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**On the Value Relevance of Banks' Valuation of Goodwill in Times  
of Financial Turmoil**

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# **On the Value Relevance of Banks' Valuation of Goodwill in Times of Financial Turmoil**

by

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## **Abstract**

Banks' valuation of goodwill has been questioned by analysts and the media. Analysts suggest that bank management as of the inception of the financial crisis have exploited the unverifiable fair value goodwill accounting opportunistically. This suggestion implicitly implies that bank management was more likely than management of other industries to exploit goodwill accounting during the financial turmoil. In this thesis, I test whether the value relevance of banks' valuation of goodwill was affected differently than other industries during the financial turmoil. To do so, I use the value relevance of the pharmaceutical industry's valuation of goodwill as a control group for banks. Further, I hypothesize that (1) banks' valuation of goodwill was value irrelevant since investors should have impounded the information of the analysts in the stock price; (2) pharmaceutical industry's valuation of goodwill was value relevant since the financial turmoil did not severely affect its core business. The empirical result of the study suggests that the goodwill valuation of both banks and pharmaceuticals was value relevant. Moreover, the empirical result indicates that banks' valuation of goodwill was not less value relevant than the pharmaceuticals' valuation of goodwill. In summary, banks' valuation of goodwill seems to have been value relevant during the financial turmoil.

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## 1. Introduction

This study investigates whether investors found American and European banks' valuation of goodwill value irrelevant during the financial turmoil. Specifically, by testing the value relevance of banks' valuation of goodwill; and applying the value relevance of the pharmaceutical industry's valuation of goodwill as a control group during the financial turmoil: I test whether the value relevance of banks' valuation of goodwill was impacted differently than other industries during the financial turmoil. In this study, Value relevance is defined as the statistical significance of the adjusted R-square and coefficients.

As the Financial Accounting Standards Board (FASB), in 2001, adopted fair value goodwill accounting; the value relevance of companies' valuation of goodwill under the fair value regime has been debated. From the view of FASB, the adoption of fair value goodwill accounting was based on the implicit notions: (1) goodwill is a non-wasting asset; and (2) managements' private information need to be disclosed more efficiently (Watts, 2003). Similar arguments were presented by the International Accounting Standard Boards (IASB) as they adopted the fair value goodwill accounting in 2004. IASB also emphasized that the convergence and adoption of fair value goodwill accounting regime would benefit investors as "[it] improves the relevance and reliability of financial information" (IASB, 2005b, p. 17). Thus, the intent of both FASB and IASB to implement fair value goodwill accounting was that management should provide investors with relevant understanding of goodwill over time (IASB 2005a; FASB 2001b), implying that management's private information should be value relevant for investors. The implication with the new fair value regime under both U.S. Generally Accepted Accounting Principles (GAAP) and International Financial Reporting Standards (IFRS), however, is that the valuation of goodwill is unverifiable, as no active market exists. This implication implies that management is provided with discretion that can be exploited opportunistically (Holthausen and Watts, 2001).

According to Ramanna (2008) the impairment-only regime was not necessarily adopted in the interest of the investors. He finds that congressmen, receiving contribution from pro-pooling companies, pressured FASB into omitting the initial proposal of substituting amortization-only regime goodwill accounting for the option to either use pooling or amortization regimes. Due to the pressure or not, FASB later proposed the unverifiable impairment-only goodwill accounting as the new substitute for pooling and amortization regimes. The fair value impairment-only proposition was supported by the congressmen, with contributions from pro-pooling companies, and cautiously accepted by other policy makers.

The result of Ramanna's (2008) study suggests that the adoption of fair value goodwill accounting in the U.S. (and later in Europe) is partly due to the lobbying of American companies that predominantly exploited the pooling option. Further, prior studies indicate that management indeed exploits the discretion of the fair value regime opportunistically (e.g., Bens et al, 2007; Li & Sloan, 2010; Muller et al., 2009; Ramanna & Watts, 2010). Thus, instead of (as FASB and IASB intended) providing investors with private information on the economic value of goodwill, management seems to value goodwill in their own interest.

Given that management is valuing goodwill opportunistically in conjunction with Ramanna's (2008) findings, fair value goodwill accounting under U.S. GAAP and IFRS might not be value relevant for investors. Thus, the association between stock prices/returns and the valuation of goodwill under U.S. GAAP and IFRS should not be statistically significant (value irrelevant). Prior association studies on the adoption of SFAS 142 (now: ASC 350) suggest that information on goodwill under the fair value regime have had limited effect on the stock prices/returns (e.g., Li et al., 2005; Chen et al, 2004). In addition, Hamberg and Beisland (2011) find that the adoption of fair value goodwill accounting, in Sweden, under IFRS 3 even worsen the association between stock prices and information on goodwill compared to the prior prudent Swedish amortization regime. The result of these value relevance studies on fair value goodwill accounting, however, is based on pooled industries during periods prior to the eruption of the financial turmoil. Thus, the result of value irrelevance might not be generalizable to individual industries' valuation of goodwill during the financial turmoil. For instance, Hamberg and Beisland (2009) find that the association between stock prices and general accounting information among non-traditional industries became more statistically significant during times of low growth expectations (bad times).

What remains a puzzle is whether value relevance of goodwill differs between industries during macroeconomic shocks (bad times). This study attempts to provide insight to the puzzle by investigating whether the financial turmoil (bad times) impacted the value relevance of industries differently. The setting of the financial turmoil provides an opportunity to test whether the value relevance of individual industries' valuation of goodwill was impacted differently. In both the U.S. and Europe, banks' valuation of goodwill has been questioned, critics were (and still are) implicitly suggesting that banks, as of the inception of the financial turmoil, are relatively more likely to exploit the discretionary provided by fair value goodwill accounting. Further, it was suggested that the pharmaceutical industry was valuing goodwill accurately during the financial turmoil (e.g., Gros, 2009; Hayn, 2010; Healy, 2009). Based on these suggestions in conjunction with theory on how information is

impounded in the stock price, I hypothesize that banks' valuation of goodwill was value irrelevant during the financial turmoil; whereas the pharmaceutical industry's valuation of goodwill was value relevant during the financial turmoil. The purpose of using the pharmaceutical industry as a control group for banks is that, unlike the banking industry, the pharmaceutical industry's core business should not have been severely affected as a direct result of the financial turmoil. This argument is based on the notion that the demand of the pharmaceutical industry's products is inelastic. Thus, two industries that are affected differently by the financial turmoil should also value goodwill differently. Results consistent with the hypotheses suggest that companies' valuation of goodwill is value relevant for investors if the management of the industry is expected to possess incentives that align with the interest of the investors. Further, consistent results would also implicitly suggest that management incentives are important for investors in both the U.S. and Europe. Hence, throughout the study, I assume that management is responsible for corporate decisions and if shareholders' interests do not perfectly align with the incentives of management, corporate decisions will reflect management interest.

This study provides FASB and IASB with information on whether banks' valuation of goodwill under the unverifiable fair value regime is value relevant for investors during the financial turmoil. In addition, the study indicates whether the value relevance differs between industries as investors' and management's interests are likely to differ between industries during the financial turmoil. Thus, this study implicitly tests whether the value relevance of the valuation of goodwill is consistent between industries and regions (America and Europe) during the financial turmoil.

Both applied association tests (price/return models) indicate that the goodwill valuation of banks and pharmaceuticals were to some extent value relevant to investors. In contrast to the hypotheses of this study, the return regression model indicates that the goodwill valuation of European banks and American pharmaceuticals and banks were to some extent significant and negatively associated with stock return. More interesting is that banks' valuation of goodwill seem to have been more value relevant than pharmaceuticals' valuation of goodwill under the return model. The result of the return model: that banks' valuation of goodwill was more value relevant than pharmaceuticals' valuation of goodwill during the financial turmoil, is confirmed in the American setting by the price regression model. However, in the European setting, pharmaceuticals' valuation of goodwill seem to have been more value relevant than banks' valuation of goodwill. Further, the price regression model suggests that goodwill items were value relevant for investors. For European banks information on capitalized goodwill

was positively associated with stock prices; whereas European pharmaceuticals' capitalized goodwill and goodwill impairments seem to have been statistically significant and negatively associated with stock prices. However, due to multicollinearity problems, the result of the European pharmaceutical's capitalized goodwill is not reliable for further interpretations. For the American setting, goodwill seems to have been value relevant as well. American banks' capitalized goodwill was associated with stock prices. Further, American pharmaceuticals' capitalized goodwill and goodwill impairments were associated with the stock prices, which indicate that the valuation of goodwill is value relevant information for investors. The conclusion of the price and return regression models was that banks and pharmaceuticals valuation of goodwill seem to have been value relevant for investors.

By linking the results of each value relevance regression above suggest that there were no difference in value relevance between pharmaceutical and banks during the financial turmoil. By pooling all observations of each industry and interact the independent goodwill variables with a dummy for banks, differences in value relevance between banks and pharmaceuticals is tested. The direct test indicates that no interaction variables are significant which implies that there was no differences between the response coefficients of banks and pharmaceuticals during the financial turmoil. Hence, banks' valuation of goodwill was not less value relevant than the pharmaceutical industry's valuation of goodwill during the financial turmoil.

