambda_8 \text{ ROA}_{t+1} + \lambda_9$$
$$\text{CAPEX}_{t+1} + \lambda_{10} \text{ GDWL\_Ac}_{t-1} + \lambda_{11} \text{ TQ}_{t-1} + \text{Year fixed effects} + \text{Industry}$$
$$\text{fixed effects} + \varepsilon_t \tag{4}$$

where (t is the acquisition year):

TQ_{t+1} = the acquiring firm's Tobin's q one year after completion of the transaction, measured as market value of equity + interest-bearing debt scaled by its total assets (COMPUSTAT Global);

$TQalt_{t+1}$ = the acquiring firm's Tobin's q one year after completion of the transaction, measured as market value of equity + book value of short and long-term debt scaled by its total assets (COMPUSTAT Global);

$CAPEX_{t+1}$ = the acquiring firm's capital expenditures divided by its lagged total assets (COMPUSTAT Global).

The main coefficient of interest is λ_3, which measures the incremental association under the impairment-only approach, relative to the amortization approach, with the acquiring firm's Tobin's q one year after the completion of the acquisition. Since Tobi's q is a measure of synergies that come from combining the assets, a ratio value over 1 indicates that the combination of assets provides synergistic value. A positive λ_3 would indicate that, relative to the amortization approach, initially recognized goodwill under the impairment-only approach provides a more faithful representation of acquired Tobin's q. However, a negative or insignificant λ_3 indicates that initially recognized goodwill is not able to faithfully represent future acquired economic performance of superior earnings in the form of improved synergies. I also control for a number of factors that are likely to impact Tobin's q, including relative size of the acquisition (Materiality$_t$), which may negatively affect Tobin's q since a larger purchase price will increase the denominator of Tobin's q; acquiring firm size (SIZE$_{t-1}$), change in sales (ΔSALE), acquiring firm leverage (LEV$_{t-1}$), the acquiring firm's operating performance (ROA$_{t+1}$), capital expenditures (CAPEX$_{t+1}$), amount of goodwill in the acquirer's balance sheet at *t-1* (GDWL_Ac$_{t-1}$), Tobin's q before the acquisition (TQ$_{t-1}$). The model also controls for industry and year fixed effects.

4. Empirical findings

4.1 Sample selection and descriptive statistics

Table 1 illustrates the sample-selection procedures. I start by identifying all 3,420 Swedish listed firm-years in the period 2001–13. I exclude firms not reporting according to IFRS in 2005-13, as well as financial firms. I lose some additional firm-year observations because of unavailable data in COMPUSTAT Global. In total, I obtain a sample of 2,555 firm-years and manually review the annual reports to identify information about initially recognized goodwill, payments, and other relevant information about the acquisition.

[Insert Table 1 about here]

Panel A in Table 2 presents descriptive information about the sample for the period 2001–13. The total deal value for acquisitions leading to a controlling stake higher than 50% of the target firm was SEK 782.8 billion for the whole period, of which the highest yearly total was SEK 175.5 billion (in 2007), and the lowest was SEK 34.4 billion (in 2009). Cash is the predominant payment type in almost all years.[8] Moreover, the total initially recognized goodwill for the whole period was SEK 445.7 billion, with a high of SEK 103.6 billion in 2007 and a low of SEK 14.5bn in 2009. The total goodwill write-off during the period was SEK 136.7 billion, and the largest write-offs were during the period when yearly amortizations and impairment tests were carried out (i.e., the amortization approach). However, the impairments seem to be quite similar under the amortization approach (the years 2001–04) and the impairment-only approach (the years 2005–13). Total impairment was SEK 72.1 billion during the period, with a high of SEK 13.4 billion and a low of SEK 491 million. The total goodwill balances were SEK 4,307.8 billion during the period, and they steadily increased from around SEK 200 billion during the amortization period to SEK 400 billion during the impairment-only period.

[Insert Table 2 about here]

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[8] The year 2002 is remarkably different as only 22.7% (SEK 18 billion out of 79.8 billion) of the total payment was in cash.

Panel B in Table 2 reports that there were goodwill balances in 2,003 firm-years (out of 2,555) during the period 2001-2013. Goodwill has steadily increased during the observed time period. As a percentage of total assets, it increased from 14.9% to 22.7%. As a percentage of equity, it increased from 36.5% to 52.3%, peaking at 64.4% in 2008. Reported goodwill impairments are usually between two and five percent of goodwill balances, except for in 2001 and 2011 when they were 19.9% and 18.9%, respectively.

Panel C in Table 2 reports that 1,040 firm-years have involved at least one acquisition leading to a controlling stake higher than 50%; 850 firm-years involved at least one deal with a controlling stake of 100%.[9] The average deal value (i.e., the purchase price) was SEK 751 million during the period, with a yearly variation from SEK 390 million in 2002 to SEK 1,639 million in 2007. The average cash payment was SEK 592 million (about 78.8% of the total payment) during the period. Average acquired goodwill was SEK 409 million during the period 2001–13, with a high of SEK 968 million in 2007, and a low of SEK 223 million in 2009. The average reported goodwill impairment was SEK 46 million during the period; there do not seem to be any systematic differences in the monetary amount of impairments during the period.

4.2 Univariate statistics

Table 3 reports the univariate statistics for the full sample of acquiring firms during the period 2001-13. I winsorize each continuous variable at its first and ninety-ninth percentiles. The average (median) purchase price for the whole period is SEK 754 million (SEK 82.5 million). The completed acquisitions are economically significant as the mean (median) is 13% (4%) of the acquiring firm's lagged total assets. More than two-thirds of the acquiring firms accounted for recognized goodwill using the impairment-only approach of IFRS. The mean (median) change in industry-adjusted ROA from the year prior to and the year following the completion of the acquisition is 0.00 (0.00). The mean (median) change in sales from the year prior to the year following the completion of the acquisition is 32% (16%). In the year following the completion of the acquisition, the mean (median) stock return is 17% (9%), and the

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[9] In the regression analyses, I only include goodwill from (1) deals with an attained ownership of 100%, and (2) that are materially the most significant deal of the year for the acquiring firm. This is because the information about individual deals is quite spares during the period of Swedish GAAP in 2001-2004.

mean (median) market-adjusted stock return is 9% (1%). The mean (median) Tobin's q is 1.63 (1.42).

[Insert Table 3 about here]

Table 4 presents univariate statistics for the mean and the median difference of the relevant variables of the impairment-only and the amortization approaches. Acquiring firms tend to pay more for acquisitions during the period with the impairment-only approach (median difference of Purchase_Price$_t$ is significantly positive), but deals tend to be less material for the acquiring firm during the period with the impairment-only approach (the mean and median differences of Materiality$_t$ are significant and negative). Acquiring firms also allocate smaller amounts of the purchase price to goodwill during the impairment-only approach (the median difference of GDWL_PPA$_t$ is significant and negative). The fact that, under the impairment-only approach, acquiring firms pay more for an acquisition but allocate less of the purchase price to goodwill suggests that goodwill under IFRS 3 provides a more faithful representation of the acquired superior earnings. Under the impairment-only approach, the acquiring firm has, after the recognition of goodwill, higher profitability (the median of ROA$_{t-1; t+1}$ is significant and positive), and the typical sales growth is higher although mean value is lower (mean difference is negative and significant, while the median difference value is positive and significant). The acquiring firms using the impairment-only approach have lower adjusted stock returns (ARET and RET are negative and significant), which could suggest that the firms applying the impairment-only approach are less able to realize acquired synergies.

[Insert Table 4 about here]

Moreover, under the impairment-only approach the acquiring firm, after the recognition of goodwill, has a higher capital expenditure (the median difference of CAPEX$_{t+1}$ is significant and positive) and is typically larger in size prior to the recognition of goodwill, but smaller on average (the median differences of SIZE$_{t-1}$ is positive and significant, but the mean is significantly negative), and typically had lower sales in the years prior to the acquisition (median AvΔSALE is significantly positive). In

addition, one year before the recognition of goodwill, the acquiring firms applying the impairment-only approach typically had higher market-to-book ratio and higher leverage (median difference of MTB_{t-1} and LEV_{t-1} are significantly positive), but the average market-to-book ratio and leverage was lower prior to recognition (the mean difference of MTB_{t-1} and LEV_{t-1} is significantly negative).

4.3 Regression analyses and results

In contrast to the analyses of the descriptive data, all regression analyses of this study are based on deal-level data. In particular, I only include initially recognized goodwill from the materially most significant deal with an attained ownership of 100% of each acquiring firm and year. There are two main reasons for this. First, in the period 2001-2004 of Swedish GAAP, acquiring firms only specified deal-level goodwill for large deals, and for all other smaller acquisitions, the acquiring firm presented the firm-level goodwill. This makes it impossible to conduct the regression analyses using stock return data because the acquisition dates for all materially less significant deals are not identifiable. Moreover, it is not possible to determine which completed acquisition is related to the initial recognition of goodwill unless the deal is large. Second, by focusing on the materially most significant deals makes the results of the study more comparable with prior studies, which tend to focus on goodwill from economically larger deals.

Table 5 presents the regression estimates of Model 1, which tests the association between initially recognized goodwill and future operating performance (ΔROA). Model 1a uses changes in the acquiring firm's performance one year after the completion of the acquisition ($\Delta ROA_{t-1;t+1}$), while Model 1b uses changes in the acquiring firm's performance two years after the completion of the acquisition ($\Delta ROA_{t-1;t+2}$). Starting with Model 1a, the analysis shows that initially recognized goodwill under the impairment-only approach (GDWL_PPA*IFRS) is positively associated with the change in the return on assets relative to initially recognized goodwill under the amortization approach (t-stat: 1.69). Initially recognized goodwill during the whole period (GDWL_PPA) and the IFRS accounting standard (IFRS) are both negatively related to the change in return on assets. Overall, these results suggest that the acquiring manager's forecast of the acquired superior economic performance through goodwill is more accurate under the impairment-only approach, relative to the amortization approach.

The regression results from the change in ROA from one year prior to the acquisition until two years after the completion of the acquisition in Model 1b ($\Delta\text{ROA}_{t-1;t+2}$) show similar results. That is, initially recognized goodwill provides a more faithful representation of the acquired superior economic performance under the impairment-only approach. However, this result is not statistically significant. Moreover, Stock returns (RET) are positively associated with the change in ROA (ΔROA), as well as the industry-adjusted change in ROA. Total goodwill balances prior to the completed acquisition (GDWL_Ac) are negative in the latter regression model in Table 5. In sum, only model 1a indicates that initially recognized goodwill is able to predict the acquired economic performance of superior earnings, suggesting at least some enhanced representational faithfulness under the impairment-only approach.

[Insert Table 5 about here]

Table 6 presents the regression estimates of Model 2, which tests the association between initially recognized goodwill and future superior earnings in the form of sales growth. Model 2a uses changes in the acquiring firm's sales performance one year after the completion of the acquisition ($\Delta\text{SALE}_{t-1;\ t+1}$), while Model 2b uses changes in the acquiring firm's sales performance two years after the completion of the acquisition ($\Delta\text{SALE}_{t-1;\ t+2}$). Although the association between goodwill under the impairment-only approach (GDWL_PPA) and future sales growth (ΔSALE) is positive, it is not statistically significant in either Models 2a and 2b. These results suggest that initially recognized goodwill does not provide a more faithful representation of acquired superior economic performance of superior future earnings in the form of future sales growth. The relative size of the acquisition (Materiality$_t$), the stock return (RET$_{t+1}$), and the market-to-book ratio (MTB$_{t-1}$) are positively associated with future sales growth. In addition, the acquiring firm's size is negatively associated with future sales growth.

[Insert Table 6 about here]

Table 7 presents the regression estimates of Model 3, which tests the association between initially recognized goodwill and stock returns. The regression analyses for the

return model (RET$_{t+1}$) and the industry-adjusted return model (ARET$_{t+1}$) both indicate that initially recognized goodwill under the impairment-only approach does not have any relation to the stock market's perception of acquired future synergies. In particular, the proportion allocated to goodwill (GDWL_PPA$_t$) and the proportion allocated to goodwill under the impairment-only approach (GDWL_PPA*IFRS$_t$) are not statistically significant in either model specification. Moreover, the market-to-book value equity ratio (MTB), the acquirer's leverage (LEV), and return on assets (ROA) are positively associated with stock returns for both specifications. Overall, these results are in line with the findings of the sales growth model (see Table 6), suggesting that initially recognized goodwill under the impairment-only approach does not provide a more faithful representation of acquired superior economic performance relative to the amortization approach.

[Insert Table 7 about here]

Table 8 presents the regression estimates of Model 4, which tests the association between initially recognized goodwill and Tobin's q. Once again, both regression estimates of Model 4 indicate that initially recognized goodwill under the impairment-only approach does not provide a more faithful representation of acquired superior economic performance relative to the amortization approach. In particular, the allocation to goodwill under the impairment-only approach (GDWL_PPA*IFRS$_t$) is not statistically significant. In fact, the proportion allocated to goodwill (GDWL_PPA$_t$) is not statistically significant. Overall, these findings suggest that the allocation does not have any association with the acquirer's post-acquisition Tobin's q. I also further note that the significance of the acquisition (Materiality$_t$), and past goodwill balances (GDWL_Ac$_{t-1}$) all have a negative association with the acquirer's post-acquisition Tobin's q. The change in sales (ΔSALE$_{t;t+1}$) and pre-acquisition Tobin's q (TQ$_{t-1}$) are positively associated with the post-acquisition Tobin's q. In other words, initially recognized goodwill does not provide a more faithful representation of acquired performance of superior earnings in the form of improved synergies.

[Insert Table 8 about here]

4.4 Additional analyses

4.4.1 Post-acquisition earnings management

I find that initially recognized goodwill under the impairment-only approach is only positively associated with one of the proxies for acquired superior economic performance of superior earnings – the ROA measure. However, this result could also interact with the fact that managers potentially misuse the adoption of IFRS in general by managing earnings. Paananen (2008), for example, reports that the quality of the financial reporting in Sweden, measured as the degree of smoothing of earnings, decreased in the years following the adoption of IFRS. Moreover, Bens, Goodman & Neamtiu (2012) find that acquiring managers are more likely to manage short-term performance when expected synergies are lower in order to avoid CEO turnover. It is possible that the quality of the acquisition during the IFRS period is lower because the discretionary principles-based component makes it possible to invest in deals with negative net present values. Since the manager probably wants to retain power as the acquiring firm expands, it is possible that the earnings are being manipulated (e.g., Bens et al., 2012). If this is the case, then the finding that acquired goodwill under IFRS better reflects the future return on assets (ROA) may be due to more income-increasing earnings management during the IFRS period. Moreover, Lee (2011) suggests that managers' incentives to manage goodwill accounting choices can be measured by a higher level of discretionary accruals. To address this concern, I re-estimate model 1, including the change in discretionary accruals (ΔDACC) to account for managers' incentives to manipulate short-term earnings in the year prior to and the year following the completion of an acquisition.

I measure discretionary accruals as the residuals from model 5, estimated based on the size of the listed Swedish firms (instead of industry classification). The reason I do not follow the approach taken by Dechow, Sloan & Sweeney (1995) is that the Swedish stock market is not large enough to provide at least 10 observations for each 2-digit SIC industry on a yearly basis. According to Ecker, Francis, Olsson & Schipper (2013), size-based estimations are as reliable as the traditional estimation of discretionary accruals based on industry classifications. Moreover, the size of listed Swedish firms within different industries varies significantly, making it impossible to compare one

international firm with midsized nationally based firms. Thus, I use a size-based estimate because it is better suited to the Swedish setting.

$$\text{TACCt}/\text{AT}_{t-1} = a_{11}/\text{AT}_{t-1} + a_2(\Delta\text{SALES}_t - \Delta\text{REC}_t)/\text{AT}_{t-1} + a_3\text{PPE}_t/\text{AT}_{t-1} + \varepsilon_t \qquad (5)$$

where:

TACC_t = Income before extraordinary items minus operating cash flow;
AT_t = Total assets;
SALES_t = Total sales;
AREC_t = Accounts receivable;
GPPE_t = Gross property, plant and equipment.

[Insert Table 9 about here]

Table 9 shows that, with the inclusion of discretionary accruals (ΔDACC), the result from the analysis of model 1a of ROA disappears. However, the number of observations drops because of unavailable data required to construct the discretionary accruals (ΔDACC) for some firms over time, which could be a reason why the relation from model 1a in Table 5 *Operating Performance* disappears. To control for this, I drop all observations in model 1a with missing discretionary accruals and retest these observations without the variable discretionary accruals (ΔDACC). Untabulated results show little change in the level of significance. Thus, after controlling for discretionary accruals (ΔDACC), I can conclude that all tests indicate that initially recognized goodwill under the impairment-only approach does not provide a more faithful representation of acquired economic performance in the form of superior earnings.

4.4.2 Alternative time periods, larger acquisitions, and goodwill

The chosen time period in this study could potentially impact the findings. Although there have been three distinct accounting standards during the period 2001–13, I have so far only drawn a distinction between the amortization and the impairment-only approaches. During the period 2005–13, however, the latter approach has been governed by IFRS 3 and a revised version of the IFRS 3(Revised).

During the period 2005–08, IFRS 3 required acquiring managers to apply the purchase method with yearly tests of economic impairments of goodwill. The part of the

excess payment exceeding the target's net assets that could not be allocated to other assets ended up as goodwill. However, with the revised version of IFRS 3 in 2009, the international Accounting Standards Board (IASB) intended to make the criteria for allocation to goodwill more stringent. For example, the transaction cost should now be expensed, instead of being recognized as goodwill, as under IFRS 3. Moreover, acquiring firms are required to report the fair-value provision of any contracted contingent payments (e.g., earnouts) as long as the contingency is recognizable, probable, and can be reliably measured. Any upward revaluation of contingent payments is no longer permitted to be recognized as goodwill, but should be expensed. In sum, these changes should make goodwill even more accurate as a measure of acquired economic performance in the form of future synergies. That is, initially allocated goodwill should provide a more faithful representation of acquired superior economic performance.

To avoid drawing any conclusions about the initial years' implementation of the impairment-only approach compared to the well-established amortization approach, I test the amortization approach on both the 2006–09 period, and the 2011–13 period. I also compare goodwill's representation of acquired future economic performance in the 2006–09 period and the 2011–13 period. The results are qualitatively unchanged by using different time periods and comparing different versions of IFRS 3. That is, initially recognized goodwill does not provide a more faithful representation with more discretion or guidance under different standards.