The remainder of this thesis is organized as follows. Section 2 discusses the accounting standards and prior systematic studies on fair value goodwill accounting. Further, the criticism of banks' valuation of goodwill during the financial turmoil is discussed. Section 3 develops two hypotheses: the first to test whether American and European banks' valuation of goodwill is value relevant; the second to test (regardless of the outcome of the first hypothesis) whether the pharmaceutical industry's valuation of goodwill is value relevant during the financial turmoil. In section 3, implications and alternate explanations to the hypotheses are addressed. Section 4 describes the research design and presents the empirical analysis. Section 5 summarizes the findings of the study and explores avenues for future research.

## **2. Discussion on Fair Value Goodwill Accounting**

In this section, I discuss the background to fair value goodwill accounting under U.S. GAAP and IFRS, respectively. Further, I discuss the recent criticism of American and European bank managements' valuation of goodwill during the financial turmoil. The section concludes with a discussion on prior research on management's valuation of goodwill under the fair value regime.

### **2.1 Background to Fair Value Goodwill Accounting**

As of 2001, FASB adopted fair value goodwill accounting and, thus, abolished historical value goodwill accounting. However, the adoption of fair value goodwill accounting for bank acquisitions were delayed till 2002, as Statement of Financial Accounting Standards (SFAS) 72 was rescinded by SFAS 147. The decision to adopt fair value goodwill accounting was based on the implicit notions that: (1) goodwill is a non-wasting asset; (2) managements' private information need to be disclosed more efficiently (Watts, 2003). Thus, the adoption of the unverifiable fair value estimates of goodwill is based on FASB's implicit assumption that investors will benefit from management's favorable private information on future cash flows (Ramanna & Watts, 2010). In 2002, based on the Norwalk Agreement, FASB and IASB initiated a joint project to converge U.S. GAAP and IFRS. As part of the convergence process: fair value goodwill accounting was adopted by IASB in 2004, but required for European companies as of 2005. The argument of IASB to converge goodwill accounting under IFRS with U.S. GAAP was to "[improve the] comparability of the financial information around the world" (IASB, 2005b, p. 16). In practice, the new fair value approach to goodwill accounting under both U.S. GAAP and IFRS applies the purchase method with at least yearly tests for impairments. The change of method to fair value goodwill accounting yield that companies no longer are allowed to neither use pooling-of-interest nor purchase method with the concept of amortization and necessary write downs.

In the U.S., goodwill accounting is based on FASB's Accounting Standards Codification (ASC) 805 *Business Combinations* and ASC 350 *Goodwill and Other Intangible Assets*. ASC 805 stipulates that the purchase method should be applied when valuing acquired assets, thus, the difference between the purchase price and the fair value of acquired assets is the capitalized goodwill. ASC 350 focuses on accounting and reporting of goodwill after it is capitalized in accordance with ASC 805. Further, ASC 350 stipulates that goodwill impairment test should be conducted at least annually at the reporting unit level. When testing for goodwill impairments under ASC 350, two steps need to be considered. The first step is to



compare the fair value of the reporting unit with its carrying amount, including goodwill. If the fair value to carrying amount-ratio is equal to or larger than one no impairment is needed; however, if this ratio is smaller than one impairments might be needed. Depending on the outcome of step one: step two is only considered if the fair value to carrying amount-ratio implies the need of impairments. Thus, step two focuses specifically on the valuation of goodwill, and if the fair value of goodwill is less than its book value; the difference is the reported goodwill impairment.

In Europe, Goodwill accounting is based on IASB's International Financial Reporting Standards (IFRS) 3 *Business Combinations* and International Accounting Standards (IAS) 36 *Impairment of Assets*. IFRS 3 defines the recognition criteria for which acquired assets should be capitalized and more importantly what should be capitalized as goodwill. Under IFRS 3 the purchase method is applied: thus the difference between the purchase price and the fair valued assets is the capitalized goodwill. Further, IFRS 3 stipulates that capitalized goodwill shall be tested for impairment in accordance with IAS 36. Since acquired goodwill shall be allocated to CGUs of the acquiring company: goodwill is tested for impairment at this level. Goodwill under IAS 36 is defined as the future economic benefits reflected by the combination of the acquired assets and, hence, goodwill is not individually identifiable or separately recognized. Thus, before the goodwill is tested for impairments, all other assets of the cash-generating unit (CGU) must be tested for impairments. Further, impairment tests shall at least be conducted yearly: companies choose the date themselves, which will be the date for all coming years. If the book value of goodwill exceeds its recoverable amount; the difference is reported as goodwill impairment. Recoverable amount is defined as the highest amount of the fair value in use or the fair value adjusted for cost of sales.

Although IASB adopted fair value goodwill accounting as part of the convergence process between U.S. GAAP and IFRS: there are still some differences. For instance, the amendments of IAS 36 (in 2009) did not fully converge with U.S. GAAP and, thus, there are still significant differences in the impairment test process. One of the main differences relates to, for instance, at what level of the company the goodwill should be tested. Under U.S. GAAP, goodwill is tested at the reporting unit level; under IFRS, goodwill is tested at the CGU level. Reporting unit is defined as a unit not lower than the operating segment; whereas CGU is not defined with a lower limit: not larger than a segment. Thus, goodwill impairments under U.S. GAAP and IFRS can theoretically be tested at different levels. In addition to the testing of goodwill at different levels, the impairment test of goodwill is not fully converged either. For instance, under U.S. GAAP it is possible to deduct liabilities from the carrying

amount of the reporting unit before comparing it with the fair value. Under IFRS, however, it is not allowed to deduct liabilities from the carrying value. These implications of the not fully converged fair value goodwill accounting between U.S. GAAP and IFRS could potentially yield differences in valuation of goodwill for the same economic event.

## **2.2 Background to the Discussion on Banks' Valuation of Goodwill**

As the investment bank *Lehman Brothers* filed for Chapter 11 bankruptcy protection in 2008, the American and European interbank markets collapsed and banks in the regions suffered severely. However, the financial crisis not just revealed macroeconomic issues: real weaknesses of banks' balance sheet were also revealed. In many cases, capitalized assets on banks' balance sheet were overvalued. Especially, so called contagious asset related to the sub-prime or its associated assets, i.e. CDOs, CDS, made it difficult for banks to sustain and, thus, banks collapsed or were on the brink of collapsing (Sorkin, *New York Times*, 2008). As the situation became unsustainable and proved to have negative effects on the real economy, a recession unfolded as a result of the financial turmoil, the American and European governments realized that intervention was indeed needed (Christie, *Bloomberg*, 2008; *Reuters*, 2008a; *Economist*, 2009). This intervention was based on the belief, such as, that banks need to recover quickly in order for the economy to recover from the recession (*Reuters*, 2009). Thus, most American and European banks' losses and diminishing equity were covered with liquidity from the governments and the quantitative ease of the central banks.

As the balance sheet of American and European banks is recapitalized, a new topic of concern has emerged: critics propose that banks' value goodwill inaccurately. Healy (*New York Times*, 2009), for instance, claims that the next source of losses for the banking industry can potentially be related to accumulated goodwill impairments. The argument is that due to the bust of the banking industry: the size of the goodwill does no longer reflect the economic reality. According to Gros (*Centre for European Policy Studies*, 2009) the issue of inflated capitalized goodwill could yield another expensive bailout of the banking industry.

In Europe, banks are blamed for excessively delaying goodwill impairments. For instance, Hayn (*Financial management*, 2010) argues that European companies and especially European banks need to impair its goodwill. Further, Gros (*Centre for European Policy Studies*, 2009) suggest that the European bank management's unwillingness to impair goodwill sufficiently is shared with the European policy makers. The argument is that politicians in Europe as a result of the European sovereign debt crisis need to stabilize the

European financial markets and, thus, not addressing the issue. Healy (*New York Times*, 2009) goes even further and argues that European policy makers' fear of an even more severe financial turmoil makes them uninterested in large goodwill impairments among banks. Healy's notion is supported by Rogoff (*interview on SVT*, 2010); he claims that the European policy makers are trying to sweep all the problems of the European banking industry under the rug. To prove his point, Rogoff exemplifies the European Central Bank's (ECB) stress test of the European banking industry. For instance, all Irish banks passed the stress test, however, some months later most of them were on the brink of bankruptcy, implying that the ECB is disguising actual problems of the European banking industry (Rogoff, *interview on SVT*, 2010).

In Sweden, for example, analysts have criticized *Swedbank's* valuation of goodwill, a bank heavily exposed to the Baltic banking market. Although the Baltic region's financial markets collapsed, *Swedbank* has not impaired the goodwill associated with the Baltic banking market. For example, Malmqvist (*Dagens Industri*, 2010) argues that *Swedbank* clearly should impair its goodwill since it is not possible to "defend" the goodwill with the superior earning power criterion. He concludes that *Swedbank's* "rogue accounting" does not only deceive the financial analysts and investors, but also is damaging to the reputation of the Swedish capital market. *Swedbank*, on the other hand, argues that no evidence indicate that the goodwill of roughly 12.4 billion SEK associated with the Baltic bank market need to be impaired (*E24*, 2009).

While European banks are blamed for excessively delaying goodwill impairments during the financial turmoil, American banks are blamed for excessively accelerating impairments of goodwill. In 2008, compared to all American industries, the banking industry was by far the heaviest affected industry in terms of goodwill impairments (in actual dollars). In late 2008, Federal officials launched measures that would ease the pressure on banks' goodwill impairments requirements in order for banks to stop the eroding effect on the balance sheet (Labaton, *New York Times*, 2008). In the period of 2008-2009, the goodwill impairments among American banks decreased with more than 90 percent (Palatnik, *KPMG*, 2010). However, as the other industries have precipitously returned to normal pre-crisis impairment amounts, banks are still impairing considerably higher than normal pre-crisis amounts (*Duff and Phelps*, 2010). Although American banks' total amount of goodwill impairments dropped in 2009, as of 2010, some of the largest banks in the U.S. once again reported goodwill impairments in billions of dollars. Especially as Bank of America impaired its goodwill associated with a credit card subsidiary, analysts criticized bank management to

be too pessimistic when valuing goodwill (Son, *Bloomberg*, 2011; Clarke & Aspan, *Reuters*, 2011, Ahmed & Cordeiro, *Reuters*, 2011): implying “big bath” impairments of goodwill. Healy (*New York Times*, 2009) suggests that American banks’ aggressive impairments are due to managers’ interest to manage earnings in order to more easily cut jobs, slash budgets and reduce capital investments. Also, it is argued that banks are excessively accelerating goodwill impairments in order to improve the potential for future inflated earnings (Healy, *New York Times*, 2009).

Based on the criticism of American and European banks’ valuation of goodwill, two implied conclusions can be derived: (1) Banks in Europe are excessively delaying impairments of goodwill; whereas American banks are excessively accelerating impairments of goodwill. (2) American and European banks seem to be more extreme than the average industry of its region, respectively. Implying that European banks are more cautious to impairments of goodwill than the other industries in Europe; and American banks are impairing goodwill more aggressively than the other American industries.

The implied difference between American and European banks’ valuation of goodwill can be related to, as discussed in the sub-section above, differences between goodwill accounting under U.S. GAAP and IFRS. Although the regional differences in goodwill accounting can be explained by differences in applied accounting standards, differences between industries in the same region cannot be explained by the applied accounting standard. Thus, the implied differences in the valuation of goodwill can potentially be related to other factors than accounting regulation. According to Holthausen and Watts (2001) the fair value regime of goodwill accounting provides management with significant discretion as no active markets for goodwill exists. Thus, accounting for goodwill under both U.S. GAAP and IFRS provides discretion that management can exploit opportunistically. The unverifiable characteristic of goodwill accounting implies that management’s incentive to the valuation of goodwill is an important factor to consider in addition to the applied accounting standard. This conclusion implies that the possible differences between American and European banks’ valuation of goodwill can be related to differences in management’s incentives rather than the applied accounting standard.

### **2.3 Prior Research on Managements’ Valuation of Goodwill**

Prior studies suggest that management value goodwill under the unverifiable fair value accounting regime opportunistically. However, the notion is not unchallenged: Jarva (2009) find that American companies’ goodwill impairments during 2002-2005 are based on

economic factors, and not earnings management. Although Jarva's study find evidence that management do not exploit goodwill in order to manage earnings, the model is, however, unable to explain whether firms not impairing goodwill during the period are opportunistically trying to avoid impairments.

In contrast to Jarva's (2009) findings, Hayn and Hughes (2006) find that management tends to value goodwill opportunistically by excessively delaying impairments of goodwill. Thus, they imply that goodwill impairment is based on other incentives than the underlying economics of the goodwill. Further, Bens et al. (2007) find that since the adoption of SFAS 142 market have not reacted to goodwill impairments. Based on Hayn and Hughes result in conjunction with the finding of Bens et al. (2007); impairments of goodwill seem to be delayed until investors understand the economic value of goodwill. This conclusion is supported by Ramanna and Watts (2010): they find that management does not impair goodwill until the investors discounted a lower value of goodwill. In addition, the high frequency of non-impaired goodwill could not be explained by favorable private information among the management, rather it is suggested that management's deliberate delay of goodwill impairments depends on CEO tenure. Ramanna and Watts' (2010) result is supported by the findings of Li and Sloan (2010) that SFAS 142 (now: ASC 350) is exploited by management as a tool of delaying impairments of goodwill, as it lag the deteriorating operational performance, to temporarily inflate earnings. Furthermore, they find that impairments are only taken when pre-impairment operating margins are unusually low. The results of the above discussed studies imply that management is not able or willing to forecast the value of goodwill and, hence, are waiting until there is substantial historical evidence that the goodwill need to be impaired (Li & Sloan, 2010).

The notion that management is opportunistically delaying goodwill impairments is confirmed by Muller's et al. (2009) study. However, their result challenges Li and Sloan's (2010) conclusion that management is unable to predict goodwill impairments. The study uses goodwill impairments as a proxy for whether management is trading on private information. Although management risks facing litigation, management of companies impairing goodwill seems to be more likely to strategically sell their stockholdings 24 month prior to the announcement of goodwill impairments than management of companies, not impairing goodwill. This result implies that management is able to predict the correct value of goodwill in advance. Although the result of Muller's et al. (2009) study is based on companies with limited (below median) analyst following, it provides evidence that when possible: management deliberately exploits the discretion provided by fair value goodwill accounting.

In conclusion, prior studies indicate that management is opportunistically delaying goodwill. Jarva (2009) find, however, that American companies' impairments of goodwill during 2002-2005 are based on the underlying economics of the goodwill, and not earnings management. I argue, however, that since Jarva's (2009) result is based on times prior to the financial crisis, it is not generalizable to bank management's valuation of goodwill during the financial turmoil. Thus, it is assumed that bank management is, depending on their interest, willing to either excessively delay impairments or excessively accelerate impairments of goodwill during the financial turmoil.

The above discussed results are based on an American setting. However, based on prior studies on general accounting information in a European setting, I argue that the above results can also be generalized to a European setting. I base this argument on: (1) goodwill accounting under both IFRS and U.S. GAAP provide management discretion; and (2) according to Ball et al, (2000), Leuz et al (2003) and Lang et al. (2006): European companies are more likely than American companies to exploit impairments to smooth earnings, implying that management of European companies also use the discretion provide by fair value goodwill accounting. Thus, I expect, based on the theory, that management in both Europe and America is able, and is willing, to manage goodwill in their own interest.

### **3. Hypotheses Development**

In this section, I motivate and hypothesize whether investors are likely to find banks' valuation of goodwill value relevant during the financial turmoil. I conclude with a discussion on implications and alternate explanations to the developed hypotheses.

#### **3.1 Research Motivation and Development of Hypotheses**

The intent of both FASB and IASB to implement fair value goodwill accounting was that management should provide investors with relevant understanding of goodwill over time (IASB 2005a; FASB 2001a), implying that management's private information should be value relevant for investors. IASB also emphasized that the convergence and adoption of fair value goodwill accounting will benefit investors as "[it] improves the relevance and reliability of financial information" (IASB, 2005b, p. 17).

According to Ramanna (2008), however, FASB's adoption of the impairment-only regime is not necessarily in the interest of the investors. He finds that congressmen, receiving contribution from pro-pooling companies, pressured FASB into drop the initial proposal of substituting amortization-only regime goodwill accounting for the option to either use pooling or amortization regimes. Due to the pressure or not, FASB later proposed the unverifiable impairment-only goodwill accounting as the new substitute for pooling and amortization regimes. The fair value impairment-only proposition was supported by the congressmen, with contributions from pro-pooling companies, and cautiously accepted by other policy makers. The result of Ramanna's (2008) study suggests that the lobbying of American companies who predominantly exploited the pooling option are responsible for the adoption of the impairment-only regime in the U.S. (and later in Europe).

As discussed in section two, the adopted fair value impairment-only regime of goodwill accounting under U.S. GAAP and IFRS provides management with significant discretion to the valuation of goodwill (e.g., Holthausen and Watts, 2001). In addition, prior studies indicate that management indeed exploits the discretion opportunistically (e.g., Bens et al, 2007; Li & Sloan, 2010; Muller et al., 2009; Ramanna & Watts, 2010). Thus, instead of (as FASB and IASB intended) providing investors with private information on the economic value of goodwill, management seems to value goodwill in their own interest.