Another concern that needs to be addressed is that models 1 and 2 include variables over multiple years, which means that it is possible that initially recognized goodwill under Swedish GAAP could be evaluated based on the economic performance during the IFRS years. In particular, initially recognized goodwill in 2004 and 2003 will be tested by ROAs and sales reported under IFRS. Thus, I drop firm-years that include IFRS data in the construction of the dependent variable of models 1 and 2 for the test of initially recognized goodwill under Swedish GAAP. I find no significant change in the overall results. Moreover, I test whether longer windows (three and four years) for models 1 and 2 could change the results of the study. This is because the realization of synergies could potentially take longer than one or two years. However, the longer window does not change the main conclusions of the study.

I also test whether the size of the acquisition and initially recognized goodwill has any effect on the results of the study. In particular, I test whether acquisitions with a

deal value of SEK 10 million or SEK 50 million, which is more representative of the deal value of studies in the finance literature, have any effect on the findings of this study. Moreover, I also test whether the inclusion of larger-sized initially recognized goodwill of SEK 1 million, or 1% of equity of the acquiring firm, changes the results of the study. I find no indications that the size of the initially recognized goodwill or the deal value is driving the results (untabulated).[10]

5. Conclusion

In this paper, I investigate whether initially recognized goodwill under the impairment-only approach provides a more faithful representation of acquired superior economic performance relative to the amortization approach. In particular, I test whether initially recognized goodwill better represents the acquired superior economic performance after the adoption of the impairment-only approach relative to the prior amortization approach. Although goodwill under the impairment-only approach gives the acquiring managers a channel to communicate private information, opportunistic managers may also misuse the additional discretion to inflate future earnings by inflating initially recognized goodwill. The previous amortization approach only provided for very limited managerial discretion when carrying out the subsequent valuation, and in Sweden, it was only related to the determination of the number of years the goodwill would be amortized. Hence, the amortization approach did not provide discretion that would incentivize managers to over-allocate the purchase price to goodwill in order to manage future earnings.

In other words, the acquiring firms' initial recognition of goodwill may more faithfully represent the underlying economics of the acquired superior economic performance under the impairment-only approach relative to the amortization approach. On the other hand, since the subsequent valuation of goodwill through impairment testing provides significant discretion to reduce the "drag" on future earnings by over-allocating the purchase price to goodwill, it might not faithfully represent the acquired superior economic performance. Based on agency theory and the documented misuse of the impairment-only approach, I conjecture that initially

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[10] These findings are not surprising given that the regression analyses only contain the materially most important acquisition of the acquiring firm for each year.

recognized goodwill under the impairment-only approach does not provide a more faithful representation of acquired superior economic performance relative to the amortization approach.

Using four models with different proxies for acquired superior economic performance, I find, overall, that the implementation of the impairment-only approach did not improve initially recognized goodwill's representation of acquired superior economic performance. Only the model estimating the relationship between initially allocated goodwill and the change in profitability (ROA) indicates positive and significant results. However, when adjusting for the possibility that acquiring managers also manage earnings by including discretionary accruals, I no longer find any relationship between initially recognized goodwill and change in return on assets. Other models that include the relationship between initially recognized goodwill and future sales, stock return, and Tobin's q all indicate that the faithful representation of underlying economics has not improved under the impairment-only approach. Thus, I conclude that the adoption of the impairment-only approach did not improve the faithful representation of acquired superior economic performance relative to the amortization approach.

To my knowledge, this is the first study to explore whether initially recognized goodwill provides a more faithful representation of acquired superior economic performance under the impairment-only approach relative to the amortization approach. This study contributes to the literature on initially recognized assets and the growing literature evaluating goodwill accounting under different accounting methods. The clear methodological strength of this study is its use of the Swedish institutional setting. Sweden is one of few settings where the impairment-only and amortization approaches can be compared without being affected by self-selection biases due to misuse of the pooling option. Hence, the findings of this study should be of interest to international standard setters in their evaluation of alternative methods to the impairment-only approach (FASB, 2017).

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Variable Name	Definition	Data Source(s)
Purchase_Price$_t$	Purchase price in million Swedish kronor (MSEK).	Annual reports
Materiality$_t$	Purchase price divided by acquirer's lagged total assets.	Annual reports and COMPUSTAT Global
IFRS	1 if the acquisition took place during the years with IFRS, and zero otherwise.	Annual Reports
$\Delta ROA_{t-1; t+1}$	Industry-mean-adjusted ROA (EBITDA divided by lagged total assets) one year after completion of the transaction minus industry-mean-adjusted ROA one year before completion of the transaction. Industry is defined by 2-digit SIC codes.	COMPUSTAT Global
$\Delta ROA_{t-1; t+2}$	Industry-mean-adjusted ROA (EBITDA divided by lagged total assets) two years after completion of the transaction minus industry-mean-adjusted ROA one year before completion of the transaction. Industry is defined by 2-digit SIC codes.	COMPUSTAT Global
$\Delta SALE_{t-1; t+1}$	Sales in the year following completion of the transaction minus sales in the year prior to completion of the transaction scaled by lagged total assets.	COMPUSTAT Global
$\Delta SALE_{t-1; t+2}$	Sales two years following completion of the transaction minus sales in the year prior to completion of the transaction scaled by lagged total assets.	COMPUSTAT Global
RET_{t+1}	Acquirer stock return in the fiscal year after completion of the transaction.	COMPUSTAT Global
$ARET_{t+1}$	Acquirer stock return in the fiscal year after completion of the transaction minus average stock return of COMPUSTAT firms over the same period.	COMPUSTAT Global
RET_{t-1}	Acquirer stock return in the fiscal year prior to completion of the transaction.	COMPUSTAT Global
TQ_{t+1}	Acquirer Tobin's q one year after completion of the transaction, measured as the market value of equity + interest-bearing debt divided by year-end total assets.	COMPUSTAT Global
$TQalt_{t+1}$	Acquirer Tobin's q one year after completion of the transaction, measured as the market value of equity + book value of short and long-term debt divided by year-end total assets.	COMPUSTAT Global
$CAPEX_{t+1}$	Acquirer capital expenditures divided by lagged total assets.	COMPUSTAT Global
GDWL_PPA$_t$	Goodwill resulting from the transaction divided by purchase price.	Annual reports
$SIZE_{t-1}$	Natural logarithm of total assets in the fiscal year prior to completion of the transaction.	COMPUSTAT Global
$Av\Delta\ SALE_{t-1;t-2}$	Average change in sales in the two years prior to completion of the transaction.	COMPUSTAT Global
ROA_{t-1}	EBITDA divided by lagged total assets in the fiscal year prior to completion of the transaction.	COMPUSTAT Global
$\Delta ROA_{t-2; t-1}$	Industry-mean-adjusted ROA (EBITDA divided by lagged total assets) one year prior to completion	COMPUSTAT Global

	of the transaction minus industry-mean-adjusted ROA two years prior to completion of the transaction. Industry is defined by 2-digit SIC codes.	
$MTB_{t+1 <1}$	1 if the market-to-book ratio is below one, and 0 otherwise.	COMPUSTAT Global
LEV_{t-1}	Long-term debt plus current proportion of long-term debt in the fiscal year prior to completion of the transaction divided by lagged total assets.	COMPUSTAT Global
$GDWL\_Ac_{t-1}$	Goodwill in the acquirer balance sheet in the year prior to completion of the transaction divided by lagged total assets.	Annual reports and COMPUSTAT Global
$CASH_{t-1}$	Cash divided by lagged total assets in the year prior to completion of the transaction.	COMPUSTAT Global
$LOSS_{t-1}$	1 if net income is negative in the fiscal year prior to completion of the transaction, and 0 otherwise.	COMPUSTAT Global
$Ln(Frequent)_t$	Natural logarithm of the number of acquisitions completed by the acquirers during the sample period.	Annual reports
$\Delta DACC_{t-1; \, t+1}$	Change in discretionary accruals between the year prior to completion of the acquisition and the year following completion of the acquisition. Discretionary accruals are measured as the residuals of the following model estimated based on the size of the firm with at least 10 observations: $TACC_t / AT_{t-1} \; a_{11} / AT_{t-1} + a_2 (\Delta SALES_t - \Delta AREC_t)/AT_{t-1} + a_3 \, GPPE_t / AT_{t-1} + \varepsilon$ where: $TACC_t$ Income before extraordinary items minus operating cash flow; AT_t Total assets; $SALES_t$ Total sales; $AREC_t$ Accounts receivable; $GPPE_t$ Gross property, plant, and equipment.	COMPUSTAT Global

Table 1: Sample Selection

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Sample Selection:														
# of Listed Firms on the Stockholm Stock Exchange	**291**	**288**	**273**	**269**	**266**	**268**	**267**	**256**	**251**	**242**	**249**	**249**	**251**	**3,420**
(-) Firms not domiciled in Sweden	13	13	14	17	16	15	17	15	15	16	18	19	18	206
(-) Non-IFRS reporting firms 2005-2013	-	-	-	-	3	3	4	3	3	3	3	3	3	28
(-) Financial firms	49	47	44	41	42	45	46	45	41	38	38	36	40	552
(-) Not Merged with COMPUSTAT Global	0	1	0	0	0	0	0	1	0	1	0	2	0	5
(-) Observations with missing values	13	10	10	9	2	4	2	1	1	7	5	4	6	74
Number of Sample Firms	*216*	*217*	*205*	*202*	*203*	*201*	*198*	*191*	*191*	*177*	*185*	*185*	*184*	*2,555*

Table 1 reports the sample selection. Starting with all listed firms on the Stockholm Stock Exchange in the period 2001–2013, I subtract listed firms not domiciled in Sweden, firms not reporting under IFRS in the period 2005-2013, financial firms, and observations with missing variables. This results in the final sample of 2,555 firm years, for which I go through the annual reports to identify acquisitions and goodwill accounting choices.

Table 2: Sample Description

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	Total
Panel A: # of Sample Firms	*216*	*217*	*205*	*202*	*203*	*201*	*198*	*191*	*191*	*177*	*185*	*185*	*184*	*2,555*
Total Deal Value (>50% stake in target)	48,909	79,816	36,314	36,041	52,797	57,872	175,477	46,098	34,382	52,585	58,164	69,517	34,838	782,816
Total Outflow of Cash	37,323	18,104	30,201	27,739	42,679	49,132	158,45	38,48	27,957	43,44	51,959	59,527	25,488	610,486
Total Acquired Goodwill	32,296	41,275	22,385	18,251	35,907	21,806	103,59	28,113	14,513	31,475	33,164	30,051	32,883	445,715
Total Other Goodwill Investments	5,567	6,877	1,435	1,462	952	998	874	2,076	205	80	37	83	244	20,896
Total Divested Goodwill	227.6	1,596	1,379	536	378	4,913	3,471	3,541	1,182	328	178	1,586	991	20,312
Total Goodwill Write-offs	21,063	30,225	20,318	13,901	1,066	6,722	3,605	4,271	6,931	5,893	10,314	9,718	2,685	136,715
Total Goodwill Impairments	4,761	13,376	2,461	491	913	6,722	3,605	4,271	6,931	5,893	10,314	9,718	2,685	72,144
Total Goodwill	234,523	243,018	226,484	225,199	279,256	267,365	370,701	413,767	411,852	405,072	401,084	403,655	425,821	4307,806
Panel B: # of Goodwill Firms	*163*	*156*	*152*	*154*	*156*	*155*	*161*	*156*	*156*	*142*	*149*	*153*	*149*	*2,003*
Goodwill to Total Assets	14.9%	15.4%	15.1%	15.8%	17.3%	18.3%	20.9%	21.8%	22.8%	22.6%	21.8%	22.5%	22.7%	19.3%
Goodwill to Equity	36.5%	40.1%	42.3%	42.6%	42.1%	48.9%	52.1%	64.4%	60.1%	57.5%	50.3%	55%	52.3%	49.5%
Goodwill Write-offs to Goodwill	49.8%	29.2%	29.2%	27.5%	3%	4.4%	1.8%	2.5%	3.5%	3.3%	18.9%	2.2%	2.3%	13.8%
Goodwill Impairments to Goodwill	19.9%	5.1%	8%	3.5%	1.8%	4.4%	1.8%	2.5%	3.5%	3.3%	18.9%	2.2%	2.3%	5.9%
Panel C: # of Acquiring Firms	*84*	*80*	*93*	*77*	*94*	*89*	*107*	*88*	*65*	*65*	*70*	*70*	*58*	*1,040*
Average Deal Value	582	998	390	468	561	650	1,639	523	528	809	830	979	600	751
Average Outflow of Cash	464.8	229	328	364	469	558	1,494	442	436	665	731	827	425	592
Average Acquired Goodwill	383	516	240	235	381	244	968	319	223	478	435	415	291	409
Average Goodwill/Deal Value	0.72	0.77	0.67	0.70	0.64	0.59	0.62	0.50	0.53	0.56	0.55	0.50	0.61	0.72
Average Goodwill write-offs	184.7	308	182	162	8.4	72	25	44.6	26.2	14	100	115	30.8	99
Average Goodwill impairments	23.4	134	21	5	7.5	72	25	44.6	26.2	14	100	115	30.8	46

Table 2 shows descriptive information about the sample firms included in this study. In panel A, I report the total values in MSEK for all sample firms. In Panel B, I report the relative values of firms with goodwill balances in the prior year. In Panel C, I report values for the firms reporting acquisition(s) during the year.

Table 3: Summary Statistics

	N	Mean	St. Dev	Min.	p25	Median	p75	Max.
Purchase_Price	1,037	754.89	3106.01	0.02	21	82.52	327	56,527
Materialityt	1,037	0.13	0.24	0.00	0.01	0.04	0.11	1.13
IFRS	1,037	0.68	0.47	0.00	0.00	1.00	1.00	1.00
$\Delta ROA_{t-1;\,t+1}$	1,013	0.00	0.13	-1.03	-0.03	0.00	0.01	1.42
$\Delta SALE_{t-1;\,t+1}$	1,018	0.32	0.83	-1.17	0.00	0.16	0.43	7.53
RET_{t+1}	952	0.17	0.63	-0.85	-0.22	0.09	0.43	3.74
$ARET_{t+1}$	952	0.09	0.53	-0.87	-0.22	0.01	0.26	3.69
TQ_{t+1}	953	1.63	0.88	0.62	1.14	1.42	1.89	10.16
$CAPEX_{t+1}$	998	0.23	0.19	-0.11	0.08	0.18	0.33	1.40
$GDWL\_PPA_t$	1,037	0.58	0.32	0.00	0.37	0.61	0.80	1.31
$SIZE_{t-1}$	1,034	7.86	2.06	3.47	6.37	7.48	9.17	12.29
$Av\Delta SALE_{t-2,t-1}$	1,019	691.03	2290.61	-3962.37	-32.13	118.39	621.82	9245.1
RET_{t-1}	930	0.21	0.66	-0.85	-0.16	0.12	0.45	3.74
ROA_{t-1}	1,030	0.00	0.15	-1.92	0.00	0.00	0.03	0.58
MTB_{t-1}	930	2.80	2.43	0.28	1.44	2.22	3.41	19.20
LEV_{t-1}	929	0.61	0.25	0.07	0.46	0.59	0.72	1.71
$GDWL\_Act_{-1}$	2,555							

Table 3 shows the mean, median, standard deviation and the minimum and maximum value of the most relevant variables in the empirical model(s) of this paper. All variables are defined in Appendix.

Table 4: Amortization Approach vs. Impairment-Only Approach

	Amortization Approach			Impairment-only Approach			Mean Diff.	Median Diff.
	N	Mean	Median	N	Mean	Median		
Purchase_Price	333	577.9	55.136	704	838.6	101.0	-260.6	45.86***
Materialityt	333	0.110	0.031	704	0.136	0.040	-0.015*	-0.009*
ΔROAt-1; t+1	225	-0.364	-0.740	488	-0.307	-0.510	-0.057	0.230*
ΔSALEt-1; t+1	327	0.260	0.133	691	0.348	0.174	-0.08*	0.041*
RETt+1	237	0.269	0.156	625	0.118	0.058	0.151	-0.098***
ARETt+1	327	0.171	0.067	625	0.046	-0.002	0.125	-0.069***
TQt+1	327	1.681	1.420	626	1.599	1.422	0.081	0.002
CAPEXt+1	322	0.240	0.195	676	0.219	0.196	0.020	0.001*
GDWL_PPAt	333	0.625	0.630	704	0.562	0.591	0.062	-0.039***
SIZEt-1	332	7.594	7.187	702	7.989	7.632	-0.394***	0.445***
AvΔSALEt-2,t-1	328	492.7	81.352	691	785.1	136.6	-292.4	54.95***
RETt-1	245	0.229	0.110	685	0.202	0.118	0.027	0.008
ROAt-1	329	0.000	0.000	701	0.007	0.000	-0.007	0.000
MTBt-1	245	2.437	1.804	685	2.936	2.371	-0.499***	0.567***
LEVt-1	244	0.570	0.563	685	0.625	0.604	-0.054***	0.041***

Table 4 shows the mean and median differences between the variables under the amortization approach and the impairment-only approach, using a two-tailed test. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively. All variables are defined in Appendix.

Table 5: Operating Performance

	$\Delta ROA_{t-1;\ t+1}$			$\Delta ROA_{t-1;\ t+2}$		
	Coef.	t-stat	p-value	Coef.	t-stat	p-value
GDWL_PPA$_t$	-.0543	-1.56	0.120	-.0311	-1.64	0.104
IFRS	-.0135	-0.85	0.396	-.0339*	-1.72	0.086
GDWL_PPA*IFRS$_t$	.0546*	1.69	0.092	.0382*	1.83	0.069
Materiality$_t$	-.0079	-0.29	0.773	.0248	1.07	0.286
SIZE$_{t-1}$	.0018	0.87	0.384	.0017	0.87	0.385
ΔSALE$_{t;t+1\ or\ t+1,\ t+2}$	-1.32e-06	-1.51	0.132	-2.09e-07	-0.33	0.740
RET$_t$	.0109*	1.79	0.075	.0011	0.18	0.859
RET$_{t+1}$	.0362***	4.04	0.000	.0196**	2.53	0.012
MTB$_{t-1}$	-.0049	-0.62	0.538	-.0011	-0.29	0.775
LEV$_{t-1}$	.0034	0.12	0.901	.0112	0.53	0.600
ROA$_{t-1}$	-.4325***	-5.64	0.000	-.6539***	-10.96	0.000
ΔROA$_{t-2;\ t-1}$	-.2098***	-2.62	0.010	-.2136**	-2.10	0.037
GDWL_Ac$_{t-1}$	-.0189	-0.76	0.446	-.0485**	-2.54	0.012
Constant	-.0278	-0.64	0.520	-.0096	-0.26	0.796
Year Fixed Effects	Yes			Yes		
Industry Fixed Effects	Yes			Yes		
N	837			822		
Adj. R2	0.043			0.066		

Table 5 shows the result of the multivariate OLS regression testing the relation between the adoption of the impairment-only approach and goodwill's representation of future operating performance. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively. Robust standard errors in parentheses. All continuous variables are winsorized on both axes at the one-percent level. There are no signs of multicollinearity; all independent variables have a VIF score below 3.

$$\Delta ROA_{t-1;\ t+1}\ or\ \Delta ROA_{t-1;\ t+2} = \alpha_0 + \alpha_1 GDWL\_PPA_t + \alpha_2 IFRS_t + \alpha_3 GDWL\_PPA_t * IFRS_t + \alpha_4 Materiality_t + \alpha_5 SIZE_{t-1} + \alpha_6 \Delta SALE_{t;\ t+1\ or\ t+1;\ t+2} + \alpha_7 RET_t + \alpha_8 RET_{t+1} + \alpha_9 MTB_{t-1} + \alpha_{10} LEV_{t-1} + \alpha_{11} ROA_{t-1} + \alpha_{12} \Delta ROA_{t-2;\ t-1} + \alpha_{13} GDWL\_Ac_{t-1} + Year\ fixed\ effects + Industry\ fixed\ effects + \varepsilon_t$$

Table 6: Sales Growth

	$\Delta SALE_{t-1;\ t+1}$			$\Delta SALE_{t-1;\ t+2}$		
	Coef.	t-stat	p-value	Coef.	t-stat	p-value
$GDWL\_PPA_t$	-.0210	-0.18	0.858	.0233	0.13	0.894
IFRS	-.1547	-1.03	0.306	-.2336	-0.81	0.420
$GDWL\_PPA*IFRS_t$	.1111	0.80	0.428	.12200	0.58	0.563
$Materiality_t$	1.251***	5.91	0.000	1.537***	5.26	0.000
$SIZE_{t-1}$	-.0527***	-4.07	0.000	-.0989***	-4.61	0.000
RET_t	.4251***	4.21	0.000	.5552***	3.79	0.000
RET_{t+1}	.2049***	4.18	0.000	.6413***	4.93	0.000
MTB_{t-1}	.0692**	2.25	0.026	.1060*	1.88	0.062
LEV_{t-1}	.0140	0.13	0.897	.1208	0.42	0.673
ROA_{t-1}	-.3023	-0.87	0.386	-1.018	-1.16	0.248
$\Delta SALE_{t-2;\ t-1}$	.1605	0.99	0.324	.0724	0.26	0.797
$GDWL\_Ac_{t-1}$	.1155	1.30	0.196	.0435	0.49	0.623
Constant	.2563	1.35	0.178	-.6278	-1.26	0.210
Year Fixed Effects	Yes			Yes		
Industry Fixed Effects	Yes			Yes		
N	843			827		
Adj. R2	0.051			0.050		

Table 6 shows the result of the multivariate OLS regression testing the relation between the adoption of the impairment-only approach and goodwill's representation of future sales growth. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively. Robust standard errors in parentheses. All continuous variables are winsorized on both axes at the one-percent level. There are no signs of multicollinearity; all independent variables have a VIF score below 3.

$$\Delta SALE_{t-1;\ t+1} \text{ or } \Delta SALE_{t-1;\ t+2} = \beta_0 + \beta_1 GDWL\_PPA_t + \beta_2 IFRS_t + \beta_3 GDWL\_PPA_t * IFRS_t + \beta_4 Materiality_t + \beta_5 SIZE_{t-1} + \beta_6 RET_t + \beta_7 RET_{t+1} + \beta_8 MTB_{t-1} + \beta_9 LEV_{t-1} + \beta_{10} ROA_{t-1} + \beta_{11} \Delta SALE_{t-2;\ t-1} + \beta_{12} GDWL\_Ac_{t-1} + \text{Year fixed effects} + \text{Industry fixed effects} + \varepsilon_t$$

Table 7: Stock Return

	RET_{t+1}			$ARET_{t+1}$		
	Coef.	t-stat	p-value	Coef.	t-stat	p-value
$GDWL\_PPA_t$	.0017	0.03	0.980	.0013	0.02	0.984
IFRS	.0904	0.54	0.589	.0880	0.53	0.599
$GDWL\_PPA*IFRS_t$	-.0146	-0.17	0.864	-.0172	-0.20	0.839
$Materiality_t$	.0686	0.80	0.424	.0788	0.88	.4081
$SIZE_{t+1}$	-.0115	-1.29	0.199	-.0117	-1.32	0.189
MTB_{t+1}	.0889***	4.09	0.000	.0876***	4.15	0.000
LEV_{t+1}	.3053***	3.02	0.003	.3150***	3.10	0.002
ROA_{t+1}	.3861**	2.31	0.022	.3806**	2.27	0.024
$\Delta ROA_{t; t+1}$	.9653***	2.82	0.005	.9965***	3.03	0.003
Constant	-.0909	-0.46	0.645	-.4443	-2.26	0.025
Year Fixed Effects	Yes			Yes		
Industry Fixed Effects	Yes			Yes		
N	843			827		
Adj. R2	0.257			0.257		

Table 7 shows the results of the multivariate OLS regression testing the relation between the adoption of the impairment-only approach and goodwill's representation of future stock returns. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively. Robust standard errors in parentheses. All continuous variables are winsorized on both axes at the one-percent level. There are no signs of multicollinearity; all independent variables have a VIF score below 3.

RET_{t+1} or $ARET_{t+1} = \delta_0 + b_1 GDWL\_PPA_t + \delta_2 IFRS_t + \delta_3 GDWL\_PPA_t * IFRS_t + \delta_4 Materiality_t + \delta_5 SIZE_{t+1} + \delta_6 MTB_{t+1} + \delta_7 LEV_{t+1} + \delta_8 ROA_{t+1} + \delta_9 \Delta ROA_{t; t+1} +$ Year fixed effects + Industry fixed effects $+ \varepsilon_t$

Table 8: Tobin's q

	Tobin's q			Tobin's q (alternative)		
	Coef.	t-stat	p-value	Coef.	t-stat	p-value
$GDWL\_PPA_t$	.0828	0.79	0.433	.0411	0.42	0.678
IFRS	-.5254***	-3.80	0.000	-.3614**	-2.40	0.017
$GDWL\_PPA*IFRS_t$	-.0014	-1.18	0.240	-.0015	-1.18	0.239
$Materiality_t$	-.5114***	-3.80	0.000	-.5402***	-4.39	0.000
$SIZE_{t+1}$	-.0396	-1.60	0.110	-.0397**	-1.70	0.090
$\Delta SALE_{t;t+1}$	.0001***	2.86	0.005	.0001***	2.81	0.006
LEV_{t+1}	.0249	0.12	0.906	-.0198	-0.10	0.922
ROA_{t+1}	-.2473	-0.58	0.563	-.1482	-0.35	0.726
$CAPEX_{t+1}$	-.1630	-0.53	0.599	-.3395	-1.57	0.119
$GDWL\_Ac_{t-1}$	-.4750***	-3.34	0.001	-.3113***	-2.62	0.010
TQ_{t-1}	.3413***	5.23	0.000	.3885***	5.57	0.000
Constant	2.388	3.89	0.000	2.073	3.24	0.001
Year Fixed Effects	Yes			Yes		
Industry Fixed Effects	Yes			Yes		
N	829			829		
Adj. R2	0.039			0.044		

Table 8 shows the results of the multivariate OLS regression testing the relation between the adoption of the impairment-only approach and goodwill's representation of future Tobin's q. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively. Robust standard errors in parentheses. All continuous variables are winsorized on both axes at the one-percent level. There are no clear signs of multicollinearity; all independent variables have a VIF score below 3.
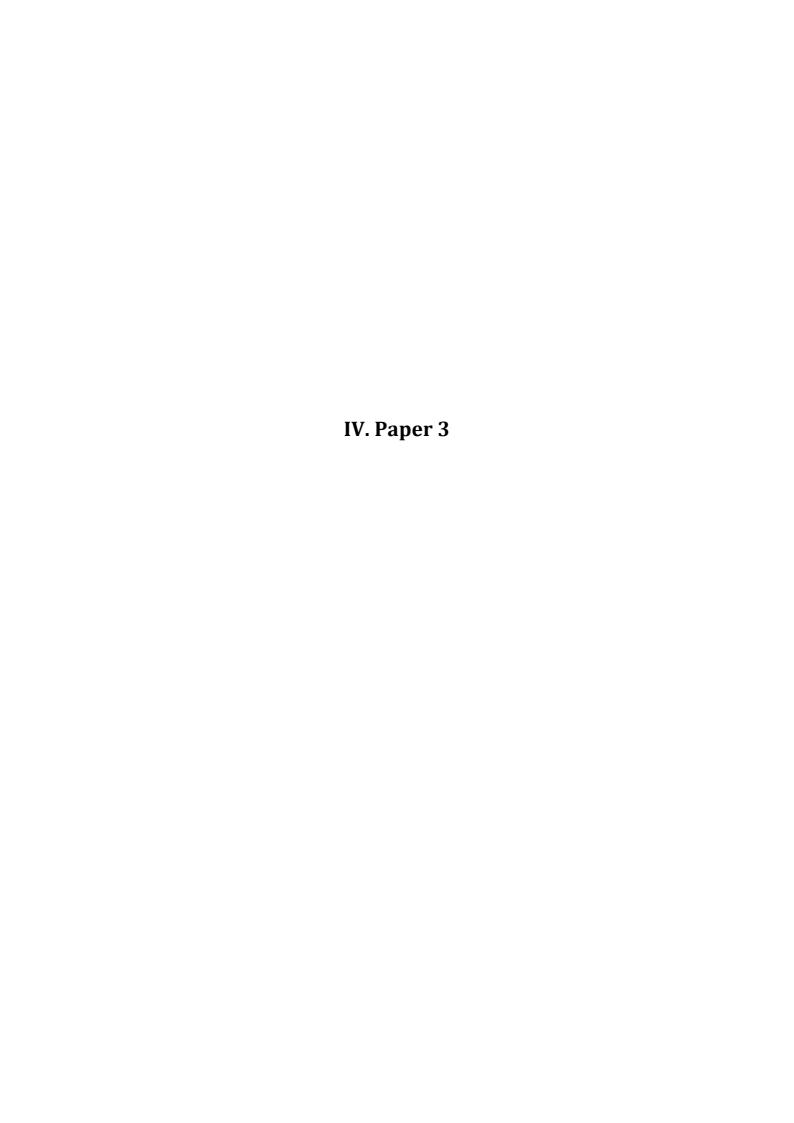
$TQt+1 = \lambda_0 + \lambda_1 \, GDWL_PPA_t + \lambda_2 \, IFRS_t + \lambda_3 \, GDWL_PPA_t * IFRS_t + \lambda_4 \, Materiality_t + \lambda_5 \, SIZE_{t+1} + \lambda_6 \, \Delta SALE_{t;t+1} + \lambda_7 \, LEV_{t+1} + \lambda_8 \, ROA_{t+1} + \lambda_9 \, CAPEX_{t+1} + \lambda_{10} \, GDWL_Ac_{t-1} + \lambda_{11} \, TQ_{t-1} + $ Year fixed effects + Industry fixed effects + ε_t

Table 9: Controlling for Earnings Management on Performance

	ΔROAt-1; t+1			ΔROAt-1; t+2		
	Coef.	t-stat	p-value	Coef.	t-stat	p-value
GDWL_PPAt	-1.043	-0.66	0.510	3.251	1.14	0.257
IFRS	-3.958**	-2.57	0.011	.6086	0.38	0.702
GDWL_PPA*IFRSt	2.308	1.19	0.236	-3.91	-1.24	0.217
Materialityt	-1.605	-1.27	0.206	-.6551	-0.68	0.498
SIZEt-1	.3130	1.54	0.126	.3306	0.92	0.357
ΔSALEt;t+1 or t+1, t+2	-.0001	-0.58	0.562	-.0002	-1.48	0.140
RETt	.5581	0.97	0.334	.0486	0.08	0.933
RETt+1	1.530**	2.43	0.016	.3576	0.51	0.611
MTBt-1	.1698	1.52	0.132	.0028	0.03	0.980
LEVt-1	-1.258	-0.84	0.403	-.5002	-0.36	0.717
ROAt-1	.5790	0.69	0.494	-.06743	-0.08	0.936
ΔROAt-2; t-1	.0221	0.53	0.598	.00332	0.10	0.918
GDWL_Act-1	1.891**	1.62	0.107	-1.4501	-1.22	0.225
ΔDACC	5.6528	1.350	0.179	3.108	1.46	0.147
Constant	-2.146	-0.88	0.381	-2.146	-0.88	0.381
Year Fixed Effects	Yes			Yes		
Industry Fixed Effects	Yes			Yes		
N	564			553		
Adj. R2	0.069			0.036		

Table 9 shows the results of the multivariate OLS regression testing the relation between the adoption of the Impairment-only approach and goodwill's representation of future operating performance, after controlling for discretionary accruals. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively. Robust standard errors in parentheses. All continuous variables are winsorized on both axes at the one-percent level. There are no signs of multicollinearity; all independent variables have a VIF score below 3.

$$\Delta ROA_{t-1; t+1} \text{ or } \Delta ROA_{t-1; t+2} = \alpha_0 + \alpha_1 GDWL\_PPA_t + \alpha_2 IFRS_t + \alpha_3 GDWL\_PPA_t * IFRS_t + \alpha_4 Materiality_t + \alpha_5 SIZE_{t-1} + \alpha_6 \Delta SALE_{t; t+1 \text{ or } t+1; t+2} + \alpha_7 RET_t + \alpha_8 RET_{t+1} + \alpha_9 MTB_{t-1} + \alpha_{10} LEV_{t-1} + \alpha_{11} ROA_{t-1} + \alpha_{12} \Delta ROA_{t-2; t-1} + \alpha_{13} GDWL\_Ac_{t-1} + \alpha_{14} \Delta DACC + \text{Year fixed effects} + \text{Industry fixed effects} + \varepsilon_t$$

IV. Paper 3

Does the Usefulness of Fair-Value Goodwill Accounting Depend on Industry-Specific Growth Opportunities?

Peter Frii

ABSTRACT

In this study, I investigate whether the usefulness of goodwill impairments depends on the firm's industry-specific growth opportunities. There are at least two main reasons why this may be the case. First, SFAS 142 only requires the testing of goodwill impairment when the reporting unit depreciates in value, suggesting that goodwill is only tested when other assets are depreciating. Second, investors are more inclined to investigate managers' accounting in periods of diminishing economic outlook, making managers more prone to present underlying economics. Using two tests related to the usefulness of accounting, I find no evidence that firms with diminishing industry-specific growth opportunities are more likely to impair goodwill. However, I do find that goodwill impairments by firms with diminishing industry-specific growth opportunities provide investors with more value-relevant information. Overall, these results indicate (1) that the delayed reporting of impaired goodwill does *not* reflect a fair application of SFAS 142, but (2) that goodwill impairments are useful to investors when the firm's industry-specific growth opportunities are diminishing.

Keywords: Usefulness; Goodwill impairment; SFAS 142; growth opportunities

1. Introduction

Does the usefulness of fair-value goodwill accounting depend on the firm's industry-specific growth opportunities? While prior research suggests reduced usefulness by providing evidence that impairments tend to lag economic impairments (e.g., Jarva, 2009; Ramanna & Watts, 2012), it is not obvious that the lag reflects managerial opportunism. An alternative explanation could be that the application of the Statement of Financial Accounting Standards (SFAS) 142 during periods of improving growth opportunities delays goodwill impairments, causing a lag as other asset classes appreciate in value. If this is the case, then a fair application of SFAS 142 should only provide useful information about impairments during periods of diminishing growth opportunities.[1] Little is known, however, about the relationship between the usefulness of goodwill impairments and the firm's macro-level growth opportunities. In this study, I investigate whether the usefulness of fair-value goodwill accounting reflects the firm's industry-specific growth opportunities by exploring goodwill-impairment choices and their relevance to investors.

There are a number of arguments why the usefulness of goodwill impairments would depend on the firm's industry-specific growth opportunities, regardless of whether the manager acts opportunistically or not. Assuming that the manager intends to present underlying economics, the SFAS 142 requirement that testing for impaired goodwill shall only be carried out if the reporting unit is impaired suggests that goodwill accounting may lag behind the underlying economics in periods of economic growth. This is because other assets than goodwill at the reporting-unit level typically appreciate (depreciate) in value during periods when the firm's industry-specific growth opportunities are improving (diminishing). Thus, goodwill is less (more) likely to be reported when the firm's industry-specific growth opportunities are improving (diminishing). In addition, SFAS 142 requires the manager to test whether goodwill is impaired more than annually if adverse events arise. This suggests that the manager has to continuously put more emphasis on the valuation of goodwill during a period of diminishing industry-specific growth opportunities, which increases the likelihood that goodwill impairments will reflect underlying economics.

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[1] I define the concept of diminishing growth opportunities as a period when the outlook for macroeconomic indicators related to the firm's potential for economic growth, such as overall sales predictions, is plummeting.

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If the manager, on the other hand, intends to misuse the discretion provided by SFAS 142, it may not be possible to opportunistically delay goodwill impairments when the firm's industry-specific growth opportunities are diminishing. Povel, Singh & Winton (2007) argue that investors are more inclined to investigate a firm's accounting information if its industry-specific growth opportunities are diminishing. Because of the extra scrutiny under these conditions, the manager is more likely to disclose investor-relevant underlying economics. Furthermore, since SFAS 142 is asymmetric in the sense that the firm is only allowed to recognize depreciations, but prohibited from recognizing appreciations and reversals, the manager may not impair goodwill if future appreciations are plausible. Thus, in times of diminishing industry-specific growth opportunities, the manager should perceive future appreciations as less plausible. Overall, these arguments suggest that the manager is less likely to opportunistically delay goodwill impairments in times of diminishing growth opportunities.