Given that management is valuing goodwill opportunistically in conjunction with Ramanna's (2008) result, fair value goodwill accounting under U.S. GAAP and IFRS might not be value relevant for investors. Thus, the association between stock prices and the

valuation of goodwill under U.S. GAAP and IFRS should not be econometrically significant. Prior association studies on the adoption of SFAS 142 (now: ASC 350) suggest that goodwill information under the fair value regime have had limited effect on the stock price (e.g., Li et al., 2004; Chen et al, 2004). In addition, Hamberg and Beisland (2011) find that the adoption of fair value goodwill accounting under IFRS 3 in Sweden not only is insignificant but even worsen the association between stock prices and information on goodwill compared to the prior prudent Swedish amortization regime. However, the result of these value relevance studies on goodwill accounting is based on industries in aggregate and periods prior to the eruption of the financial turmoil. Thus, the result of value irrelevance might not be applicable to the value relevance of individual industries' valuation of goodwill during the financial turmoil. For instance, Hamberg and Beisland (2009) find that the association between stock prices and general accounting information among non-traditional industries becomes more significant during times of low growth expectations (bad times). Non-traditional industry is defined as an industry more likely to capitalize investments as intangible assets.

The setting of the recent financial turmoil provides an opportunity to test whether the value relevance of individual non-traditional industries' valuation of goodwill is impacted differently. What makes the financial turmoil interesting (and macroeconomic shocks in general) is that it affects industries' core business differently. Thus different industries might have different incentives to the valuation of goodwill. Given this argument, industries with core business not affected by the financial turmoil should be more value relevant than industries severely affected.

As discussed in section two, the financial turmoil has put particularly the banking industry's core business under pressure. According to analysts and media reports, American and European banks have valued goodwill opportunistically. The notion is that American and European banks' valuation of goodwill during the financial turmoil does not reflect the economic value: as European banks are excessively delaying goodwill impairments; whereas American banks are excessively accelerating the impairments of goodwill due to the financial turmoil. (e.g., Gros, *Centre for European Policy Studies*, 2009; Hayn, *Financial management*, 2010; Healy, *New York Times*, 2009; Duff and Phelps, 2010). The notion that bank management is exploiting the fair value accounting regime during the financial turmoil is supported by Fiechter & Meyer's (2011) study. The study indicate that American bank management in 2008, as the crisis was most severe, indeed used the discretion provided by U.S. GAAP to smooth the earnings. Although the result is based on the discretion provided of the change from mark-to-market to mark-to-model valuation (Level 3 fair value) under ASC



825 *Financial Instrument*, the result aligns with the assumption of this study: bank management are using the discretion to manage earnings in their own interest.

Elaborating on Hamberg and Beisland's (2009) result, banks' valuation of goodwill should be value relevant during the financial turmoil (bad times). However, in contrast to this notion, I argue that due to the high analysts and media coverage of the banking industry, as a result of the financial turmoil: banks' valuation of goodwill should be value irrelevant. As a result of banks attracting high analyst coverage: the efficiency in the price discovery of bank stocks is improved among investors (e.g., Brennan, Jagadeesh & Swaminathan 1993; Brennan & Subrahmanyam, 1995; Kimbrough, 2007). Thus, the debate on banks' inaccurately valued goodwill is publicly acknowledged and, hence, should be impounded in the stock prices of banks in the short and long term (Hong, Lim & Stein, 2000).

Thus, even if bank management value goodwill accurately or not, the finding of prior studies that management in general value goodwill opportunistically in conjunction with the analysts and media reports: investors should be hesitant towards the banking industry's valuation of goodwill and therefore not finding the valuation value relevant. Based on these reasons, I hypothesize that neither American nor European banks' valuation of goodwill is a value relevant financial reporting element during the financial turmoil:

**[H1a]** *American Banks' valuation of goodwill is not value relevant during the financial turmoil*

**[H1b]** *European Banks' valuation of goodwill is not value relevant during the financial turmoil*

The purpose of H1a and H1b is to test whether investors, with the stock market price as a proxy, find banks' valuation of goodwill value relevant in times of financial turmoil. Empirical results consistent with H1a and H1b suggest that investors acknowledge the criticism of analysts and media reports on banks valuation of goodwill and, thus, do not impound banks' information on goodwill into the stock price. However, since prior studies claim that fair value goodwill accounting in general is not value relevant (e.g., Hamberg and Beisland, 2011; Li et al., 2005; Chen et al, 2004), I cannot conclude that results consistent with H1a and H1b specifically relate to banks; and not to all industries during the financial turmoil.

In order to test whether the financial turmoil is affecting the value relevance of bank's valuation of goodwill differently than other industries, I include the value relevance of another non-traditional industry's valuation of goodwill as a control: the pharmaceutical

industry. What makes the pharmaceutical industry interesting as a control is that, unlike the banking industry, its core business is not as severely affected by the financial turmoil since consumers are price-inelastic to the pharmaceutical's products and services (Penner, 2004). Thus, pharmaceutical's valuation of goodwill should not be directly affected by the financial crisis (or other macroeconomic shocks). Instead, the valuation of goodwill should be associated with the opportunities associated with the research and development of acquired companies. This argument is also implicitly confirmed by the stock markets: the market beta of the pharmaceutical industry is generally low which implies that investors find the industry less dependent on the business cycle (e.g., Golec & Vernon, 2007; Myers & Howe, 1997).

An additional argument for including the pharmaceutical industry as a control is that, in contrast to the banking industry, analysts claim that pharmaceutical's valuation of goodwill is accurate and consistent during the financial turmoil (e.g., Hayn, *Financial management*, 2010; *Duff and Phelps*, 2010). Applying the same reasoning as in the development of hypothesis one (e.g., Hong, Lim & Stein, 2000), the analyst coverage and information on the pharmaceutical industry's accurately valued goodwill should be publicly acknowledged. Hence, the pharmaceuticals' valuation of goodwill should be value relevant information as it is perfectly impounded in the stock price in the short and long term.

Thus, I conclude that the pharmaceutical industry is an appropriate control group for whether results consistent with H1a and H1b is related to whether companies are adversely affected by the financial crisis or whether investors in general do not find goodwill value relevant during the financial turmoil. Based on the above discussion, I hypothesize that pharmaceuticals' valuation of goodwill is value relevant:

[H2a] *American pharmaceutical Industry's valuation of goodwill is value relevant during the financial turmoil*

[H2b] *European pharmaceutical Industry's valuation of goodwill is value relevant during the financial turmoil*

### **3.2 Implications and Alternate Explanations**

Hypothesis 1 tests whether banks' valuation of goodwill under the fair value regime of U.S. GAAP and IFRS is value irrelevant during the financial turmoil. To do this, H1a and H1b test the value relevance of American and European banks' valuation of goodwill, respectively. Linking H1a and H1b together is the assumption that banks' valuation of goodwill under the fair value regime of U.S. GAAP and IFRS is value irrelevant during the financial turmoil. Empirical evidence consistent with hypothesis 1 indicates that banks'

valuation of goodwill under both U.S. GAAP and IFRS is value irrelevant during the financial turmoil. Evidence consistent with hypothesis 1 is interesting since it would contradict the findings of Hamberg and Beisland (2009) that the value relevance of accounting information becomes more significant during bad times. Also, it is interesting for FASB and IFRS since the argument for adopting fair value goodwill accounting was to improve the relevance for investors over time (including the financial turmoil).

Hypothesis 2 tests whether the pharmaceutical's valuation of goodwill under the fair value regime of U.S. GAAP and IFRS is value relevant during the financial turmoil. To do this, H2a and H2b test the value relevance of American and European pharmaceuticals' valuation of goodwill during the financial turmoil, respectively. Hypothesis 2 is the assumption that the pharmaceutical industry is valuing its goodwill accurately and consistent and, thus, is value relevant for investors. Evidence consistent with H2a and H2b suggest that fair value goodwill accounting under U.S. GAAP and IFRS is value relevant (for at least one industry) during the financial turmoil.

Linking hypotheses 1 and 2 is the assumption that during the financial turmoil (macroeconomic shock), companies have different incentives to value goodwill and investors are aware of it. During the financial turmoil, based on analysts and media reports, banks are expected to value goodwill opportunistically; whereas pharmaceuticals are expected to value goodwill accurately. If investors impound the information of the analysts to the stock price instead of the information of bank and pharmaceutical management: banks' valuation of goodwill should be value irrelevant; whereas pharmaceuticals' valuation of goodwill should be value relevant. Thus, empirical results consistent with hypotheses 1 and 2 suggest that the financial turmoil affects the value relevance of different industries, where the most severely affected industry (banks' valuation of goodwill) is not value relevant; whereas one of the least severely affected industries (pharmaceutical) is value relevant. Thus, Results consistent with the hypotheses suggest that companies' valuation of goodwill is value relevant for investors if the management of the individual industry is expect to posses incentives that align with the investors.