Based on the aforementioned arguments, I expect that the usefulness of goodwill impairments will depend on the firm's industry-specific growth opportunities. Specifically, I predict that firms with diminishing industry-specific growth opportunities (1) are more likely to impair goodwill than are firms with non-diminishing industry-specific growth opportunities, and, thus, (2) will provide more value-relevant information to investors. To test these predictions, I exploit the periods prior to and after the start of the financial crises in 2007–2008 and the European sovereign debt crisis in 2010 as possible and observable sources of variation in the manager's decision to impair goodwill, focusing on banks/financial institutions and pharmaceuticals.[2] This is a suitable setting because the core business of banks and financial institutions was severely affected by the financial crises due to fluctuating financial markets (Adrian & Shin, 2008), whereas the core business of the pharmaceuticals should not have directly been affected by the turmoil following the financial crises due to inelastic demand for their services and products.[3]

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[2] The term *Pharmaceuticals* refers to firms belonging to the following sectors: pharmaceutical and biotechnology; Health care equipment and services throughout the paper.

[3] The demand for the products and services of the banking industry has traditionally been cyclical (Levine & Zervos, 1998), whereas the pharmaceutical industry's products and services have been/are relatively insensitive to market fluctuations (Myers & Howe, 1997; Harrington, 2012). Thus, firms in the sector *BANKS & FINANCIALS* will be directly affected by diminishing growth opportunities, while firms in the sector *PHARMACEUTICALS* will not be directly affected by the financial crises.

I start the investigation by testing whether firms with diminishing industry-specific growth opportunities (i.e., *Banks & Financials*) are more likely to impair goodwill relative to *Pharmaceuticals.* To do so, I use an OLS specification where the dependent variable takes the value of 1 if the firm reports impaired goodwill, and 0 otherwise. After controlling for firm-specific growth opportunities, I find that a firm's industry-specific growth opportunities have no significant impact on the likelihood of impairing goodwill. In one case, I find some evidence suggesting that, during the European debt crisis, banks and financial institutions were less likely to impair goodwill. Although the research design of the first test is unable to determine whether *Banks & Financials* or *Pharmaceuticals* are managing goodwill impairments, these findings suggest that delayed goodwill impairments, as found in prior literature, are not due to an overall fair application of SFAS 142. Thus, I am unable, solely using the OLS estimations, to clearly determine whether the usefulness of goodwill impairments to investors improved as the firm's industry-specific growth opportunities diminished.

Accordingly, I test whether goodwill impairments by *BANKS & FINANCIALS* provide more useful information to investors relative to *PHARMACEUTICALS*, using a value-relevance specification. I find that goodwill impairments are negatively and significantly associated with abnormal stock returns when the firm's industry-specific growth opportunities are not diminishing. However, when the firms industry-specific growth opportunities are diminishing, I find that goodwill impairments are positively and significantly associated with stock abnormal returns. These two findings indicate that investors attach higher valuation weight to goodwill impairments when the firm's industry-specific growth opportunities are diminishing. In other words, goodwill impairments are more useful to investors when the industry-specific growth opportunities are diminishing.

I also perform robustness checks and additional tests. I investigate the robustness of the models testing the usefulness of goodwill impairment decisions by changing from *frequency of* impaired goodwill to *total amounts of* impaired goodwill. The test provides no convincing evidence that industry-specific growth opportunities are related to reported goodwill impairment amounts. Thus, the goodwill-impairment decision cannot be linked to investors' higher valuation weight to goodwill impairments found in the of value-relevance tests. Hence, the results indicate that industry-specific economic growth opportunities may have an impact on investors' perception of accounting

information, but it is not necessarily based on a relative change in managerial goodwill accounting choices. Moreover, I use an alternative time frame to include the economic uncertainty during the period 2008–2011 for both model specifications, and find that the main results are robust to this change. I also test the robustness of, for example, unwillingness to impair goodwill and financial leverage. No alternative specifications change the main results of this paper. Finally, I test and find that the significance of the results improves if the sample is refined by only including financial institutions in the second financial crisis, which strengthens the conclusion that goodwill impairments by firms in an industry with diminishing growth opportunities provide more value-relevant information to investors.

This study provides insights into the usefulness of fair-value goodwill accounting and its relationship to the firm's industry-specific growth opportunities. Prior studies have mainly focused on the usefulness of fair-value goodwill accounting without considering the effect of the macroeconomic environment (e.g., Jarva, 2009; Ramanna & Watts, 2012; Muller, Neamtiu & Riedl, 2012). This paper extends our knowledge by providing evidence that the usefulness of fair-value goodwill to investors does depend to some extent on the firm's industry-specific growth opportunities. Thus, the main takeaway from this paper is that goodwill impairments are more useful to investors when a firm's industry-specific growth opportunities are diminishing.

Although this study indicates that managers misuse SFAS 142, it is not possible to determine whether firms in industries with diminishing growth opportunities delay the reporting of goodwill or whether firms in industries with non-diminishing growth opportunities opportunistically accelerate the impairment of goodwill when other industries are suffering from diminishing growth opportunities. Thus, future studies should further explore the underlying economics of goodwill impairment by firms with diminishing growth opportunities. However, the findings of this study are based on a sample of banks and financial institutions, which may not be representative of other industries. Accordingly, an extension of this study should therefore include more industries by using a more general definition of industry-specific growth opportunities (instead of CDS spreads). Finally, this paper only takes the investor-perspective on the usefulness of fair-value goodwill accounting and, thus, does not make any claims about whether SFAS 142 is efficient for other information users.

This paper is organized as follows. Section 2 presents background information and develops the hypotheses. Section 3 presents the sample selection and the research design. Section 4 includes descriptive information, empirical findings, and the sensitivity analyses. Section 5 summarizes and concludes.

2. Background and research hypotheses

2.1 Background to fair-value goodwill accounting

A fundamental idea behind the Financial Accounting Standards Board's (FASB) Conceptual Framework for Financial Reporting is that accounting information should present underlying economics and thus mitigate information asymmetries between managers and users such as investors. In line with this reasoning, the FASB advocates fair-value goodwill accounting on the premise that managers, by disclosing their estimations of future superior earnings related to acquisitions, will better convey concurrent private information to investors (FASB, 1999). Another argument for fair-value goodwill accounting was that it would make the initial valuation of goodwill uniform by only permitting the purchase method. The U.S. Securities and Exchange Commission (SEC), in particular, had expressed concerns about the previous option of choosing between the pooling and the purchase method, arguing that pooling-companies tend to misuse the option to opportunistically avoid systematic-amortization of goodwill.[4]

In 2001, the FASB made fair-value goodwill accounting mandatory practice for most industries through the adoption of SFAS 141 and 142.[5] A year later, with the adoption of SFAS 147, banks were also required to test goodwill on a fair-value basis, thereby making fair-value goodwill accounting pursuant to SFAS 141 and 142 mandatory for all firms following U.S. GAAP, regardless of which industry they belong to. The main

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[4] If the purchase price exceeds the market value of acquired net assets, the chosen method – the pooling method versus the purchase method with mandated yearly amortizations – will have materially different outcomes for future financial statements. While the purchase method will likely result in goodwill, which will be amortized or impaired through the income statements in future periods, the pooling option results in no goodwill, since the acquiring firm records the book value of the target firm's equity. Thus, pooling firms' future income statements will, *ceteris paribus*, likely be overstated if the purchase price exceeds the fair value of acquired net assets.

[5] In 2009, the FASB launched the Accounting Standards Codification (ASC) to replace all authoritative non-governmental standards such as SFAS as the single source of U.S. GAAP. Under the new framework, SFAS 141 is classified as ASC 805 *Business Combinations*; and SFAS 142 is classified as ASC 350 *Goodwill and Other Intangible Assets*.

implication of the adoption of fair-value goodwill accounting is that the subsequent treatment of goodwill is entirely based on impairment tests instead of systematic yearly amortizations.

However, academics and practitioners have voiced concern that, when the subsequent treatment of goodwill is based on the impairment-only approach, goodwill accounting may reflect managers' self-dealing over underlying economics (Watts, 2003; Hlousek, 2002). As noted by Holthausen & Watts (2001), the reliability and relevance of complex unverifiable accounting disclosures (e.g., goodwill) is dependent on managers' incentives to present unbiased information, suggesting that opportunistic managers are likely to manipulate goodwill items in particular. Underlying these concerns about the timeliness of goodwill impairment, and inadequate goodwill-impairment disclosures, is the supposition that managers' goodwill accounting will be unreliable. On the other hand, with the additional discretion provided by SFAS 141 and 142, it is possible for non-opportunistic managers to provide users with credible information about goodwill and thereby reduce the information asymmetry between managers and information users (Watts, 2003).

2.2 Accounting for goodwill under SFAS 141 and 142

Since SFAS 141 requires the initial valuation and allocation of acquired assets to be based on the purchase method, goodwill is defined as the difference between the purchase price and the fair value of purchased net assets. SFAS 142 requires managers, at least annually, to test goodwill for impairment at the reporting unit level on a fixed date initially chosen by the manager. The impairment test is divided into two separate steps; Step one compares the fair value of the reporting unit, including capitalized goodwill, with its carrying amount (i.e. book value); Step two is only considered if the carrying amount exceeds the fair value of the reporting unit in step one, since it indicates a need for further investigation. Impaired goodwill should be reported if the investigation in step two indicates that the book value of goodwill exceeds its fair value. One important feature related to SFAS 142 is that the valuation of goodwill is asymmetric in the sense that firms are only allowed to report depreciations, but are prohibited from reporting appreciations or reversals of previous write-downs of goodwill. In addition, if extraordinary events arise, SFAS 142 requires managers to test for goodwill impairment more than once during a year.

2.3 Research hypotheses

In contrast to the FASB's expectations, most prior research provides evidence suggesting that managers opportunistically delay goodwill impairments (e.g., Churyk, 2004; Hayn & Hughes, 2006; Bens, Heltzer & Segal, 2007; Ramanna & Watts, 2012; Muller et al. 20012). Li & Sloan (2017), for instance, find that goodwill impairments tend to peak when operating margins are *unusually* low, implying that managers' accounting choices depend on investors' understanding of the underlying value of goodwill. Moreover, Muller et al. (2012) find that managers of goodwill-impairment firms are more likely to earn abnormal returns on insider trading prior to announcements of impairment, suggesting that managers understand and deliberately delay goodwill impairments in pursuit of private gain.

Although most prior research finds that managers tend to misuse SFAS 142, no prior study has investigated how diminishing growth opportunities affect goodwill accounting choices and their relevance to investors. There are at least two key arguments why goodwill impairments could better reflect underlying economics when the firm's industry-specific growth opportunities are diminishing. First, delayed goodwill impairments may (instead of managerial opportunism) reflect the complexity of testing goodwill for impairment under SFAS 142. This line of reasoning could explain why Jarva (2009), for instance, finds that, although the goodwill impairments tend to lag behind economic impairments, they cannot be linked to managerial opportunism.

Because SFAS 142 only requires managers to test whether goodwill is impaired if the reporting unit is impaired, goodwill may, assuming that managers are acting in the best interest of information users, be more likely to concurrently reflect underlying economics when other assets than goodwill are depreciating. In other words, since other assets than goodwill at the reporting unit level typically depreciate (appreciate) in value during periods when the firm's industry-specific growth opportunities are diminishing (improving), the firm is more (less) likely under these conditions to test for impaired goodwill. Thus, provided that managers do not value goodwill opportunistically, goodwill impairments are more likely to be made when assets other than goodwill at the reporting unit level are not appreciating, since the first step of the impairment testing of SFAS 142 is less likely to delay the second step of the impairment test.

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Another argument for why goodwill impairments by firms in industries with diminishing growth opportunities could better reflect the underlying economics is that managers are unable to act from opportunistic motives when overall growth opportunities are diminishing. For example, Povel et al. (2007) provide proofs that, since investors are more inclined to investigate accounting information reported by firms with diminishing industry-specific growth opportunities, managers are more likely to disclose investor-relevant underlying economics under these conditions. Moreover, since, pursuant to SFAS 142, managers are not allowed to recognize gains or reversals, opportunistic managers may misuse the discretion provided by the standard to avoid goodwill impairments unless it is absolutely clear that no future appreciations are plausible. Consequently, goodwill impairments are more likely to concurrently reflect underlying economics when the firm's overall growth opportunities are diminishing, since managers are forced by the investors' strengthened monitoring activity to impair goodwill.

Accordingly, regardless of whether goodwill impairments are delayed because of the complexity of the impairment-test procedure under SFAS 142 or because of managerial opportunism, I expect diminishing industry-specific growth opportunities to have an impact on goodwill accounting choices. Specifically, I predict that firms are more likely to impair goodwill if their industry-specific growth opportunities are diminishing, since (1) other assets are less likely to delay the impairment test of goodwill, or (2) opportunistic managers are forced to impair goodwill as investors strengthen their monitoring activity. These arguments lead to the first research hypothesis, stated in alternative form:

H1: *Firms with diminishing industry-specific growth opportunities are more likely to impair goodwill than are firms with non-diminishing industry-specific growth opportunities.*

Because accounting will only provide relevant information to investors when it reflects underlying economics, I expect the value relevance of goodwill to increase when the firm's industry-specific growth opportunities are diminishing. This is because, when the manager impairs goodwill based on underlying economics, this will interact with investors' adjustments of their valuation of the firm's equity. These arguments lead to the second research hypothesis stated in alternative form:

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H2: *Goodwill impairments by firms in industries with diminishing growth opportunities provide more value-relevant information to investors.*

3. Sample selection and research design

3.1 Sample selection

3.1.1 Setting for the empirical analyses

The recent financial crises provide an opportunity to test whether goodwill impairments convey more useful information to investors if the firm's industry-specific growth opportunities are diminishing. What makes the financial crisis a suitable setting is that at least two industries are disparately affected by its repercussions. Banks and financial institutions were severely affected by the financial crisis since their core business depends on resilient financial markets (Adrian & Shin, 2008). The core business of the pharmaceutical industry, on the other hand, was probably not affected by the turmoil following the start of the financial crisis due to inelastic demand for pharmaceutical services and products.

Thus, while demand for products and services of the banks and financial institutions has traditionally been cyclical (Levine & Zervos, 1998), the pharmaceutical industry's products and services are relatively insensitive to market fluctuations (Myers & Howe, 1997; Harrington, 2012). In addition, due to increased operating costs as a result of regulatory and legislative changes (Standard & Poor's, 2012), investors in banks and financial institutions are more likely to be prone to investigate each firm's earnings prospects, focusing on items relevant to the valuation of goodwill, such as operational risk, future growth, and competition.

3.1.2 Data collection

On Datastream, I identify U.S. firms with capitalized goodwill on their balance sheet during the period 2002–2012 and that belong to one of the following four sectors: Banks; Financial Services; Healthcare Equipment and Services; and Pharmaceuticals and Biotechnology (the latter two are referred to as pharmaceuticals). The starting point of the period, 2002, coincides with the adoption of SFAS 147 - the standard that required American-listed banks to apply fair-value goodwill accounting. The end point

is set to 2012 to include the full effects of the negative economic outlook that followed the start of the financial crisis in mid-2007.

I further restrict the sample to firms complying with U.S. GAAP and that are listed on the three major U.S. stock markets (i.e. New York stock exchange, NYSE MKT, and NASDAQ). I mitigate survivorship bias by including companies categorized in *Datastream* as either *dead*, *suspended*, or *delisted* if they show any sign of being active during any year in the studied period. All components related to financial reporting information and abnormal stock returns were retrieved from Worldscope.

In addition, I restrict the sample by only including data from 2003–2012. The reason why I do not include the year when fair-value goodwill accounting was implemented (i.e., 2001 for pharmaceuticals and 2002 for banks) is, (1) that 2001 and 2002 may include accounting choices associated with the aftermath of the bursting of the IT bubble, which would include crisis-accounting choices in my period of stability and certainty. (2) and, more importantly, that banks were not allowed to report fair-value goodwill impairments prior to 2002. Thus, by excluding 2002, I also avoid comparing the transition year to fair-value goodwill accounting for banks to pharmaceuticals' non-transition-year of fair-value goodwill accounting.[6] Because some firm-years include capitalized goodwill but report goodwill impairments as *#NA*, I use SEC's database EDGAR to manually investigate and correct for all *#NA* that are equivalent to non-goodwill impairment. After adjusting for delisted firms and bankruptcies, this leads to a final sample of 777 firm-years, including 262 firm-years for banks, 163 firm-years for financial institutions, 79 firm-years for pharmaceuticals and biotechnology, and 273 firm-years for health care equipment and services.[7]

3.2 Growth opportunities and the decision to impair goodwill

I now turn to the empirical model that assesses whether banks and financial institutions were more likely to report impaired goodwill compared to pharmaceuticals during the period of financial crises (i.e., hypothesis H1). I use the following OLS model to examine the cross-sectional determinants:[8]

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[6] For an in-depth discussion about the difference between the transition-period and post-transition period when studying goodwill accounting, see for example Li, Shroff & Venkataraman (2011).

[7] The final sample size varies depending on the specification of each empirical model.

[8] The variables in model 1 are also defined in Appendix A.

$$D\_IMPGW_{it} = \phi_0 + \phi_1 \, BF_{it} + \phi_2 \, CRISIS \, 1 + \phi_3 \, CRISIS \, 2 + \phi_4 \, CRISIS \, 1\_BF_{it}$$

$$+ \, \phi_5 \, CRISIS \, 2\_BF_{it} + \phi_6 \, SIZE_{t-1} + \phi_7 \, GW\_TA_{t-1} + \phi_8 \, BTM_{t-1}$$

$$+ \, \phi_9 \, D\_BTM_{t-1} + \phi_{10} \, PRE\_E_t + \phi_{11} \, LOSS_t + \phi_{12} \, D\_RETURN_t$$

$$+ \, \phi_{13} \, D\_RETURN_t{}^*R_t + \phi_{14} \, D\_RETURN_{t-1} + \phi_{15} \, D\_RETURN_t{}^*R_{t-1} + \varepsilon_{it} \quad (1)$$

The OLS estimations of model (1) are based on two samples – one compares banks with pharmaceuticals; and the other compares banks and financial institutions with pharmaceuticals. Following prior studies on the likelihood of reporting goodwill impairments (e.g., Jarva, 2009), I use a sample of impairment firms and non-impairment firms that are either banks/financial institutions or pharmaceuticals. By including all firms in the industries chosen for this study and using their impairment decisions (impairment versus non-impairment) as the dependent variable and controlling for firm-level characteristics, I assess whether banks and financial institutions significantly changed the likelihood of impairing goodwill during the financial crises relative to pharmaceuticals.

The dependent variable (*D_IMPGW*) is an indicator variable equal to 1 if firm *i* impairs goodwill in year *t* during the sample period 2003–2012, and 0 otherwise. The primary variables of interest are the indicator variables *BF*, *CRISIS 1*, and *CRISIS 2*, and the interaction variables *CRISIS 1 _BF*, and *CRISIS 2 _BF*. *BF* is intended to capture whether banks (BANKS sample) and banks and financial institutions (BANKS & FINANCIALS sample) are more likely to impair goodwill than the pharmaceuticals during the sample period, 2003–2011. *CRISIS 1* and *CRISIS 2* are intended to capture likelihood of firms' goodwill impairments as a direct result of the financial crises, regardless of which of the two industries or the four sectors they belong to.

The definitions of the indicator variables *CRISIS 1* and *CRISIS 2* are primarily based on credit default swap (CDS) spreads. Based on CDS spreads, the financial crisis started on July 1, 2007, and ended on March 31, 2009, which was later followed by an unstable and uncertain period with a negative economic outlook for most industries (Casu & Chiaramonte, 2012). *CRISIS 1* is an indicator variable equal to 1 for 2008–2009, and 0 otherwise; *CRISIS 2* is an indicator variable equal to 1 for 2011, and 0 otherwise. The reason I do not include the second half of 2007 is, first that, as acknowledged by Povel et al. (2004), investors tend not to immediately respond to new economic conditions, and, second, prior studies conclude that the goodwill impairment tends to lag the

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economic impairment by up to one year (e.g., Jarva, 2009). The European debt crisis in 2010 fueled investors' fear about future financial stability across the world, causing a diminishing economic outlook for, in particular, the financial industry (Gianviti, Krueger & Pisani-Ferry, 2010, Candelon & Arezki, 2011). For the same reason as for *CRISIS 1*, I treat the variable *CRISIS 2* as a leading variable for one year, thus, defining year 2011 as *CRISIS 2*.

Because the literature is sparse on the topic, I have no theoretical guidance on how BF will affect the likelihood of goodwill impairments, and, thus, I do not predict any sign for ϕ_1. The indicator variables *CRISIS 1* and *CRISIS 2* are intend to measure the likelihood of goodwill impairments due to financial turbulence during the first and second financial crises. Because economic turbulence will attract reinforced monitoring activity, I predict positive coefficients for ϕ_2, and ϕ_3. The interaction variables *CRISIS 1_BF* and *CRISIS 2_BF* are intended to measure the likelihood of whether banks (*BANKS* sample) and banks and financial institutions (*BANKS & FINANCIALS* sample) change the frequency of goodwill-impairments as a direct effect of the financial crisis. Based on hypothesis H1, I predict that the coefficients ϕ_4 and ϕ_5 will be significant and positive.

I also include variables to control for other potential determinants related to the frequency of goodwill impairments. First, I include firm size (*SIZE*) to control for size-effects, defined as the logarithm of the beginning-of-the-period market value of the firm's equity. Based on prior literature (e.g., Ramanna & Watts, 2012), I expect larger firms to be more likely to impair goodwill, leading to a predicted positive sign for ϕ_6. In addition, I include the goodwill-to-total-assets ratio (*GW_TA*), defined as the beginning-of-the-period capitalized goodwill scaled by the beginning-of-the-period total assets. Based on prior studies (e.g., Muller et al, 2012), I predict that companies with larger goodwill balances are more likely to impair goodwill, especially during periods of diminishing growth opportunities, leading to a predicted positive sign for ϕ_7.

I further include book-to-market ratio (*BTM*) as a proxy for firm-specific growth opportunities. The reason for including *BTM* and controlling for firm-specific opportunities is to avoid biased conclusions about industry-specific behavior relating to the financial crisis, which in reality are related to firm-specific behavior. In the literature, firms with book-to-market ratios above one are expected to impair goodwill (e.g., Ramanna & Watts, 2012), I capture this effect with the indicator variable (*D_BTM*), taking the value of 1 if *BTM* is above 1, and 0 otherwise (Jarva, 2009). Thus, I predict

positive and statistically significant coefficients (ϕ_8 and ϕ_9) for the *BTM* variables. Moreover, I use earnings before goodwill impairments (*PRE_E$_t$*) to measure the general performance of the firm (Jarva, 2009). Further, by including the dichotomous variable (*LOSS$_t$*), I control for firm-specific financial distress. *LOSS* takes the value of 1 if *PRE_E$_t$* is less than 0, and otherwise 0. Thus, I expect the signs of ϕ_{10} and ϕ_{11} to be positive.

Finally, I include the interaction *D_RETURN$_t$*R$_t$* to control for negative stock return, where the indicator variable *D_RETURN$_t$* equals 1 if year-end stock return *R$_t$* is negative, and 0 otherwise. *D_RETURN$_t$*R$_{t-1}$* is the past year control for information about economically impaired goodwill. The underlying logic of using negative stock return is that it should signal information about economically impaired goodwill, and, thus, *D_RETURN$_t$* controls for information about economically impaired goodwill (Jarva, 2009). Since negative stock return informs investors about economically impaired goodwill, I expect the signs of ϕ_{12}, ϕ_{13}, ϕ_{14}, ϕ_{15} to be negative (Jarva, 2009).

3.3 Growth opportunities and the value relevance of goodwill impairments

I now turn to the empirical model that investigates whether investors attach higher value weight to goodwill impairments when the firm's industry-specific growth opportunities are diminishing (i.e., hypothesis H2). To measure the relevance of goodwill impairment before and after the financial crises in 2008–2009 and 2011, respectively, I estimate the following panel-data regression, focusing on the yearly change in abnormal return and goodwill impairments. The main reason why I focus on change (instead of level) is that the size of goodwill relative to total assets is typically large for pharmaceuticals and small for banks. Note that all variables are firm-specific, and I deflate all independent variables, as suggested by Easton & Sommers (2003) by the market value of the firm's equity in April 1 year *t*:[9]

$$\text{ABRET}_{it} = \gamma_0 + \gamma_1 \text{ CRISIS 1} + \gamma_2 \text{ CRISIS 1} + \gamma_3 \Delta\text{EARN\_IMP}_{it} + \gamma_4 \Delta\text{GWIMP}_{it}$$
$$+ \gamma_5 \Delta\text{IMP\_BF\_CRISIS 1} + \gamma_6 \Delta\text{IMP\_BF\_CRISIS 2} + \gamma_7 \Delta\text{IMP\_BF}$$
$$+ \gamma_8 \Delta\text{IMP\_CRISIS 1} + \gamma_9 \Delta\text{IMP\_CRISIS 2} + \gamma_{10} \text{ BF\_CRISIS 1}$$
$$+ \gamma_{11} \text{ BF\_CRISIS 2} + \gamma_{12} \text{ D\_NEARN} + \gamma_{13} \text{ D\_NEARN\_EARN} + \varepsilon_{it} \qquad (2)$$

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[9] Since model 2 is based on a fixed-effect specification, the time invariant indicator variable BF is dropped. Untabulated additional tests using a random-effect specification show that the inclusion of BF does not change the results presented in section 4.3. All variables are also defined in Appendix B.

Like model (1), the panel-data regression (i.e., model 2) is based on two samples – one comparing banks with pharmaceuticals (BANKS sample), the other comparing banks and financial institutions with pharmaceuticals (*BANKS & FINANCIALS* sample).

The dependent variable *ABRET* is defined as the difference between the dividend-adjusted stock return of firm *i* and the corresponding dividend-adjusted return of its sector. To calculate the return of each sector, I use FTSE USA indices for banks, financial services, healthcare equipment and services, and pharmaceuticals and biotechnology, focusing on the yearly change in the value-weighted industry market index. In order to avoid hindsight bias, I calculate the stock return as the yearly change as of the first of April. The indicator variables *CRISIS 1* and *CRISIS 2* control for whether abnormal returns were affected by the financial crises in 2008–2009 and 2011.[10] Although a period of economic crisis is, on average, associated with evaporating market liquidity and negative stock return, it is unclear whether it has any effect on the individual firm's abnormal returns after adjusting for their industry's average return. I therefore do not make any predictions about the signs γ_1 and γ_2.

Since model 2 is based on the change in abnormal return measures, I follow Hamberg and Beisland (2011) by extracting year-to-year change in goodwill (*ΔGWIMP*) from the year-to-year change in reported earnings (*ΔEARN*). Since model (2) assumes abnormal returns to be a function of the year-to-year change in earnings before goodwill impairments, I predict that the sign for γ_3 will be positive. However, since goodwill impairments are in positive amounts, and assuming that goodwill normally signals weakening future accumulated operating cash flows, I predict that the sign of γ_4 will be negative.

The primary variable of interest is goodwill impairments reported by banks and/or financial institutions in the periods CRISIS 1 and CRISIS 2 (i.e., *ΔIMP_BF_ CRISIS 1* and *ΔIMP_BF_ CRISIS 1*). The variables are based on the interaction between the year-to-year change in goodwill impairments *ΔGWIMP*, the indicator variable for financial institutions and/or banks (*BF*) and the two periods of financial crisis (i.e., *CRISIS 1* and *CRISIS 2*). The purpose of these interaction variables is to distinguish whether goodwill impairments by banks and/or financial institutions reduce the negative association between abnormal returns and goodwill impairments during periods when the firm's industry-specific growth opportunities are not diminishing. If goodwill impairments

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[10] For a discussion about the definition of *CRISIS 1* and *CRISIS 2,* see section 3.2

only provide information about underlying economics to investors when the firm's industry-specific growth opportunities are diminishing, I predict that $\Delta IMP\_BF\_CRISIS\ 1$ and $\Delta IMP\_BF\_CRISIS\ 2$ will be positively associated with abnormal returns. That is, I expect the signs of γ_5 and γ_6 to be positive.

I also include a number of control variables. First, I control for goodwill impairments by banks/financial institutions ΔIMP_BF, as well as for goodwill impairments during the first and second financial crisis (i.e., $\Delta IMP\_CRISIS\ 1$ and $\Delta IMP\_CRISIS\ 2$) to avoid drawing wrong conclusions about the primary variable of interest. I do not have any expected signs for γ_7, γ_8, and γ_9. I control for the relevance of banks and financial institutions during the first and second financial crises (i.e., BF_CRISIS 1 and BF_CRISIS 2), in which connection I have no expectation of regarding the relation to abnormal returns (i.e., γ_{10} and γ_{11})

Since losses are a poor predictor of future performance of going concerns (Hayn, 2010; Ball & Shivakumar, 2006)[11], I use the dichotomous variable (D_EARN) to control for negative earnings. D_EARN takes the value of 1 if net profit of firm i is negative in year t, and 0 otherwise. I further interact D_NEARN with firm-years and with negative earnings (NEG_EARN), resulting in (D_NEARN_EARN) (Francis, Schipper & Vincent, 2003). Since losses have a negative impact on returns, I predict that the coefficient γ_{12} of D_NEARN will be negatively associated with abnormal returns, whereas the coefficient γ_{13} of D_NEARN_EARN is, because of its definition (i.e., negative amounts), positively associated with abnormal returns.

4. Empirical analyses

4.1 Descriptive statistics

Table 1 presents descriptive information about goodwill impairments by banks/financials and pharmaceuticals. Panel A reveals that goodwill impairments are reported more frequently during the period following the financial crisis; roughly 80% (99 of 122) of all goodwill impairments were reported in the second half of the sample period, i.e., 2008–2012. Banks and Financial Services firms appear to impair goodwill more frequently in the two years immediately following the start of the first financial

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[11] Since accrual accounting requires the firm to continue in future periods (i.e., the going-concern criterion), losses cannot be part of an indicative trend without violating the going-concern criterion. I, therefore, treat all losses as temporary events.

crisis, i.e., 2008–2009. Pharmaceuticals, on the other hand, seem to continue impairing goodwill at a higher "crisis-frequency" for a longer period, 2008–2011. For the sample period 2003–2012, the amounts of the 122 reported goodwill impairments range from USD 57 thousand to roughly USD 1 billion. More specifically, (i) Banks reported a total of 32 impairments (2 before the start of the financial crisis), and the reported goodwill impairment amounts range from USD 57 thousand to around USD 250 million; (ii) Financial Services reported a total of 38 impairments (12 before the start of the financial crisis), and the reported goodwill impairment amounts range from USD 1.3 million to USD 1 billion; (iii) Pharmaceuticals and Biotechnology reported a total of 13 impairments (2 before the start of the financial crisis), ranging in amounts from USD 565 thousand to USD 400 million; (iv) Healthcare Equipment and Services firms reported a total of 39 impairments (7 before the start of the financial crisis), and the reported goodwill impairment amounts range from USD 185 thousand to roughly USD 1 billion.

Panel B presents the firm frequency of goodwill impairments for each sector. Of the 101 sample firms, 86 reported impaired goodwill at least once during the period. Consistent with prior studies (e.g. Muller et al., 2012), the majority (63 firms, or 73% of all impairment firms) of the sample-firms reporting goodwill only report one-time impairments during the period. However, some firms impaired goodwill multiple times during the period; one financial firm, for instance, impaired goodwill eight times during the sample period of 10 years.

Table 2 presents univariate comparisons for the three samples (*BANKS*; *BANKS & FINANCIALS*; and *PHARMACEUTICALS*). The change in goodwill impairments (ΔGWIMP) is larger among pharmaceuticals than among banks or banks/financial institutions (B&F). From the start of the financial crisis, the change in goodwill impairments by banks and financial institutions (*ΔIMP_BF_UNCER*) seems to have increased. The indicator variable for negative earnings (*D_EARN*) reveals that earnings below 0 are more common in the pharmaceutical industry (35% of the observations), whereas roughly 20% of the sampled firm-years of banks and banks/financial institutions reported earnings below 0. The total reported amount of negative earnings adjusted by the market value of the firm's equity (D_NEARN_EARN) also reveals that pharmaceuticals, on average, report larger losses over the sample period.

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Furthermore, pharmaceuticals have a larger proportion of goodwill relative to total assets (GW_TA) than banks and financials. However, banks and financial institutions are, based on their book-to-market ratio (BTM), more likely on average to impair goodwill than are pharmaceuticals, which suggests that the banking/financial industries' goodwill is under more pressure. The frequency of firms with a BTM above one is roughly 45% among banks, 39% among banks/financial institutions, and only 16.5% among pharmaceuticals.

4.2 Growth opportunities and the decision to impair goodwill

Table 3 presents the results for the analysis of goodwill impairment reporting frequency (D_IMPGW) from the OLS regression,[12] consisting of two subsamples – *BANKS*, and *BANKS & FINANCIALS*. Note that the variable *BF* is the indicator variable for banks in the BANKS sample, and is the indicator variable for banks and financial institutions in the BANKS & FINANCIALS sample. Under both tests, pharmaceuticals are used as a benchmark. Neither sample shows any strong signs of multicollinearity. In the BANKS sample, no variable has a VIF score above 3; and in the *BANKS & FINANCIALS* sample all VIF scores are below 2.5.[13]

I start the analysis by comparing banks with pharmaceuticals in Table 3 (column *BANKS*, N= 409) and the likelihood of goodwill impairments (*D_IMPGW*). After controlling for firm-specific characteristics and other variables that prior literature has found relevant to explaining the likelihood of goodwill impairments, I find conflicting results as regards whether firms with diminishing industry-specific growth opportunities are more (or less) likely to report impaired goodwill. Specifically, I find that banks' *BF* in general and during the first financial crisis *CRISIS 1_BF* are positively associated with impairing goodwill, while, during the second financial crisis, *CRISIS 2_BF* is negatively associated with the likelihood of impairing goodwill. However, *CRISIS 1* and *CRISIS 2* are positive and significant at the 5%-level and 1%-level, respectively, suggesting that goodwill impairments are more likely in times of financial crisis.

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[12] Table 3 also includes the results from Logistic regressions, using the same variable specifications.

[13] Tables 8 and 9 report the pairwise correlations between the independent variables. The interaction variables (*CRISIS 1_BF* and *CRISIS 2_BF*) are correlated with other variables, and have the "highest" VIF scores of 2.48 and 2.34, respectively, in the BANKS & FINANCIALS sample. In the BANKS sample, the variables BTM_{t-1} and D_BTM_{t-1} have the highest VIF scores of 2.95 and 2.43, respectively. All other independent variables have VIF scores below 2.

Among the control variables, the relative size of the goodwill GW_Ta_{t-1} and the size of the firm *SIZE* are positively associated with goodwill impairments at the 10%-level and 1%-level, respectively, while *PRE_E* is negatively associated with the likelihood of impairing goodwill at the 1%-level. Moreover, *D_RETURN*R* is negatively associated at the 1%-level.

Turning to the *BANKS & FINANCIALS* sample in Table 3 (N= 516), I find some evidence suggesting that firms with diminishing industry-specific growth opportunities are less likely to impair goodwill. In particular, banks and financial institutions (i.e., firms with diminishing industry-specific growth opportunities) are less likely to impair goodwill in the second financial crisis *CRISIS_2*BF*. However, banks and financial institutions *BF* are not more (or less) likely to impair goodwill. Similar to the first analysis of the BANK sample, the first financial crisis is positively but insignificantly associated with, and the second financial crisis *CRISIS 2* has a positive effect on, the likelihood of reporting goodwill impairments at the 5%-level.

I also find that goodwill in relation to total assets (GW_TA) has a positive impact on the likelihood of impairing goodwill, which is consistent with the notion that firms with larger goodwill are more likely to report impairments. The size of the firm, *SIZE,* is positively associated with reporting impaired goodwill at the 10%-level, while negative returns in period *t* seem to increase the likelihood of impairing goodwill, and D_RETUNRN*R_t is negatively associated at the 1%-level, indicating that a current negative return has an impact on the likelihood of impairing goodwill.

Overall, I find no convincing evidence suggesting that firms with diminishing industry-specific growth opportunities are more likely to impair goodwill than are firms in industries with non-diminishing growth opportunities. In fact, I find some evidence that banks and financial are less likely to impair goodwill during the second period of financial crisis (CRISIS 2) at the 5%-level. Although the direction of *CRISIS 1_BF* is, as expected, positive (i.e., consistent with hypothesis H1), it is not statistically significant. These results indicate that prior findings of delayed reporting of goodwill impairments are probably not related to the complexity of the goodwill impairment test under SFAS 142. However, these tests are not able to determine whether any industry (i.e., *BANKS & FINANCIALS* vs. *PHARMACEUTICALS*) is on average misusing the discretion offered by SFAS 142.