Empirical results inconsistent (in different combinations) with hypotheses H1a, H1b, H2a and H2b indicate either that the financial turmoil do not impact banks and other industries differently; or that additional factors than solely the financial turmoil affects the value relevance (e.g., differences in trust to management, culture, goodwill is not impounded in the stock price regardless of the business cycle and industry). For instance, (1) if empirical results are consistent with hypothesis 1 (i.e. H1a-H1b) but not hypothesis 2 (i.e., H2a-H2b)

indicates that investors are not impounding goodwill in the stock price, implying that the adoption of fair value goodwill accounting was unnecessary since investors are not including the information. An alternative interpretation relates to how exposed the pharmaceutical industry is to the financial products. Although it is unlikely, the internal banks of the pharmaceutical industry, for instance, can be just as exposed to the financial turmoil as the listed banks (2) If empirical results are consistent with hypothesis 2 but not with hypothesis 1 indicates that during the financial turmoil investors find both banks' and pharmaceuticals' valuation of goodwill value relevant. This result would imply that fair value goodwill accounting has been successfully adopted since investor finds the information on goodwill relevant: as FASB and IASB intended. (3) Other combinations of empirical results consistent and inconsistent with H1a, H1b, H2a and H2b implies that there are regional differences between the value relevance of American and European banks and pharmaceuticals, suggesting that the efficiency of information diffusion differ in the regions or that the convergence of fair value goodwill accounting between U.S. GAAP and IFRS is not sufficiently implemented and, hence, affects the value relevance differently. Thus, by linking hypotheses 1 and 2 together, provides implicit indication on whether investors only mistrust banks' valuation of goodwill during the financial turmoil or whether investors mistrust the valuation of goodwill in general. It is possible that the banking and pharmaceutical industry in one region value goodwill accurately; whereas banks and pharmaceuticals in another region value goodwill opportunistically.

Potential implications of interpreting the hypotheses relate to possibility that investors based on implicit information from management anticipated how the financial turmoil would affect banks' and pharmaceuticals' valuation of goodwill and, hence, the valuation of goodwill is value relevant information for investors as it is presented and not when it is published in the financial statements. However, this study focus on how accounting information is valued during the setting of the financial turmoil, and not whether investors are able to anticipate on beforehand, although it might affect the results. In addition, it is possible that investors in one region do not impound the analyst reports and, hence, find goodwill value relevant even tough it is not associated with its economic value, or vice versa. My association tests cannot rule out these possibilities, but this is not necessary to interpret the empirical evidence of hypotheses 1 and 2, since investors' choice not to impound information of analysts to the stock price is related to value relevance as well.

Another implication relates to the cultural heterogeneity of Europe. In this study it is implicitly assumed that Europe and America are two homogenous areas, respectively.

Although America is not homogenous (e.g., state laws and regulation), the problem with heterogeneity is likely to be more severe in Europe. For instance, based on the code of law, Europe can be divided into three regions and, in addition, the level of investor protection and view on financial markets differ within Europe (La Porta et al., 1998). Specifically the UK might affect the result of Europe, since its capital market, investor protection and rule of law is similar to America (La Porta et al., 1998). In addition, prior to the adoption of fair value goodwill accounting, Europe have in the past been more prudent than America to the valuation of goodwill. For instance, van der Zanden and Nobes (2002) find that before the adoption of fair value goodwill accounting, European companies on average amortized goodwill under a shorter (5-20 years) period than American companies (40 years). However, since IFRS is applied in a heterogeneous setting: the problems with heterogeneity must be accepted.

The value relevance of goodwill valuation during bad times (e.g., financial turmoil) is not necessarily generalizable. For instance, Hamberg and Beisland (2009) conclude, that over time: value relevance of accounting information varies. They find that the value relevance models in bad times (relative to good times) better explains returns with accounting data. Since this study is only based on the setting of the financial turmoil, this finding implies that the result of value relevance can only be generalized to times of financial turmoil (or macroeconomic shocks).

Concluding, the datasets include companies in different sizes meaning that analyst following might not be impounded as efficiently as anticipated in the hypothesis. However, investors should be more cautious towards banks in general since the financial turmoil has attracted attention to specifically this industry's dilemma.

## 4. Empirical Analysis

In this section, I start with describing the sample selection procedure and address potential caveats with the data. Further, the research design of the empirical models is presented. The section concludes with a presentation of the main findings and a discussion on the reliability and validity of the empirical results.

### 4.1 Data and Sample Selection

In this study, I employ data from banks and pharmaceuticals listed on the American and European stock exchanges in the period of the financial turmoil, all collected from Datastream. I define the financial turmoil (2007-2009) as the period starting as of the bust of the American housing market and the following financial crisis. In order to maintain sufficient inference of the value relevance, all included stock market prices are based on efficient developed stock markets (Aboody et al., 2002). Thus, I use prior studies on market efficiency to select appropriate stock markets. Based on Worthington and Higgs' (2011) results, I include market data from the U.S., EU 15, Norway and Switzerland. However, the stock markets of Luxembourg and Greece are excluded due to stock market inefficiency (Dicle and Levendis, 2011). It should be noted that after all necessary adjustments in the dataset of the study (explained below), only two Greek banks and pharmaceutical firms, respectively, and one bank in Luxembourg were excluded: implying that the exclusions most likely do not drive the results of the study. Hence, Europe is defined as the countries of EU 15 (excluding Greece and Luxembourg), Norway and Switzerland. In the vein of the efficient stock market argument, all banks and pharmaceuticals listed for “over the counter” (OTC) trading are excluded from the analysis, as well. The reason for not including the eastern European markets (besides from the developed market criterion) is based on Chan's et al. (1997) result that eastern European, except from the Hungarian, stock markets are inefficient.

In this study, based on the *Oxford Dictionary of English*, *bank* is defined as an organization that acts as a financial intermediary and, thus, income is primarily related to interest and fees on money, financial services and products. In Datastream, two categories fulfill this definition: *Financial Services sector* and *Bank sector*. However, since this study focus on banks: the financial institutions and financial services (including investment banks) are not included. The *pharmaceutical industry* is defined as an industry that is developing, producing and marketing licensed drug for medication purposes. In Datastream, this industry is found under the *pharmaceutical and biotechnology sector-category*.

The included banks and pharmaceuticals of the initial datasets comply with different accounting standards and have different fiscal year-ending. Thus, necessary adjustments of the data are taken to improve the comparability of the data. Since the focus of this study is on the valuation of goodwill under U.S. GAAP and IFRS: banks and pharmaceuticals with no capitalized goodwill under either accounting standard during the period of financial turmoil are excluded. Hence, firms with no group accounting are excluded since goodwill only exists in consolidated financial statements. Since companies listed on the American stock exchanges are allowed to comply with IFRS and some of the listed companies in Europe are complying with local standards and even US GAAP: I exclude all companies in the U.S. datasets that are not confirmed to comply with U.S. GAAP; further, I excluded companies in the European datasets that was not confirmed to comply with IFRS. The data on complied accounting standard was collected from Datastream. In order to avoid duplications: the sample was filtered for non-equity securities, secondary quotes and non-major securities. Further, for any bank or pharmaceutical listed in more than one stock exchange: stock prices and accounting information of the major stock exchange in the country where the company is based is applied to the study.

In order to avoid comparability problems due to information disclosed at different dates, banks and pharmaceuticals with fiscal year-end other than December 31 in year  $t$  are excluded. Further, in order to avoid survivor bias, the initial dataset included all banks and pharmaceuticals of Datastream. That is, companies registered as dead, suspended delisted were initially included with active companies, and if active during any given year of the period they are included in the analysis. Based on prior market based studies, the stock price is a lead variable from April 1 in year  $t+1$ . The lead variable *stock price* ( $P^{ret}$ ) is based on the assumption that investors impound accounting information from the annual report in April rather than the year-end financial statements. In addition, all accounting items and stock market prices applied in the study were converted by Datastream into U.S. dollars.

In the data from Datastream, missing values are quite common and especially for information on goodwill impairments. In order to improve the model more data is need. Thus, I investigated manually whether the missing values equal “zero” impairments by checking banks’ and pharmaceuticals’ financial statements randomly. I find that missing values are related to no impairments. This adjustment might result in biased regression results as for some companies the missing value is not equal to zero. It should be noted that I only include “zeros” in the cells that Datastream specifically states: no values available. All empty cells are not adjusted with the assumption of the value of zero.

Table 1 presents the number of included firms on April 1 in year t+1. The table is split into the sample of U.S. firms accounting for goodwill under U.S. GAAP and European firms accounting for goodwill under IFRS. The number of listed banks in both U.S. and Europe has decreased slightly over time. Similar pattern goes for the pharmaceutical industry in the U.S. and Europe. In the dataset, American banks and pharmaceuticals have fewer registered impairments than its European ditto, which might seem to contradict the discussion in section two: U.S. banks are excessively impairing goodwill. However, this is just the number of impairment charges and not the total amount of impairments. The mean value of goodwill impairment among American banks is slightly higher than the European banks (see table 9). Further, the portion of capitalized goodwill among American banks is decreasing faster than European banks. For the pharmaceutical industry, it is on the contrary, the portion of capitalized goodwill is increasing in both the American the European setting. The latter pattern in the European setting seems to correlate with number of delisted pharmaceuticals in Europe is increasing. Moreover, goodwill impairments seem to be more stable but slightly decreasing in the European setting; whereas U.S. Pharmaceuticals are a more volatile during the financial turmoil.