4.3 Growth opportunities and the value relevance of goodwill impairments

Table 4 presents the results of the assessment of whether goodwill impairments provide more value-relevant information to investors when reported by banks and financial institutions in CRISIS 1 and CRISIS 2. As in section 4.2, the first column focuses on the value relevance of reported goodwill impairments by banks relative to pharmaceuticals (i.e., the BANKS column), and the second column compares the value relevance of reported goodwill impairments by banks and financial institutions with pharmaceuticals (i.e., the *BANKS & FINANCIALS* column). In both analyses, all estimates are based on robust standard errors and I have winsorized the sample by 1%. Neither sample shows any clear sign of multicollinearity. In the BANKS sample, no variable has a VIF score above 3; and in the *BANKS & FINANCIALS* sample all VIF scores are below 5.[14]

Focusing on the sample that compares goodwill impairment by banks and pharmaceuticals (column BANKS, N = 471), the periods of crisis, *CRISIS 1* and *CRISIS 2*, are both negatively associated with abnormal returns at the 10%-level, suggesting that investors in firms with diminishing industry-specific growth opportunities put less weight on their valuation. Earnings before impaired goodwill (*ΔEARN_IMP*) are positively associated (t-statistic = 2.20) with abnormal returns, which is, *ceteris paribus*, consistent with the notion that higher earnings attract more investments relative to other firms in the industry/sector. The coefficient of the indicator variable for negative earnings (*D_EARN*) is significantly negative (t-statistic = -3.43), which is consistent with the expectation that losses make a firm less attractive to investors relative to other firms in the industry/ sector. Goodwill impairments (*ΔGWIMP*) are negatively associated with abnormal returns, but not statistically significant (t-statistic = -1.61), when the firm's industry-specific growth opportunities are not diminishing. Moreover, the coefficient of the interaction variable *D_NEARN_EARN*, which takes the value of the reported loss or otherwise 0, is not statistically significant.

Regarding the variable of interest, goodwill impairments by banks in the period of CRISIS 1, *ΔIMP_BF_CRISIS 1* is positively associated with abnormal returns (coefficient =

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[14] Tables 10 and 11 present the pairwise correlations of the independent variables of the value relevance tests. The tables show that the interaction variables moderately correlate with the underlying variables. However, the VIF scores show no strong signs of problems with multicollinearity, suggesting that regression coefficients can be used to estimate the value relevance of goodwill impairments. In the BANKS sample, *ΔGWIMP* has the highest VIF score of 2.79, and most of the interaction variables have a VIF score of around 2. In the BANKS & FINANCIALS sample *ΔGWIMP* has the highest VIF score of 4.98. The interaction variables in the sample have VIF scores of around 2 and 3. All other independent variables have VIF scores below 2.

0.701, t-statistic = 3.58). *ΔIMP_BF_CRISIS 2,* however, is not associated with abnormal returns (coefficient = 0.603, t-statistic = 1.57). These findings are in line with my prediction that investors attach more value to goodwill impairments when the firm's industry-specific growth opportunities are diminishing, indicating that goodwill impairments under these conditions are more useful to investors.

Table 4 (the *BANKS & FINANCIALS* column, N = 581) reveals similar results as for the sample consisting of banks versus pharmaceuticals (*BANKS*). However, the interaction variable *D_NEARN_EARN* is now positively significant, as predicted. Furthermore, goodwill impairments *ΔGWIMP* are now negatively associated with abnormal returns at the 1%-level. Interestingly, goodwill impairments by banks and financial institutions during CRISIS 1 *ΔIMP_BF_CRISIS 1* are still positively associated with abnormal returns (t-statistic = 4.24). However, goodwill impairments by banks and financial institutions (*ΔGWIMP_BF_CRISIS 2*) during *CRISIS 2* are now positively associated with abnormal returns (t-stat = 1.90), but only at the 10%-level. The latter finding is consistent with my expectation that goodwill impairments are more value-relevant when a firm's growth opportunities are diminishing. By including financial institutions, which were more likely to be affected by the European sovereign debts crises, the value relevance of the impairment changed to significant and positive. Thus, investors attach more weight to the valuation of goodwill impairments when the firm's industry-specific growth opportunities are diminishing.

Overall, I find that goodwill impairments by firms with diminishing industry-specific growth opportunities are positively associated with abnormal returns at the 1%-level. This finding indicates that goodwill impairments reduce the uncertainty and the information asymmetry between managers and investors when banks' industry-specific growth opportunities are diminishing. In addition, goodwill impairments by banks and financial institutions in the first and second financial crisis (CRISIS 1 and CRISIS 2) are positively associated with abnormal returns at the 1%-level and the 10%-level, respectively. These results further strengthen the above conclusion, which indicates that firms with diminishing industry-specific growth opportunities provide more useful information to investors through goodwill impairments.

4.4 Additional tests

4.4.1 Diminishing growth opportunities and goodwill impairment amounts

The test of hypothesis H1 conducted by comparing frequencies of reported goodwill impairments does not necessarily provide reliable evidence. This is because managers could, in addition to increasing the frequency of reported goodwill impairments, also increase the amount of impaired goodwill. Thus, I also test whether goodwill impairment amounts may be linked to the firm's industry-specific growth opportunities by applying the following OLS specification:[15]

$$T\_IMPGW_{it} = \psi_0 + \psi_1\,CRISIS\,1 + \psi_2\,CRISIS\,2 + \psi_3\,BF_{it} + \psi_4\,CRISIS\,1\_BF_{it}$$
$$+ \psi_5\,CRISIS\,2\_BF_{it} + \psi_6\,SIZE_{t-1} + \psi_7\,GW\_TA_{t-1} + \psi_8\,BTM_{t-1}$$
$$+ \psi_9\,D\_BTM_{t-1} + \psi_{10}\,PRE\_E_t + \psi_{11}\,LOSS_t + \psi_{12}\,D\_RETURN_t$$
$$+ \psi_{13}\,D\_RETURN_t{*}R_t + \psi_{14}\,D\_RETURN_{t-1} + \psi_{15}\,D\_RETURN_t{*}R_{t-1} + \varepsilon_{it}$$

(3)

I use the same variables as in model 1, with the following exceptions: First, I replace the dependent variable *D_IMPGW* with the natural logarithm of reported goodwill impairment amounts *T_IMPGW*. Second, the primary variables of interest are, as above, the indicator variables *BF*, *CRISIS 1 and CRISIS 2*, and the interaction variables *CRISIS 1_BF* and *CRISIS 2_BF*. *BF* is intended to capture whether banks (BANKS sample) and banks and financial institutions (*BANKS & FINANCIALS* sample) report smaller goodwill impairment amounts relative to pharmaceuticals during the whole sample period. I predict no sign for the coefficients ψ_4 and ψ_5 since firms with diminishing industry-specific growth opportunities may report smaller or larger goodwill impairment amounts. I include the same control variables as in model 1, with the exception of D_RETURN, D_RETURN$_t$*R$_t$, D_RETURN$_{t-1}$ and D_RETURN$_t$*R$_{t-1}$. Furthermore, I expect the signs of the remaining coefficients in model 3 to correspond to the respective coefficients in model 1. That is, I expect the same signs for ψ_i as for ϕ_i (i.e., ϕ_0- ϕ_3, and ϕ_6- ϕ_{11}).

Table 5 presents the results from the OLS regression on the amounts of impaired goodwill (T_IMPGW), consisting of two subsamples *BANKS* and *BANKS & FINANCIALS*.

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[15] The variables of the additional tests can be found in Appendix C.

Starting with the BANKS sample in Table 4 (N = 63), I find that banks in the second financial crisis (CRISIS_2*BF) are negatively associated with the reporting of impaired goodwill amounts at the 10%-level, suggesting that banks report smaller amounts of goodwill relative to pharmaceuticals. Although the coefficient is negative for the variable measuring banks' reporting of goodwill impairment amounts in the first crisis, the result is not statistically significant. The coefficient for CRISIS 1 and CRISIS 2 is positive but not statistically significant. The positive coefficient for GW_TA, at the 1%-level, indicates that firms with larger capitalized goodwill report larger goodwill impairment amounts. SIZE is also positively associated with the reporting of goodwill impairment amounts at the 1%-level.

Turning to the examination of reported goodwill impairment amounts by banks and financial institutions (column *BANKS & FINANCIALS*) in Table 5, the inference is similar to that in the *BANKS* sample. That is, I find that banks and financials in the second period of the financial crisis (CRISIS 2) are negatively associated with reporting goodwill impairment amounts, indicating that banks and financial institutions report smaller goodwill impairment amounts. There are some exceptions, however. Compared to the BANKS sample, for instance, the size of the firm (*SIZE*) is now positively associated with reported goodwill impairment amounts. In addition, focusing on the variables of interest, I find that banks and financial institutions during *CRISIS 2* are positively associated with reporting goodwill impairment amounts compared to pharmaceuticals. Altogether, the variables indicate that firms with diminishing industry-specific opportunities during *CRISIS 2* are more likely to impair goodwill. The coefficient of D_BTM is positive and significant at the 5%-level, indicating that firms expected to impair goodwill report larger goodwill impairment amounts.

Overall, I find that firms with diminishing industry-specific growth opportunities (i.e., banks and financial institutions) report smaller goodwill impairment amounts relative to firms in industries with stable growth opportunities. However, these findings are only statistically significant during the second financial crisis, and only at the 10%-level. Thus, reported goodwill impairment amounts are better explained by the market value of the firm ($SIZE_{t-1}$), goodwill in relation to total assets (*GW_TA*), and firm-level growth opportunities (*BTM*).

4.4.2 Alternative time frame

There is a possibility that the definition of the time frame of diminishing growth opportunities is inaccurate. Therefore, as an alternative to CDS spreads, I use the whole period following the start of the first financial crisis until the end of the second financial crisis as a period of diminishing growth opportunities for banks and financial institutions. Consequently, I replace *ΔGWIMP_BF_CRISIS 1* and *ΔGWIMP_BF_CRISIS 2* in model 2 with *ΔIMP_BF_UNCER,* as well as replacing *CRISIS 1* and *CRISIS 2* with UNCER. UNCER is an indicator variable, which takes the value 1 for the years 2008-2011, and 0 otherwise. The reason I use *UNCER* instead of *CRISIS 1* and *CRISIS 2* is that the growth opportunities can be affected over a longer period than just at the peak of each crisis, as defined by CDS spreads. Using *UNCER* instead of *CRISIS 1* and *CRISIS 2* does not change the main conclusion about the positive association between abnormal returns and goodwill impairments.

I further replace CRISIS_1*BF and CRISIS_2*BF in model 2 with CRISIS_UNCER*BF, as well as CRISIS 1 and CRISIS 2 with UNCER in models 1 and 3. These changes do not change the main results of the study (compare Tables 6 and 7). The interaction between the start of the financial crisis and banks and financial institutions' *BF_UNCER* indicates that banks and financial institutions are less likely to impair goodwill. Altogether, the three variables indicate that the industry, the start of the financial crisis, and, more importantly, industry-specific economic opportunities drive the likelihood of goodwill impairments. Although my statistical analyses suggest that the fact that firms are either banks or financial institutions during the period following the financial crisis can explain the likelihood of goodwill impairments, I cannot find any evidence that either industry or diminishing growth opportunities have any effect on the reported goodwill impairment amounts. Also in the *BANKS & FINANCIALS* sample, all three variables of interest (*BF*, *UNCER,* and *BF_UNCER*) do not have any significant impact on the amount of goodwill impairments. In sum, the alternative time frame does not change the conclusions about managers' likelihood of impairing goodwill in a setting of diminishing industry-specific growth opportunities.

4.4.3 Other robustness tests

I further examine the consistency of the presented results by carrying out several alternative specifications of models 1, 2, and 3. I use alternative specifications to assess

the robustness of the variables of interest by including/excluding a number of variables, such as year controls. I also change the panel-data estimation to OLS. Non-tabulated results for the variables of interest reveal consistent directional evidence and level of significance, suggesting that goodwill impairments by banks and financial institutions during periods of diminishing growth opportunities are positively associated with abnormal returns.

I also restrict the *BANKS & FINANCIALS* sample in model 2, in Table 4, to only include financial institutions and pharmaceuticals (i.e., excluding banks) to further explore whether goodwill impairments by firms in industries with diminishing growth opportunities in a setting of macroeconomic uncertainty are positively associated with abnormal market returns. The logic behind this restriction is that banks had substantial governmental guarantees in the second crisis, which made them relatively more robust to the second European sovereign debt crisis. Thus, if diminishing industry-specific growth opportunities actually drive the positive association between reported goodwill impairments and abnormal market returns, I expect the statistical explanatory power of ΔGWIMP_BF_CRISIS 2 to be stronger when banks are excluded. I find that, when banks are excluded, the direction does not change, but, as expected, the level of significance of the coefficient for ΔGWIMP_BF_CRISIS 2 improves from the 10%-level to the 5%-level. This result strengthens the conclusion of the study that goodwill impairments by firms with diminishing growth opportunities provide investors with more value-relevant information.

I also further examine models 1 and 3, i.e., the assessments of the decision to impair goodwill. First, since it is quite common in the literature to use *Tobin's Q* instead of BTM, I test whether Tobin's Q, measured as the ratio of the market value of total assets to the book value of total assets has any impact on the results. Second, I test the robustness by excluding year-control variables as well as firm-specific variables, such as the market value of the firm (*SIZE*), firms' growth opportunities (*BTM*), and goodwill to total assets GW_TA. Third, I also include the firm's financial leverage (*LEVERAGE*), defined as total debt divided by total assets, as a proxy for debt convents. Finally, I test the robustness for the potential unwillingness to impair goodwill by taking the size of goodwill in relation to book value of equity *GW_BVE*, which controls for managers' propensity to present economically impaired goodwill. Taking the inverse of dividing 1 by *GW_BVE*, larger values imply that managers do not hesitate to align goodwill accounting with

underlying economics. Results not tabulated in the paper show that all these alternative specifications do not change the direction or the level of significance of the variables of interest (i.e., CRISIS_1*BF and CRISIS_2*BF).

5. Summary and conclusion

In this study, I explore whether the usefulness of goodwill impairments depends on the firm's industry-specific growth opportunities. There are two main arguments for why this could be the case: (i) diminishing opportunities are less likely to delay the second step of testing goodwill for impairment as other assets are likely to depreciate in value, and (ii) opportunistic managers of a firm with diminishing growth opportunities may no longer be able to delay goodwill impairments as investors strengthen their monitoring activity (Povel et al., 2007). Based on these arguments, I predict that firms in industries with diminishing growth opportunities (1) are more likely to impair goodwill than are firms in industries with non-diminishing growth opportunities, and (2) that their goodwill impairments will provide value-relevant information to investors.

I use the periods prior to and following the financial crisis and the European sovereign debt crisis as possible and observable sources of variation in managers' decisions to impair goodwill. In particular, I investigate whether managerial accounting choices by banks and financial institutions changed relative to pharmaceuticals from the start of the financial crisis, assuming that the former two sectors' growth opportunities were relatively more affected by the repercussions of the financial crisis. Furthermore, I investigate whether goodwill impairments by banks and financial institutions are more value-relevant to investors since their industry-specific growth opportunities diminished during the financial crises.

I find that firms in industries with diminishing growth opportunities are not more likely to impair goodwill. I find some evidence suggesting that banks and financial institutions, at least during the second financial crisis, were less likely to impair goodwill. These results suggest that prior studies' findings of delayed goodwill impairments are probably not the result of a fair application of SFAS 142, as only banks and financial institutions would have impaired goodwill if the second step had previously been delayed by appreciating other assets. However, I do find that goodwill impairments by firms in industries with diminishing growth opportunities (i.e.,

banks/financial institutions) are value-relevant to investors. Overall, these results indicate that goodwill impairments by firms with industry-specific economic growth opportunities have an impact on investors' valuations. Thus, the main takeaway from this paper is that goodwill impairments are more useful to investors when the firm's industry-specific growth opportunities are diminishing, but their usefulness cannot solely be ascribed to the impairment decision.

Overall, this study contributes to the literature by providing initial evidence that the usefulness of fair-value goodwill accounting can be linked to firms' industry-specific growth opportunities. In particular, the study provides new insights into the usefulness of goodwill accounting in different economic settings. However, it is not clear whether firms in industries with diminishing growth opportunities delay goodwill impairments or whether firms in industries with non-diminishing growth opportunities opportunistically accelerate goodwill impairments when other industries are suffering from diminishing growth opportunities.

Accordingly, future studies should investigate to what extent goodwill impairments reflect underlying economics when the firm's industry-specific growth opportunities are diminishing, and whether other firms with non-diminishing growth opportunities misuse the crisis to accelerate goodwill impairments. Moreover, these studies should include more industries with a more general identification of diminishing growth opportunities (instead of CDS spreads). Finally, this paper only uses the investor-perspective on the usefulness of fair-value goodwill accounting and thus does not make any claims about whether SFAS 142 is efficient for other information-users.

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Appendix A: Growth Opportunities and the Decision to Impair Goodwill

Dependent and experimental variables

Variable	Definition
D_IMPGW_{it}	An indicator variable equal to 1 if firm i reports goodwill-impairment in year t during the sample period 2003-2012, and 0 otherwise (Dependent variable in model 1)
T_IMPGW_{it}	Is a variable equal to the natural logarithm of goodwill impairments during the sample period 2003-2012 (Dependent variable in model 2)
$CRISIS\ 1\_BF_{it+1}$	An indicator variable equal to 1 if firm *i* belongs to the financial and/or banking sector and if year t is either 2007 or 2008, and 0 otherwise. Treated as a leading variable.
$CRISIS\ 2\_BF_{it+1}$	An indicator variable equal to 1 if firm i belongs to the financial and/or banking sector <u>and</u> if year t is 2010, and 0 otherwise. Treated as leading variable.