**Table 1**  
*Sample Description*

	America (U.S. GAAP)			Europe (IFRS)		
	2007	2008	2009	2007	2008	2009
Listed Banks Included	120	113	102	64	63	63
Listed Pharmaceuticals Included	110	114	106	101	96	91
Banks with capitalized Goodwill %	103	96	99	58	56	57
	85.8%	84.8%	97%	90.6%	88.8%	90.4%
Pharmaceuticals with capitalized Goodwill %	75	77	79	94	89	87
	68.1%	67.5%	74.5%	93%	92.7%	95.6%
Banks reporting goodwill impairments %	18	35	27	14	24	20
	15%	30.9%	26.4%	21.8%	38%	31.7%
Pharmaceuticals reporting goodwill impairments %	1	7	5	10	8	9
	0.9%	6.1%	4.7%	9.9%	8.3%	9.8%



## 4.2 Research Design for the Hypotheses

Econometrically, there are two main approaches to investigate investors' reaction to accounting information: short window or long-window. Short window approach attempts to explain the relation between accounting information and the short term movements of the market value by including additional information to the disclosed year-end information (e.g., analyst reports, earnings alerts) as explanatory variables. Long-window approach, however, attempts to explain long-term differences and, thus, excluding information that has short term effects on investors' valuation of equity. In this study, I apply the long-window approach since the relevance of managements' valuation of one specific accounting element (goodwill) is of interest (and not the short term fluctuation of the stock price).

The value relevance of accounting information is determined by using association tests, with the stock market price as a proxy for investor perception. Thus, value relevance research attempts to explain the relevance (statistical significance) of accounting information by comparing the relation between managements' and the markets' valuation of accounting elements. The association test is usually based on either price or return models (e.g., Easton & Harris, 1991; Collins et al., 1999). The relevant elements of the price model relates to both the balance sheet and the income statement; whereas the value relevant elements of the return model relates exclusively to the income statement. However, since the price model is deflated with the number of shares outstanding whereas the return model is deflated by the ingoing value of equity: it is suggested that price models suffer from scaling problems (e.g., Kothari & Zimmerman, 1995; Easton & Sommers, 2003; Gu, 2007). According to Kothari and Zimmerman (1995) it is the research question that determines which one of the models to apply. A common way in accounting research to avoid problems with reliability, however, is to employ both models (e.g., Hamberg & Beisland, 2011). For instance, Hamberg and Beisland (2011) find that goodwill impairments of the return model are not value relevant whereas goodwill (in the balance sheet) of the price model is value relevant. Thus, in order to include all value relevant effects of both the balance sheet and the income statement and, thus, improve the reliability: I apply both the return and the price model to test whether banks' valuation of goodwill as well as pharmaceuticals' valuation of goodwill is value relevant or not during the financial turmoil. Value relevance is defined as the statistical significance of the adjusted R-square and coefficients.

#### 4.2.1 Return Model Specification

The original return model in market based accounting research states that the return ( $RET$ ) is equal to the function of earnings ( $Earn$ ) and the change of earnings ( $\Delta Earn$ ) (e.g., Easton & Harris, 1991; Lev & Zarowin, 1999; Francis and Schipper, 1999):

$$RET = f(Earn, \Delta Earn) \quad (1)$$

In order to test whether banks' and pharmaceuticals' valuation of goodwill is value relevant goodwill impairments need to be included in *Equation (1)*. In order to do so, I apply Hamberg and Beisland's (2011) extraction of goodwill reductions from reported earnings with the exception that instead of defining goodwill reductions as amortization and impairments of goodwill: I only include goodwill impairments ( $GWimp$ ), since during the financial turmoil only impairments are allowed under both U.S. GAAP and IFRS. This extraction yield *equation 2*:

$$Earn = (Earn - GWimp) + GWimp \quad (2)$$

By inserting *equation (2)* into *equation (1)* yields a return model that includes Earnings adjusted for goodwill impairments:

$$RET = f[(Earn - GWimp), GWimp, \Delta(Earn - GWimp), \Delta GWimp] \quad (3)$$

I use *equation (3)* to examine whether banks' and pharmaceuticals' valuation of goodwill is value relevant during the financial turmoil. A poor predictor of future performance is losses (Hayn, 1995; Ball & Shivakumar, 2006), a common element in times of financial turmoil. Thus, I adjust for the problem of negative earnings (as suggested by Francis et al, 2003) by interacting a dichotomous variable ( $D$ ) for negative earnings ( $Earn$ ), which takes the value of one if earnings is negative, otherwise zero. I deflate all exogenous variables (as suggested by Easton & Sommers, 2003) with the market value of equity of April 1 in year  $t$ . This yields the following regression model:

$$RET_{it} = \beta_0(Earn + GWimp)_{it} + \beta_1 GWimp_{it} + \beta_2 \Delta(Earn + GWimp)_{it} + \beta_3 \Delta GWimp_{it} + \beta_4 (D * Earn_{it}) + \varepsilon_{it}$$

Where  $RET_{it}$  is the change of the dividend-adjusted stock price ( $P^{ret}$ ) from April 1 in year  $t$  to April 1 in year  $t+1$  for firm  $i$ .  $Earn_{it}$  is the net profit for firm  $i$  in year  $t$ .  $GWimp_{it}$  is the value of goodwill impairment (if any) for firm  $i$  in year  $t$ .  $D_{it}$  is a dichotomous variable that takes the value of 1 if net profit for firm  $i$  is negative in year  $t$ .  $\Delta$  is the change of the variable from year  $t-1$  to year  $t$ .

#### 4.2.2 Price Model Specification

The second model I use to test the value relevance of banks' and pharmaceuticals' valuation of goodwill is the price model specification. The advantage with the price model, as mentioned above, is that it includes items from both the balance sheet and income statement. The original price model states that the market value of equity (Price) is equal to the function of the book value of the equity (BVE) and net profit (Earn).

$$Price = f(BVE, Earn) \quad (4)$$

In order to test the value relevance of managements' valuation of goodwill, it need to be included in *equation (4)*, Following Hamberg and Beisland's (2011) extraction of goodwill in the price model: the goodwill on the balance sheet is decomposed from the book value of equity ( $BVE$ ): yielding ( $BVE - GW$ ). Goodwill impairments ( $GWimp$ ) are extracted from earnings ( $Earn$ ): yielding ( $Earn - GWimp$ ). These extractions yield the following price model:

$$Price = f[(BVE - GW), GW, (Earn - GWimp), GWimp] \quad (5)$$

I use *equation (5)* to test whether banks and pharmaceuticals' valuation of goodwill is value relevant. As in the return model, I adjust for negative earnings and as suggested by Collins et al. (1999): I use the dichotomous variable to interact for losses ( $D$ ) with  $BVE$  and  $Earn$ , respectively. The empirical model yields:

$$Price_{it} = \beta_0 + \beta_1 (BVE + GW)_{it} + \beta_2 GW_{it} + \beta_3 (Earn + GWimp)_{it} + \beta_4 GWimp_{it} + \beta_5 (D*BVE)_{it} + \beta_6 (D*Earn)_{it} + \varepsilon_{it}$$

Where  $Price$  is the market value of equity for firm  $i$  in the end of year  $t$  and  $BVE_{it}$  is the book value of equity for firm  $i$  in year  $t$ .  $GW_{it}$  is the book value of goodwill for firm  $i$  in year  $t$ .  $Earn_{it}$  is the net earnings for firm  $i$  in year  $t$ .  $GWimp_{it}$  is the impairment of goodwill (if any) for firm  $i$  in year  $t$ . The endogenous and all exogenous variables are deflated with the number of shares outstanding for firm  $i$  in year  $t$ .

### 4.3 Empirical Results for the Hypotheses

The ordinary least squares (OLS) estimator was applied to the return and the price regression models, respectively. Since the exogenous variables of the datasets seem to include large variances: I test the datasets for potential heteroskedasticity. The White's test indicates that some of the datasets suffers from heteroskedasticity. In order maintain good inference of the statistical analysis, the data is adjusted with the Huber/White's HAC estimator (as suggested by: Huber, 1967; White, 1980). Adjustments for outliers with the studentized residual were also applied to each model; all values that exceed three standard deviations are excluded from the regression. No more than 1 percent of observations were dropped as a result of the exclusion. Additional univariate statistics of the applied return and price regression models are presented in Appendix 1-4. Further, in this sub-section, for the comfort of the reader,  $Pr$  denotes the accounting elements related to the price regression (i.e.,  $GWimp^{Pr}$ );  $Ret$  denotes the accounting elements related to the return regression (i.e.,  $GWimp^{Ret}$ ).

#### 4.3.1 Main Findings

Overall, the determinant coefficients of the regression models of this study seem to align with Hamberg and Beisland's (2011) models. However, there are some differences as well. The main difference is that some of the regression models in this study unlike Hamberg and Beisland's (2011) regression models suffer from multicollinearity. I have unsuccessfully tried to rectify the problem with multicollinearity of the models. One of the approaches was to use the mean value of the variable that has the highest correlation with the other variables, and interact a variable that takes the value of the difference between the mean and the individual observation of the variable. The approach resulted in *Stata* omitting other variables in the given regression model. Since this study applies Hamberg and Beisland's (2011) model, model modifications are not considered. Thus, I decided not go further with compensating for

multicollinearity if it meant omitting variables in the model<sup>2</sup>. As Hamberg and Beisland's (2011) study did not suffer from multicollinearity, even though intuitively the response variables and its change variables should correlate, implies that during turbulent times problems with correlations appears more evident in the price and return regression models. Also, another potential explanation to why this study suffers from multicollinearity can be related to, unlike Hamberg and Beisland (2011), the focus on individual industries rather than pooled industries. This is a likely explanation given that when banks and pharmaceutical of this study were pooled together: the variance inflation factor no longer indicates multicollinearity problems.

Table 2 and 3 presents the value relevance of goodwill accounting items using the return regression model specification. American and European banks' impairment of goodwill  $GWimp^{Ret}$  is negatively associated with stock return. However, only goodwill impairments of European banks are statistically significant (t-stat: -1.95). For the European and American pharmaceuticals goodwill impairments have contradictory association with stock return. Goodwill impairments of European pharmaceuticals is negatively associated with stock return (t-stat: -0.18); whereas American pharmaceuticals' goodwill impairments are positively associated with stock return (t-stat: 0.84). Neither of the American and European pharmaceuticals' goodwill impairments is statistically significant. Further, all four return regressions indicate that change of goodwill impairments  $\Delta GWimp^{Ret}$  is negatively associated with stock return.

**Table 2**  
*Return Regression – Europe*

Variables	European Pharma. (IFRS)			European Banks (IFRS)		
	Coefficient	t-stat	VIF	Coefficient	t-stat	VIF
Constant	-0.15897**	-2.50		-0.351***	-2.84	
Earn-GWimp	1.7721	1.46	66.79	1.007**	2.39	2.85
GWimp	-1.2564	-0.18	22.98	-1.492*	-1.95	1.58
$\Delta$ Earn-GWimp	-0.7062	-0.84	14.35	-2.187**	-2.38	4.29
$\Delta$ GWimp	-1.1782	-0.17	20.43	-1.962**	-2.43	6.72
D*Earn	-1.0894	-0.99	77.20	1.087	1.32	3.62
Obs.	87			72		
Adj. R-square	0.0607			0.2535		
Mean VIF	17.08			2.91		

\*\*\* =1% Significance; \*\* =5% Significance; \* =10% Significance, (two-tailed)

<sup>2</sup> Since multicollinearity does not affect the models reliability, just the individual variables with high noise (Studenmund, 2006), only relevant variables associated with the valuation of goodwill is an issue in this study.

In contrast to the developed hypotheses, European banks' valuation of goodwill seems to have been value relevant for investors. The goodwill items  $GWimp^{Ret}$  and  $\Delta GWimp^{Ret}$  of the European banks is, unlike for the European pharmaceutical, statistically significant. Further, the adjusted R-square of European banks is larger than the European pharmaceutical industry (25.35% compared to 6.07%). In addition, the results of the European pharmaceutical return regression must be interpreted cautiously since it is likely to suffer from severe multicollinearity problems<sup>3</sup>.

Also American banks' valuation of goodwill indicates some value relevance (although less significant than the European banks) as the change goodwill impairment  $\Delta GWimp^{Ret}$  is statistically significant (t-stat: -2.86). For the pharmaceutical industry, the valuation of goodwill is not as strongly associated with the stock return as hypothesized. Although the change in goodwill impairments of the American pharmaceutical is statistically significant (t-stat: -1.86), American banks' change of goodwill is more value relevant (t-stat: -2.86). Also, compared to American banks, the adjusted R-square of the American pharmaceuticals is lower. Thus, the results of the return regression suggest that banks' valuation of goodwill was more value relevant than pharmaceuticals' valuation of goodwill for investors during the financial turmoil.

**Table 3**  
*Return Regression – America*

Variables	American Pharma. (U.S. GAAP)			American Banks (U.S. GAAP)		
	Coefficient	t-stat	VIF	Coefficient	t-stat	VIF
Constant	-0.0582	-0.56		-0.1814**	-2.51	
Earn-GWimp	1.153	0.88	35.12	0.709**	2.02	3.38
GWimp	4.792	0.84	2.47	-0.800	-1.61	3.76
$\Delta$ Earn-GWimp	0.4134***	5.10	2.01	-0.634*	-1.75	4.49
$\Delta$ GWimp	-8.66*	-1.86	2.16	-1.034**	-2.86	4.45
D*Earn	-1.356	1.05	35.46	-2.974***	-4.49	2.11
Obs.	47			158		
Adj. R-square	0.2477			0.1802		
Mean VIF	15.44			3.36		

\*\*\* =1% Significance; \*\* =5% Significance; \* =10% Significance, (two-tailed)

<sup>3</sup> As suggested by Hamberg and Beisland (2011), I apply the rule of thumb of VIF-coefficients equal to 10 and larger indicates multicollinearity.

Table 4 and 5 presents the value relevance of banks and pharmaceuticals, measured using price regression model specifications. In the European setting, the capitalized goodwill  $GW^{Pr}$  is negatively associated with stock prices. The goodwill balance of European banks and pharmaceuticals is statistically significant (t-stat: -8.39 and -3.36, respectively). Further, goodwill impairment is also negatively associated with stock prices. European banks' goodwill impairments is not statistically significant (t-stat: -0.53); whereas European pharmaceuticals' goodwill impairments is value relevant (t-stat: -3.15). However, the goodwill impairment variable of the European pharmaceutical suffers from problems with multicollinearity, which might affect the result of this variable. Hence, the result must be interpreted cautiously.

**Table 4**  
*Price Regression – Europe*

Variables	European Pharmaceutical (IFRS)			European Banks (IFRS)		
	Coefficient	t-stat	VIF	Coefficient	t-stat	VIF
Constant	15.036			49.533***	4.79	
BEV- GW	1.6742***	4.74	13.07	-0.410**	-2.23	25.44
GW	-3.097***	-3.36	13.26	-6.289***	-8.39	3.25
Earn-GWimp	1.768	0.73	1.28	5.114***	7.5	26.6
GWimp	-24.531***	-3.15	1.20	-5.127	-0.53	1.01
D*Earn	-0.9616	-0.22	2.94	(omitted)	-	
D*BVE	-3.3278*	-1.90	1.11	-4.3188	-0.65	1.02
Obs.	108			84		
Adj. R-square	0.8585			0.7263		
Mean VIF	5.98			9.40		

\*\*\* =1% Significance; \*\* =5% Significance; \* =10% Significance, (two-tailed)

**Table 5**  
*Price Regression – America*

Variables	American Pharmaceutical (U.S. GAAP)			American Banks (U.S. GAAP)		
	Coefficient	t-stat	VIF	Coefficient	t-stat	VIF
Constant	2.520	1.14		1.1813	0.21	
BEV- GW	2.0151***	4.37	1.62	0.4035**	1.98	14.47
GW	0.7312***	4.33	1.72	-0.222	-0.16	1.06
Earn-GWimp	4.338	1.22	6.49	4.2101***	2.95	14.71
GWimp	-8.491**	-2.20	.83	-14.35**	-2.34	1.02
D*Earn	-2.2312	-0.49	5.88	1.1813***	-3.00	1.02
D*BVE	-4.1612	1.60	1.08	(omitted)	-	
Obs.	55			189		
Adj. R-square	0.6666			0.8851		
Mean VIF	3.10			6.46		

\*\*\* =1% Significance; \*\* =5% Significance; \* =10% Significance, (two-tailed)

In the American setting, capitalized goodwill has no unified association with stock prices. Balanced goodwill of American banks' goodwill is negatively associated with stock prices; whereas balanced goodwill of American pharmaceuticals is positively associated with stock prices. From the investors point of view, capitalized goodwill of American banks is value irrelevant (t-stat: -0.16); whereas capitalized goodwill of American pharmaceuticals is value relevant (t-stat: 4.33).

In both the American and European setting, goodwill impairment  $GWimp^{Pr}$  is negatively associated with stock prices. Goodwill impairment of American banks and pharmaceuticals and European pharmaceutical is statistically significant, but European banks' goodwill impairments are value irrelevant for investors. Adjusted R-square for all for price regressions is large. However, adjusted R-square for American banks is larger than American pharmaceutical (88.52% and 66.66%, respectively); whereas the adjusted R-square of the European pharmaceuticals is larger than the European banks (85.85% and 72.63%, respectively). The results of the prices regression suggest that investors found both banks and pharmaceuticals valuation of goodwill value relevant. For the American and European pharmaceuticals, both capitalized goodwill and impairments of goodwill was value relevant information for investors. Multicollinearity problems in the European pharmaceutical data imply that the value relevance of capitalized goodwill should be interpreted cautiously. European banks' capitalized goodwill was value relevant; whereas American banks' impairments of goodwill were value relevant information for the investors.