Control and descriptive variables

Variable	Definition
CRISIS 1	An indicator variable equal to 1 for the years 2008–2009, and 0 otherwise
CRISIS 2	An indicator variable equal to 1 for the year 2011, and 0 otherwise
BF_{it}	An indicator variable equal to 1 if firm *i* belongs to banks in the BANKS sample; and if firm *i* belongs to the banks or financial services sector in the *BANKS & FINICIALS* sample, and 0 otherwise;
$SIZE_{t-1}$	The natural logarithm of the market value of the firm December 31 in year t, and is calculated as common shares outstanding times the share price April 1
GW_TA_{t-1}	Is the ratio of capitalized goodwill to total assets for firm *i* in year *t-1*
BTM_{t-1}	Book value of common equity to market value of equity of the firm
D_BTM_{t-1}	An indicator variable equal to 1 if BTM is above 1, otherwise equal to 0
PRE_E_t	Earnings before goodwill impairment divided by the year-end market value
$LOSS_t$	An indicator variable equal to 1 if PRE_E is below 0, otherwise equal to 0, divided by the year-end market value
D_RETURN	An indicator variable equal to 1 if the firm's annual stock return is below 0, otherwise 0
D_RETURN_R	Is the indicator variable D_RETURN times the firms' negative annual stock return

Appendix B: Growth Opportunities and Value Relevance

Dependent and experimental variables

Variable	Definition
ABRET	The difference between raw stock return for firm *i* and the corresponding return of the value weighted industry market index. Raw return RET_{it} is the change in the dividend-adjusted stock price (P^{ret}) from April 1 in year *t* to April 1 in year *t+1* for firm *i*.
ΔIMP_BF_ CRISIS 1	Interactions between change in the goodwill impairments, BF, and *CRISIS 1* from year t-1 to t
ΔIMP_BF_ CRISIS 2	Interactions between change in the goodwill impairments, BF, and *CRISIS 2* from year t-1 to t

Control and descriptive variables

Variable	Definition
ΔIMP_BF	Interaction between change in the goodwill impairments and BF.
BF_CRISIS 1	Interaction between BF and *CRISIS 1* from year t-1 to t.
BF_CRISIS 2	Interaction BF, and *CRISIS 2* from year t-1 to t.
ΔIMP_CRISIS 1	Interaction between change in the goodwill impairments and *CRISIS 1* from year t-1 to t.
ΔIMP_CRISIS 2	Interaction between change in the goodwill impairments and *CRISIS 2* from year t-1 to t.
CRISIS 1	An indicator variable equal to 1 if year *t* is 2007-2008, and 0 otherwise. Treated as a leading variable.
CRISIS 2	An indicator variable equal to 1 if year *t* is 2010, and 0 otherwise. Treated as a leading variable.
ΔEARN_IMP	Change in earnings before goodwill impairments from year t-1 to t
ΔGWIMP	Change in goodwill impairment from year t-1 to t
D_NEARN	An indicator variable equal to 1 if earnings in year t is below 0, otherwise equal to 0.
D_NEARN_EARN	An interaction variable between D_NEARN and income EARN, which means that the variable takes the value of negative earnings, and otherwise 0

Appendix C: Additional Variables for the Robustness Tests

Variable	Definition
Tobin's Q	Measured as the ratio of the market value of total assets to the book value of total assets of firm *i*
LEVERAGE	Total debt divided by total assets of firm *i*
GW_BVE	The size of goodwill in relation to book value of equity of firm *i*
UNCER	An indicator variable equal to 1 if year *t* is 2008-2011, and 0 otherwise, of firm *i*
BF_UNCER	Interactions between BF, and *UNCER* from year t-1 to t of firm *i*
ΔGWIMP_BF_UNCER	Interactions between the change in goodwill impairments, BF, and *UNCER* from year t-1 to t of firm *i*

Table 1
Descriptive Information about Goodwill Impairments

Panel A: Yearly goodwill impairments by sector

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total	%
Banks	0	0	0	0	2	7	14	4	3	2	**32**	26%
Financial Inst.	2	3	3	1	3	10	3	5	6	2	**38**	31%
Pharma. & Biotech	0	0	1	1	0	2	3	2	3	1	**13**	11%
Health Care E&S	2	1	1	2	1	8	8	4	10	2	**39**	32%
Total	**4**	**4**	**5**	**4**	**6**	**27**	**28**	**15**	**22**	**7**	**122**	100%
%	3%	3%	4%	3%	5%	22%	23%	12%	18%	6%	100%	

Panel B: Goodwill impairments by within-firm frequency for each sector

Impairments Reported During Sample Period	1	2	3	4	5	6	7	≥8	Total obs	%
Banks	21	4	1	0	0	0	0	0	26	30%
Financial Institutions	14	5	2	0	0	0	0	1	22	25%
Pharma. & Biotech	4	3	1	0	0	0	0	0	8	9%
Health Care E&S	24	5	0	0	1	0	0	0	30	35%
Total number of firms	**63**	**17**	**4**	**0**	**1**	**0**	**0**	**1**	**86**	100%
Percent of sample	73%	20%	5%	0%	1%	0%	0%	1%	100%	

This table presents descriptive statistics with a special focus on goodwill impairments. Panel A presents the number of firms in each sector reporting goodwill impairments under SFAS 142 during the period 2003–2012. Panel B presents the frequency of goodwill impairments for each sector in total within the sample period 2003-2012.

Table 2
Descriptive Information about the Industries – Selected Variables

	Mean			Median			N		
	BANK	B&F	PHARM	BANK	B&F	PHARM	BANK	B&F	PHARM
ΔIMP_BF_NegOut	-.0011	-.0006	-	0	0	-	330	570	-
$\Delta GWIMP$	.00002	-.0003	.0018	0	0	0	330	570	440
$\Delta EARN\_IMP$	-.0206	.0145	.0070	-.0032	-.0032	.00091	209	319	263
D_EARN	.2454	.2543	.3522	0	0	0	330	570	440
D_NEARN_EARN	-.0993	-.1265	-.168	0	0	0	236	369	295
GW_TA_{t-1}	.0161	.0922	.2047	.00916	.0194	.17945	207	377	315
$SIZE_{t-1}$	11.69	12.33	13.18	11.72	12.190	13.06	237	372	314
D_RETURN_t	.5269	.495	.479	1	0	0	241	384	334
$D\_RETURN_t*R_t$	-.1254	-.113	-.134	0	0	0	330	570	440
D_RETURN_{t-1}	.5680	.537	.5	1	1	1/0	213	335	308
$D\_RETURN_t*R_{t-1}$	-.1144	-.106	-.133	0	0	0	329	569	440
BTM_{t-1}	1.128	1.003	.5381	.9525	.83441	.4849	237	372	314
D_BTM_{t-1}	.4556	.390	.165	0	0	0	237	372	314

This table presents the distribution of the regression variables for banks (*BANKS*), banks and financial-industry firms (*B&F*), pharmaceuticals (*PHARM*) for some variables of interest included in the study. All variables in this table are defined in sections 3.1 and 3.2.

Table 3
Diminishing Growth Opportunities and Goodwill Impairments –Frequency

Variables	Expected Sign	BANKS		BANKS & FINANCIALS	
		D_IMPGW Logistic	D_IMPGW OLS	D_IMPGW Logistic	D_IMPGW OLS
CRISIS_1*BF	+	0.683 (0.754)	0.142* (0.088)	-0.206 (0.643)	0.420 (0.0815)
CRISIS_2*BF	+	-1.416 (0.968)	-0.252** (0.112)	-1.400* (0.783)	-0.239** (0.1033)
CRISIS 1	?	0.712 (0.482)	0.168** (0.081)	0.977 (0.680)	0.0861 (0.588)
CRISIS 2	?	2.071*** (0.556)	0.272*** (0.088)	2.244*** (0.569)	0.290*** (0.0823)
BF	?	-0.187 (0.648)	0.021* (0.047)	0.521 (0.503)	0.0894 (0.0393)
GW_TA $_{t-1}$	+	1.235 (1.359)	0.266* (0.158)	2.594** (1.081)	0.395*** (0.1350)
LOSS$_t$	+	0.7634 (0.7107)	2.04e-07 (4.05e-07)	-0.0531 (0.1998)	7.19e-08 (2.69e-07)
PRE_E$_t$	+	-0.8512 (2.116)	-1.24e-07*** (3.21e-08)	0.677 (0.1902)	-1.07e-07 (2.90e-08)
SIZE$_{t-1}$	+	0.372*** (0.136)	0.037*** (0.0134)	-0.053 (0.787)	0.0213* (0.0117)
BTM$_{t-1}$	+	0.593 (0.464)	0.0683 (0.0604)	0.379* (0.216)	0.0388 (0.0237)
D_BTM $_{t-1}$	+	0.402 (0.577)	0.0170 (0.0731)	0.623 (0.425)	0.0544 (0.0563)
INTERCEPT		-8.174*** (2.045)	-0.545*** (0.191)	-7.080*** (1.507)	-0.356** (0.156)
D_RETURN$_t$	?	-0.153 (0.498)	-0.039 (0.045)	-0.419 (0.403)	-0.0482 (0.043)
D_RETURN$_t$*R$_t$	?	-2.861*** (0.923)	-0.605*** (0.139)	-3.657*** (0.720)	-0.553*** (0.123)
D_RETURN$_{t-1}$	?	-0.656 (1.393)	0.0027 (0.0284)	0.104 (0.446)	0.0117 (0.0295)
D_RETURN$_t$*R$_{t-1}$	?	-0.861 (1.970)	-0.191* (0.117)	-1.161 (0.881)	-0.150 (0.106)
Year Controls		Included	Included	Included	Included
N		356	409	450	516
AdjR^2			0.297		0.235
Prob chi2		0.000		0.000	
Pseudo R^2		0.253		0.213	

This table provides estimates of the OLS (*D_IMPGW*) regressions. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively. Robust standard errors in parentheses.

$$D\_IMPGW_{it} = \phi_0 + \phi_1\, CRISIS\ 1_{it} + \phi_2\, CRISIS\ 2_{it} + \phi_3\, BF_{it} + \phi_4\, CRISIS\ 1\_BF_{it} + \phi_5\, CRISIS\ 2\_BF_{it} + \phi_6\, SIZE_{t-1} + \phi_7\, GW\_TA_{t-1}$$
$$+ \phi_8\, BTM_{t-1} + \phi_9\, D\_BTM_{t-1} + \phi_{10}\, PRE\_E_t + \phi_{11}\, LOSS_t + \phi_{12}\, D\_RETURN_t + \phi_{13}\, D\_RETURN_t*R_t$$
$$+ \phi_{14}\, D\_RETURN_{t-1} + \phi_{15}\, D\_RETURN_t*R_{t-1} + \varepsilon_{it}$$

D_IMPGW$_{it}$ is an indicator variable equal to 1 if firm *i* impairs goodwill in year *t* during the sample period 2003-2012, and 0 otherwise. *CRISIS 1 $_{it}$* is an indicator variable equal to 1 for the years 2008-2009, and 0 otherwise; *CRISIS 2* is an indicator variable equal to 1 for the year 2011, and 0 otherwise. *BF$_{it}$* is an indicator variable equal to 1 if firm *i* belongs to the financial services sector and/or banking sector, and 0 otherwise. *CRISIS 1_BF$_{it}$* and *CRISIS 2_BF$_{it}$* are an indicator variable equal to 1 if firm *i* belongs to the financial and/or banking sector and if year *t* is within 2008-2012 or 2011, and 0 otherwise. *SIZE$_{t-1}$* is the natural logarithm of the market value of the firm on December 31 in year t, and is calculated as the common shares outstanding times the share price on April 1. *GW_TA $_{t-1}$* is the ratio of capitalized goodwill to total assets for firm *i* in year *t-1*. *BTM$_{t-1}$* is the book value of common equity to market value of equity. *D_BTM $_{t-1}$* is an indicator variable equal to 1 if BTM is above one, otherwise equal to 0. *PRE_E$_t$* is earnings before goodwill impairment divided by the year-end market value. *LOSS$_t$* is an indicator variable equal to 1 if PRE_E is below 0, otherwise equal to 0, divided by the year-end market value. *D_RETURN* is an indicator variable equal to 1 if the firm's annual stock return is below 0, otherwise 0. *D_RETURN*R* is the indicator variable D_RETURN times the firm's negative annual stock return. In the second test, (*D_IMPGW*) replaces (*D_IMPGW*). *D_IMPGW* is an indicator variable equal to 1 if firm *i* impair goodwill in year *t* during the sample period 2003-2012, and 0 otherwise.

Table 4

Diminishing Growth Opportunities and the Value Relevance of Goodwill Impairments

Variables	Expected Sign	BANKS		BANKS & FINANCIALS	
		Coefficient Estimate	t-Stat	Coefficient Estimate	t-Stat
ΔIMP_BF_CRISIS 1	+	0.701*** (0.196)	3.58	0.368*** (0.0867)	4.24
ΔIMP_BF_CRISIS 2	+	0.603 (0.384)	1.57	0.595* (0.313)	1.90
CRISIS 1	?	-0.227* (0.130)	-.174	-0.280** (0.133)	-2.11
CRISIS 2	?	-0.196* (0.105)	-1.86	-0.268** (0.109)	-2.47
ΔGWIMP	-	-0.237 (0.148)	-1.61	-0.255*** (0.0732)	-3.49
BF_CRISIS 1	?	0.519*** (0.099)	5.23	0.446*** (0.102)	4.36
BF_CRISIS 2	?	0.065 (0.113)	0.56	0.0523 (0.107	0.49
ΔIMP_CRISIS 1	?	0.184 (0.202)	0.91	0194 (0195)	0.99
ΔIMP_CRISIS 2	?	0.635** (0.270)	2.35	0592** (0.286)	2.07
ΔIMP_BF	?	-0.087*** (0.027)	-3.19	-0.178 (0.171)	-1,04
ΔEARN_IMP	+	0.0315** (0.0144)	2.20	-0.0154 (0.0278)	-0.55
D_EARN	-	-0.184*** (0.0535)	-3.43	-0.140*** (0.0482)	-2.90
D_NEARN_EARN	+	0.0374 (0.0323)	1.16	0.0955* (0.0539)	1.77
INTERCEPT		0.395*** (0.106)	3.71	0.449*** (0.107)	4.17
Firm Fixed Effects		Included		Included	
Year Fixed Effects		Included		Included	
Adj. R-Square		0.140		0.125	
Firm-years		471		581	
Number of Firms		77		101	

This table provides panel-data estimates of the value-relevance regressions of managers' goodwill accounting choices during crisis 1 and crisis 2. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively. Robust standard errors in parentheses. Both models are strongly balanced. No indications of problems with multicollinearity; all variables have a VIF score below 2. The sample is winsorized by 1%.

$$\text{ABRET}_{it} = \gamma_0 + \gamma_1 \text{ CRISIS 1} + \gamma_2 \text{ CRISIS 1} + \gamma_3 \Delta\text{EARN\_IMP}_{it} + \gamma_4 \Delta\text{GWIMP}_{it} + \gamma_5 \Delta\text{IMP\_BF\_CRISIS 1}$$
$$+ \gamma_6 \Delta\text{IMP\_BF\_CRISIS 2} + \gamma_7 \Delta\text{IMP\_BF} + \gamma_8 \Delta\text{IMP\_CRISIS 1} + \gamma_9 \Delta\text{IMP\_CRISIS 2} + \gamma_{10} \text{ BF\_CRISIS 1}$$
$$+ \gamma_{11} \text{ BF\_CRISIS 2} + \gamma_{12} \text{ D\_NEARN} + \gamma_{13} \text{ D\_NEARN\_EARN} + \varepsilon_{it}$$

ABRET is the difference between raw stock return for firm *i* and the corresponding return of the value weighted market index. Raw return RET_{it} is the change in the dividend-adjusted stock price (P^{ret}) from April 1 in year *t* to April 1 in year *t+1* for firm *i*. *CRISIS 1* is an indicator variable equal to 1 if year *t* is either 2008 or 2009, and 0 otherwise. *CRISIS 2* is an indicator variable equal to 1 if year *t* is 2011, and 0 otherwise. *BF* is an indicator variable equal to 1 if firm *i* belongs to the banking/financial industry, otherwise equal to 0. *ΔEARN_IMP* is the change in earnings before goodwill impairments from year t-1 to t. *ΔGWIMP* is the change in goodwill impairment from year t-1 to t. *ΔIMP_BF_CRISIS 1* is the change in the interactions between goodwill impairments, BF, and *CRISIS 1* from year t-1 to t (the same reasoning applies to *ΔIMP_BF_CRISIS 2*). *D_NEARN* is an indication variable equal to 1 if earnings in year t are below 0. *D_NEARN_EARN* is an interaction variable equal to all earnings below 0, and otherwise 0.

Table 5
Diminishing Growth Opportunities and Goodwill impairments –Amounts

Variables	Expected Sign	BANKS T_IMPGW OLS	BANKS & FINANCIALS T_IMPGW OLS
CRISIS_1*BF	+	-0.896 (0.842)	-.5228 (.715)
CRISIS_2*BF	+	-2.199* (1.151)	-1.512* (0.787)
CRISIS 1	?	.46329 (0.544)	1.401 (0.464)
CRISIS 2	?	.51411 (0.544)	1.475* (0.681)
BF	?	.61280 (0.731)	.0828 (0.591)
GW_TA$_{t-1}$	+	5.4827*** 1.1913	4.538*** (0.881)
LOSS$_t$	+	-0.365 (1.502)	0.1705 (1.417)
PRE_E$_t$	+	0.0846 (0.767)	-.1853 (1.419)
SIZE$_{t-1}$	+	1.1334*** (0.191)	.9213*** (0.135)
BTM$_{t-1}$	+	1.5439** (0.633)	.45071 (0.355)
D_BTM$_{t-1}$	+	.46423 (0.676)	1.064** (0.474)
INTERCEPT		-5.071** (2.044)	-4.992*** (1.787)
Year Controls		Included	Included
N		63	100
Adj. R-Square		0.685	0.609

This table provides estimates of the OLS (*T_IMPGW*) regressions. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively. Robust standard errors in parentheses.

$$T\_IMPGW_{it} = \psi_0 + \psi_1\ CRISIS\ 1 + \psi_2\ CRISIS\ 2 + \psi_3\ BF_{it} + \psi_4\ CRISIS\ 1\_BF_{it} + \psi_5\ CRISIS\ 2\_BF_{it} + \psi_6\ SIZE_{t-1} + \psi_7\ GW\_TA_{t-1} + \psi_8\ BTM_{t-1} + \psi_9\ D\_BTM_{t-1} + \psi_{10}\ PRE\_E_t + \psi_{11}\ LOSS_t + \psi_{12}\ D\_RETURN_t + \psi_{13}\ D\_RETURN_t*R_t + \psi_{14}\ D\_RETURN_{t-1} + \psi_{15}\ D\_RETURN_t*R_{t-1} + \varepsilon_{it}$$

T_IMPGW$_{it}$ is a variable equal to the natural logarithm of impaired goodwill during the sample period 2003-2012. *CRISIS 1$_{it}$* is an indicator variable equal to 1 for the years 2008-2009, and 0 otherwise. *BF$_{it}$* is an indicator variable equal to 1 if firm *i* belongs to the financial services sector and/or banking sector, and 0 otherwise. *UNCER_BF$_{it}$* is an indicator variable equal to 1 if firm *i* belongs to the financial and/or banking sector and if year *t* is within 2008-2012, and 0 otherwise. *SIZE$_{t-1}$* is the natural logarithm of market value of the firm on December 31 in year t, and is calculated as the common shares outstanding times the share price April 1. *GW_TA$_{t-1}$* is the ratio of capitalized goodwill to total assets for firm *i* in year *t-1*. *BTM$_{t-1}$* is the book value of common equity to market value of equity. *D_BTM$_{t-1}$* is an indicator variable equal to 1 if BTM is above 1, otherwise equal to 0. *PRE_E$_t$* is earnings before goodwill impairment divided by the year-end market value. *LOSS$_t$* is an indicator variable equal to 1 if PRE_E is below 0, otherwise equal to 0, divided by the year-end market value.

Table 6: Alternative Time Frame
Diminishing Growth Opportunities and Value Relevance of Goodwill Impairments

Variables	Expected Sign	BANKS		BANKS & FINANCIALS	
		Coefficient Estimate	t-Statistic	Coefficient Estimate	t-Statistic
ΔIMP_BF_ UNCER	+	0.762*** (0.174)	4.36	0.290* (0.153)	1.90
UNCER	?	-0.165 (0.116)	-1.42	-0.177 (0.113)	-1.57
BF_ UNCER	?	0.054 (0.062)	0.88	0.0677 (0.654)	1.04
ΔIMP_BF	?	-2.34*** (0.315)	-7.43	-1.389 (0.694)	-1.44
ΔIMP_UNCER	?	-1.595*** (0.232)	-6.86	-1.648 (0.208)	-7.91
ΔGWIMP	-	-0.347*** (0.128)	-2.70	-0.331** (0.133)	-2.49
ΔEARN_IMP	+	0.033** (0.013)	2.47	-0.0165 (0.030)	-0.55
D_EARN	-	-0.165*** (0.052)	-3.20	-0.124** (0.049)	-2.54
D_NEARN_EARN	+	0.0334 (0.028)	0.23	0.0872* (0.048)	1.83
INTERCEPT		0.168 (0.115)	1.45	0.170 (0.114)	1.49
Firm Fixed Effects		Included		Included	
Year Fixed Effects		Included		Included	
Adj. R-Square		0.187		0.118	
Firm-years		471		581	
Number of Firms		77		101	

This table provides panel data estimates of the value-relevance regressions of managers' goodwill accounting choices during the period of financial uncertainty from 2008 to 2012. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively. Robust standard errors in parentheses. Both models are strongly balanced. No indications of problems with multicollinearity; all variables have a VIF score below 5. The dependent variable is winsorized by 1%.

$$ABRET_{it} = \gamma_0 + \gamma_1\ UNCER + \gamma_2\ BF + \gamma_3\ \Delta EARN\_IMP_{it} + \gamma_4\ \Delta GWIMP_{it} + \gamma_5\ \Delta IMP\_BF\_UNCER + \gamma_6\ BF\_UNCER + \gamma_7\ \Delta IMP\_BF$$

$$+ \gamma_8\ \Delta IMP\_UNCER + \gamma_9\ D\_NEARN + \gamma_{10}\ D\_NEARN\_EARN + \varepsilon_{it}$$

ABRET is the difference between raw stock return for firm *i* and the corresponding return of the value weighted market index. Raw return RET_{it} is the change in the dividend-adjusted stock price (P^{ret}) from April 1 in year *t* to April 1 in year *t+1* for firm *i*. *UNCER* is an indicator variable equal to 1 if year *t is* 2008-2012, and 0 otherwise. *BF* is an indicator variable equal to 1 if firm *i* belongs to the banking/financial industry, otherwise equal to 0. *ΔEARN_IMP* is the change in earnings before goodwill impairments from year t-1 to t. *ΔGWIMP* is the change in goodwill impairment from year t-1 to t. *BF_UNCER* is the interaction between BF and the period of uncertainty. *ΔIMP_BF* is the interaction between change in goodwill impairments and BF. *ΔIMP_UNCER* is the interaction between change in goodwill impairments and UNCER. *ΔIMP_BF_UNCER* is the interaction between change in goodwill impairments, BF, and *UNCER* from year t-1 to t. *D_NEARN* is an indication variable equal to 1 if earnings in year t are below 0. *D_NEARN_EARN* is an interaction variable equal to all earnings below 0, and otherwise 0.

Table 7: Alternative Time Frame
Diminishing Growth Opportunities and Goodwill Impairments –Frequency /Amounts

Variables	Expected Sign	BANKS		BANKS & FINANCIALS	
		D_IMPGW OLS	T_IMPGW OLS	D_IMPGW OLS	T_IMPGW OLS
$UNCER *BF$	+	-0.0579	-0.834	-0.100*	0.595
		(0.0675)	(0.998)	(0.060)	(0.800)
$UNCER$	?	0.0231	-0.763	0.148**	-0.214
		(0.060)	(0.683)	(0.060)	(0.535)
BF	?	0.060	0.419	0.101**	-0.856
		(0.044)	(0.816)	(0.044)	(0.775)
GW_TA_{t-1}	+	0.243	5.236***	0.380***	4.545***
		(0.160)	(1.105)	(0.137)	(0.802)
$LOSS_t$	+	1.11e-07	-0.108	1.52e-08	-0.333
		(3.95e-07)	(1.589)	(2.73e-07)	(1.370)
PRE_E_t	+	-1.27e-07	-0.296	-1.10e-07***	0.316*
		(3.24e-08)	(1.562)	(2.90e-08)	(1.375)
$SIZE_{t-1}$	+	0.038***	4.245***	0.022**	0.955***
		(0.0136)	(0.191)	(0.0118)	(0.107)
BTM_{t-1}	+	0.0615	0.938**	0.0367	0.509*
		(0.056)	(0.450)	(0.0247)	(0.269)
D_BTM_{t-1}	+	0.0296	0.180	0.0674	0.961**
		(0.0741)	(0.736)	(0.0578)	(0.443)
INTERCEPT		0.565***	-6.654**	-0.385**	-4.679***
		(0.195)	(2.911)	(0.160)	(1.618)
D_RETURN_t	?	-0.0191		-0.0425	
		(0.045)		(0.0432)	
$D\_RETURN_t*R_t$	?	-0.592***		-0.5498***	
		(0.140)		(0.1246)	
D_RETURN_{t-1}	?	-0.0072		-0.0053	
		(0.0290)		(0.0296)	
$D\_RETURN_t*R_{t-1}$	?	-0.169		-0.1429	
		(0.122)		(0.1077)	
Year controls		Included		Included	
N		409	57	516	100
Adj. R-Square		0.277	0.721	0.227	0.612
Prob chi2		0.000			
Likelihood ratio statistics		-125.77			
Pseudo R^2		0.2431			

This table provides estimates of the OLS (*D_IMPGW*) and OLS (*T_IMPGW*) regressions. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively. Robust standard errors in parentheses.

$$D\_IMPGW_{it} = \psi_0 + \psi_1\, UNCER + \psi_2\, BF_{it} + \psi_3\, UNCER\_BF_{it} + \psi_4\, SIZE_{t-1} + \psi_5\, GW\_TA_{t-1} + \psi_6\, BTM_{t-1} + \psi_7\, D\_BTM_{t-1}$$
$$+ \psi_8\, PRE\_E_t + \psi_9\, LOSS_t + \psi_{10}\, D\_RETURN_t + \psi_{11}\, D\_RETURN_t*R_t + \psi_{12}\, D\_RETURN_{t-1} + \psi_{13}\, D\_RETURN_t*R_{t-1} + \varepsilon_{it}$$

$$T\_IMPGW_{it} = \psi_0 + \psi_1\, UNCER + \psi_2\, BF_{it} + \psi_3\, UNCER\_BF_{it} + \psi_4\, SIZE_{t-1} + \psi_5\, GW\_TA_{t-1} + \psi_6\, BTM_{t-1} + \psi_7\, D\_BTM_{t-1}$$
$$+ \psi_8\, PRE\_E_t + \psi_9\, LOSS_t + \varepsilon_{it}$$

D_IMPGW_{it} is an indicator variable equal to 1 if firm i impairs goodwill in year t during the sample period 2003-2012, and 0 otherwise. T_IMPGW_{it} is a variable equal to the natural logarithm of goodwill impairments during the sample period 2003-2012.

$UNCER_{it}$ is an indicator variable equal to 1 for the years 2008-2012, and 0 otherwise. BF_{it} is an indicator variable equal to 1 if firm i belongs to the financial services sector and/or banking sector, and 0 otherwise. $UNCER\_BF_{it}$ is an indicator variable equal to 1 if firm i belongs to the financial and/or banking sector and if year t is within 2008-2012, and 0 otherwise. $SIZE_{t-1}$ is the natural logarithm of the market value of the firm on December 31 in year t, and is calculated as the common shares outstanding times the share price April 1. GW_TA_{t-1} is the ratio of capitalized goodwill to total assets for firm i in year $t-1$. BTM_{t-1} is the book value of common equity to market value of equity. D_BTM_{t-1} is an indicator variable equal to 1 if BTM is above 1, otherwise equal to 0. PRE_E_t is earnings before goodwill impairment divided by the year-end market value. $LOSS_t$ is an indicator variable equal to 1 if PRE_E is below 0, otherwise equal to 0, divided by the year-end market value. D_RETURN is an indicator variable equal to 1 if the firm's annual stock return is below 0, otherwise 0. $D\_RETURN*R$ is the indicator variable D_RETURN times the firms' negative annual stock return. In the second test, (*D_IMPGW*) replaces (*D_IMPGW*). D_IMPGW is an indicator variable equal to 1 if firm i impairs goodwill in year t during the sample period 2003-2012, and 0 otherwise. All independent variables (except *D_RETURN* and *D_RETURN*R*) are part of all analyses.

Table 8: Pairwise Correlation Matrix
Diminishing Growth Opportunities and Goodwill Impairments –Frequency (BANKS sample)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) BF														
(2) CRISIS 1	0.000													
(3) CRISIS 2	0.000	-0.167***												
(4) GW_TA $_{t-1}$	-0.585***	0.035	-0.021											
(5) PRE_E $_t$	-0.191***	0.039	0.006	0.227***										
(6) LOSS $_t$	0.059*	-0.011	-0.028	-0.109**	0.147***									
(7) BTM $_{t-1}$	0.237***	0.066	0.061	-0.074	-0.066	0.0129								
(8) D_BTM $_{t-1}$	0.316***	0.097**	0.088**	-0.151***	-0.084**	-0.0188	0.4761***							
(9) D_RETURN $_t$	0.047	0.231***	0.139***	0.083*	-0.025	-0.1011**	0.0139	-0.0319						
(10) D_RETURN $_t$*R $_t$	0.018	-0.327***	-0.151***	(0.054	0.0797**	0.1635***	0.0070	0.0022	-0.6698***					
(11) D_RETURN $_{t-1}$	-0.111**	-0.254***	0.039	-0.040	0.0416	0.0147	-0.2302***	-0.2891***	0.0047	0.0523				
(12) D_RETURN $_t$*R $_{t-1}$	0.039	-0.316***	0.032	0.019	0.0663*	0.1008***	-0.2374***	-0.3734***	0.0206	0.1422***	0.6544***			
(13) CRISIS_1*BF	0.354***	0.612***	-0.102***	-0.233***	-0.0764**	-0.0486	0.1073**	0.1975***	0.2200***	-0.1755***	-0.1825***	-0.1728***		
(14) CRISIS_2*BF	0.244***	-0.106***	0.635***	-0.163***	-0.0522	-0.0522	0.1046**	0.1659***	0.0611	-0.0766**	0.0203	0.0083	-0.0648*	
(15) SIZE $_{t-1}$	-0.384***	-0.013	-0.035	0.355***	0.5821***	-0.0355	-0.2181***	-0.3973***	-0.0082	0.0999**	0.1895***	0.3232***	-0.1429***	-0.1291***

Table 8 shows the pairwise correlations of the independent variables. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively. All variables are defined in Appendix A.

Table 9: Pairwise Correlation Matrix
Diminishing Growth Opportunities and Goodwill Impairments –Frequency (BANKS & FINANCIALS sample)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) BF														
(2) CRISIS 1	-0.0000													
(3) CRISIS 2	0.0000	-0.1667***												
(4) GW_TA$_{t-1}$	-0.3382***	0.0424	-0.0299											
(5) PRE_E$_t$	-0.1283***	-0.0030	0.0247	0.1360***										
(6) LOSS$_t$	-0.0364	-0.0878***	0.0034	0.0195	0.2850***									
(7) BTM$_{t-1}$	0.1862***	0.0823**	0.0622	-0.0651	-0.0977**	-0.0498								
(8) D_BTM$_{t-1}$	0.2469***	0.1231***	0.0778**	-0.1695***	-0.1079***	-0.1045***	0.4876***							
(9) D_RETURN$_t$	0.0157	0.2086***	0.1513***	0.0559	-0.0492	-0.0864**	-0.0023	-0.0307						
(10) D_RETURN$_t$*R$_t$	0.0451	-0.3081***	-0.1455***	-0.0107	0.0814***	0.0551*	0.0248	0.0058	-0.6768***					
(11) D_RETURN$_{t-1}$	-0.0731**	-0.2804***	0.0486	-0.0434	0.0534	0.0438	-0.2129***	-0.2920***	-0.0003	0.0491				
(12) D_RETURN$_t$*R$_{t-}$	0.0580*	-0.3343***	0.0269	0.0292	0.0642**	0.0308	-0.2212***	-0.3773***	0.0405	0.1340***	0.6689***			
(13) CRISIS_1*BF	0.3134***	0.7134***	-0.1189***	-0.1004***	-0.0864***	-0.1333***	0.1141***	0.1982***	0.1798***	-0.1786***	-0.2227***	-0.2227***		
(14) CRISIS_2*BF	0.2149***	-0.1223***	0.7337***	-0.1022***	-0.0050	-0.0086	0.0904**	0.1255***	0.0917**	-0.0818***	0.0401	0.0147	-0.0872***	
(15) SIZE$_{t-1}$	-0.2205***	-0.0123	-0.0174	0.3215***	0.5781***	-0.0488	-0.2070***	-0.3818***	-0.0068	0.0711*	0.1984***	0.3050***	-0.0747*	-0.0596)

Table 9 shows the pairwise correlations of the independent variables. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively. All variables are defined in Appendix A.

Table 10: Pairwise Correlation Matrix

Diminishing Growth Opportunities and Value Relevance of Goodwill Impairments (BANKS sample)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) BF													
(2) CRISIS 1	0.0000												
(3) CRISIS 2	0.0000	-0.1667***											
(4) D_EARN	-0.1157***	0.1285***	0.0715**										
(5) ΔEARN_IMP	-0.0118	-0.0180	-0.0004	-0.1017**									
(6) ΔGWIMP	-0.0051	0.1618***	0.0421	0.1468***	0.0211								
(7) ΔIMP_BF_CRISIS 1	0.0753**	0.1305***	-0.0217	0.1092***	(-0.0047)	0.3706***							
(8) ΔIMP_BF_CRISIS 2	-0.0406	0.0176	-0.1054***	-0.0048	-0.0142	0.1217***	0.0023						
(9) ΔIMP_BF	0.0001	0.1188***	-0.0281	0.0480	0.0135	0.5070***	0.5317***	0.2397***					
(10) BF_CRISIS 2	0.2443***	-0.1058***	0.5348***	0.0414	0.0041	-0.0223	-0.0138	-0.1661***	-0.0416				
(11) BF_CRISIS 1	0.3536***	0.6124***	-0.1021***	0.1406***	-0.0222	0.0842**	0.2131***	0.0108	0.1698***	-0.0648*			
(12) ΔIMP_CRISIS 1	-0.0133	0.2086***	-0.0348	0.1751***	0.0070	0.6384***	0.4800***	0.0037	0.4275***	-0.0221	0.1042***		
(13) ΔIMP_CRISIS 2	-0.0587	-0.0193	0.1160***	0.0721**	0.0106	0.3425***	-0.0025	0.3564***	0.0850**	-0.0697*	-0.0118	-0.0040	
(14) D_NEARN_EARN	0.0403	-0.0307	-0.0054	-0.2180***	0.5984***	-0.0906**	-0.0719*	-0.0155	-0.0296	-0.0063	-0.0175	-0.1151***	-0.0474

Table 10 shows the pairwise correlations of the independent variables. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively. All variables are defined in Appendix B.

Table 11: Pairwise Correlation Matrix
Diminishing Growth Opportunities and Value Relevance of Goodwill Impairments (BANKS & FINANCIALS sample)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) BF													
(2) CRISIS 1	0.0000												
(3) CRISIS 2	0.0000	-0.1667***											
(4) D_EARN	-0.1062***	0.1517***	0.0722**										
(5) ΔEARN_IMP	0.0026	0.0049	-0.0161	-0.1039**									
(6) ΔGWIMP	-0.0042	0.1299***	0.0240	0.1342***	-0.0814**								
(7) ΔIMP_BF_CRISIS 1	0.0426	0.0970***	-0.0162	0.1044***	-0.1590***	0.5238***							
(8) ΔIMP_BF_CRISIS 2	-0.0209	0.0119	-0.0715**	0.0011	-0.0073	0.0786**	0.0012						
(9) ΔIMP_BF	-0.0007	0.0891***	-0.0071	0.0775**	-0.0995**	0.6505***	0.5336***	0.0923***					
(10) BF_CRISIS 2	0.2149***	-0.1223***	0.6337***	0.0476	-0.0151	-0.0087	-0.0119	-0.0974***	-0.0093				
(11) BF_CRISIS 1	0.3134***	0.6134***	-0.1189***	0.1584***	0.0118	0.0945***	0.1360***	0.0085	0.1125***	-0.0872**			
(12) ΔIMP_CRISIS 1	0.0017	0.1507***	-0.0251	0.1479***	-0.1387***	0.6702***	0.6222***	0.0018	0.5557***	-0.0184	0.1101***		
(13) ΔIMP_CRISIS 2	-0.0582*	-0.0177	0.1063***	0.0654**	0.0080	0.2106***	-0.0017	0.3739***	0.0344	-0.0471	-0.0126	-0.0027	
(14) D_NEARN_EARN	0.0244	-0.0757*	-0.0010	-0.2337***	0.5312***	-0.2040***	-0.2634***	-0.0128	-0.1894***	-0.0021	-0.0803**	-0.2709***	-0.0410

Table 11 shows the pairwise correlations of the independent variables. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively. All variables are defined in Appendix B.