#### 4.3.2 Differences in Response Coefficients

Although the analysis above indicates that the goodwill valuation of both banks and pharmaceuticals is to some extent value relevant, it does not answer the question of whether or not the value relevance of banks valuation of goodwill is significantly different from the pharmaceuticals' valuation of goodwill. To test for significant differences between the value relevance of banks and pharmaceuticals' valuation of goodwill, I use the differences in the response variables of goodwill to tests whether investors respond differently to banks and pharmaceuticals' valuation of goodwill. Thus, I pool the observations from both the American and the European setting and interact the independent goodwill variables with a dummy for banks. The results of table 6 is based on pooled ordinary least square regression when examine the difference between goodwill valuation of banks and pharmaceuticals. The Price and return regression model specifications are applied to the data.



In the return regression, goodwill impairments response coefficient  $GWimp$  for pharmaceuticals is -5.297 (t-stat: -3.06). The difference in goodwill impairment response coefficient between pharmaceuticals and banks  $GWimp*Bank$  is 4.3419 (t-stat: 2.47). This difference indicates that investors are more positive to banks' goodwill impairments, but still negative with a response coefficient of -0.9551. However, the result is not reliable since the VIF of 180 and 182, respectively, indicate severe multicollinearity. The Change goodwill impairments response coefficient  $\Delta GWimp$  is insignificant for both pharmaceuticals and banks. In the price regression, the goodwill response coefficient of pharmaceuticals is 0.6376 (t-stat: 2.18). The difference in goodwill response coefficient between pharmaceuticals and banks is -1.5026 and insignificant (t-stat: -1.25). Further, both goodwill impairments and the interaction variables of goodwill impairments are insignificant in the price regression, which suggest that there is no difference between the value relevance of banks and pharmaceuticals' valuation of goodwill.

**Table 6**  
*Differences in response coefficients*

Variables	Return Regression Model			Variables	Price Regression Model		
	Coefficient	t-stat	VIF		Coefficient	t-stat	VIF
Constant	-0.1881***	-3.70		Constant	10.115***	2.94	
Earn-GWimp	0.9046***	3.05	3.02	BEV- GW	0.3469**	2.16	13.35
GWimp	-5.297***	-3.06	180	GW	0.6376**	2.18	1.57
$\Delta$ Earn-GWimp	-0.2791	-0.96	4.74	Earn-GWimp	4.3411***	3.50	2.73
$\Delta$ GWimp	-0.0824	-0.25	5.64	GWimp	-12.596***	-4.53	1.02
D*Earn	-1.3567**	-2.38	2.54	D*Earn	-2.9965	-1.51	2.73
				$D*BE$	-1.7422	-1.17	2.68
GWimp*Bank	4.3419**	2.47	182	GW*Bank	-1.5026	-1.25	1.36
$\Delta$ GWimp*Bank	-0.0486	-0.34	2.86	GWimp*Bank	0.8543	-0.18	2.65
Obs.	274			Obs.	357		
Adj. R-square	0.2449			Adj. R-square	0.8498		
Mean VIF	54.5			Mean VIF	4.87		

\*\*\* =1% Significance; \*\* =5% Significance; \* =10% Significance, (two-tailed)

Since the interaction variables not suffering from multicollinearity problems are statistically insignificant in the return and the price model, it suggests that there was no difference in value relevance between the goodwill valuation of pharmaceuticals and banks during the financial turmoil. This conclusion is further strengthened as the adjusted R-square for both the return and the price model with interactions is similar to adjusted R-square of untabulated return and price models without interaction variables.

## **5. Conclusion**

### **5.1 Summary of Findings**

As FASB introduced fair value goodwill accounting, the value relevance of companies' valuation of goodwill has been debated. From the standard-setters' point of view, the new fair value regime is beneficial for the investors. Both FASB and IASB claim that investors will benefit from management's valuation of goodwill under the fair value regime rather than static historical value regime (FASB, 2001; IASB, 2005a).

Prior research, however, suggests that management is exploiting the fair value regime opportunistically and, thus, implying that investor should not find the valuation of goodwill value relevant (e.g., Li and Sloan, 2010). Studies on the value relevance of goodwill also find that goodwill under the fair value accounting regime is value irrelevant (e.g., Hamberg and Beisland, 2011). However, the result of these studies includes pooled industries and not individual industries. Further, these results seem to vanish in bad times; Hamberg and Beisland find that non-tradition industries' valuation of goodwill becomes more relevant as the growth expectations are low. Thus, the setting of the financial turmoil provide an opportunity to test whether the value relevance is impacted differently as industries' core business is most likely to be impacted differently by the financial turmoil. Specifically, the value relevance of banks' valuation of goodwill is compared with the value relevance of the pharmaceuticals valuation of goodwill during the financial turmoil.

The return regression model in this study indicates that the valuation of goodwill of European banks and American pharmaceutical and banks were to some extent associated with stock return and, thus, value relevant for investors. What is interesting is that banks' valuation of goodwill seem to have been more value relevant than pharmaceuticals' valuation of goodwill. Also, the price regression model suggests that goodwill items of both banks and pharmaceuticals were value relevant for investors. For European banks information on capitalized goodwill was associated with stock prices; whereas European pharmaceuticals' capitalized goodwill as well as goodwill impairments seems to have been associated with stock prices. However, due to multicollinearity problems, the result of capitalized goodwill of the European pharmaceutical is not reliable for further interpretations. For the American setting, goodwill seems to have been value relevant as well. American banks' capitalized goodwill was associated with stock prices. Further, American pharmaceuticals' capitalized goodwill and goodwill impairments were associated with the stock prices, which indicate value relevant information for investors. The conclusion of the association regression tests is

that banks and pharmaceuticals valuation of goodwill seem to have included value relevant information to investors. The European pharmaceutical data suffers from multicollinearity which makes it difficult to draw any reliable inference from the results of the return regression analysis. However, the price model regression indicates that goodwill impairments of the European pharmaceuticals were value relevant information for the investors.

The results of the value relevance models suggest that there were no differences in the value relevance between the valuation of goodwill of pharmaceuticals and banks in both regions (America and Europe). By pooling all observations and interact the independent goodwill variables with dummy variables for banks, differences in value relevance between banks and pharmaceuticals is tested. The direct test indicates that interaction variables not affected by multicollinearity problems are statistically insignificant which implies that there is no differences between the response coefficients of banks and pharmaceuticals. Thus, the conclusion of this study is that banks' valuation of goodwill was not less value relevant for investors than the pharmaceutical industry's valuation of goodwill during the financial turmoil. In addition, goodwill seems to have been value relevant information for investors during the financial turmoil.

The result of this study is interesting since it indicates that the adoption of fair value goodwill accounting is relevant for investors, at least during the financial turmoil, which to some extent aligns with the findings of Hamberg and Beisland (2009). This result, however, is in conflict with the result of Hamberg and Beisland's (2011) association test: who found that the valuation of goodwill to be value irrelevant information under the fair value regime. The explanation for the conflicting results could potentially be related to the differences in settings between this study and Hamberg and Beisland's (2011) study. The financial turmoil might have an effect on how investors include information on the valuation of goodwill than during times with macroeconomic stability. Further, Hamberg and Beisland's (2011) study is based on the Swedish setting which might differ from the European and American setting of this study.

## **5.2 Avenues for Future Research**

Notwithstanding the result of this study, the quality of the applied dataset for both the European and American setting is low and, thus, more research on how the financial turmoil affects the value relevance of banks and other industries is needed. Events during the financial turmoil are problematic to study since variables tend to be affected more randomly and swiftly as the investors and markets per definition acts economically irrational. However, the

perception of investors during turbulent times is interesting for standard setters since it is most likely then the accounting regulation and investor protection is needed the most.

In this study, it is assumed that analysts and media reports have analyzed companies correctly and that this explicitly means that European and American banks are exploiting the discretion provided by fair value goodwill accounting opportunistically. However, the macroeconomic events during the financial turmoil have different implications even for companies in the same region or industry. Thus, a study on whether American and European banks (or other industries) actually value goodwill differently is of interest and linking these results to the hypotheses of this study. The result of linking these two studies would also test the efficiency of information diffusion and whether value relevance of fair value goodwill accounting affected by analysts or other external factors than managements' information.

A last suggestion for further research is to analyze whether Hamberg and Beisland's (2011) price/return regression models are robust (especially when industries are not pooled) during turbulent times. In this study, the models suffer more or less from severe multicollinearity, this problem need to be canvassed in order to find out if the model specification needs to be improved or if the problem is related to the applied data in this study.

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## Appendix 1 Correlation Matrices: Return Model

**Table 7**  
*Pairwise Correlations (Pearson) – Return Model*

Return Model						
America, Banks						
	(1)	(2)	(3)	(4)	(5)	(6)
Return (1)						
Earn-GWimp (2)	-0.0299					
GWimp (3)	-0.0800	0.6507				
$\Delta$ Earn-GWimp (4)	-0.1308	0.6164	0.5728			
$\Delta$ GWimp (5)	-0.1657	0.3782	0.7013	0.7521		
D*Earn (6)	0.2930	0.4921	0.0095	0.4309	0.0037	
Europe, Banks						
	(1)	(2)	(3)	(4)	(5)	(6)
Return (1)						
Earn-GWimp (2)	0.5870					
GWimp (3)	-0.0517	0.1156				
$\Delta$ Earn-GWimp (4)	-0.1006	0.4221	0.1942			
$\Delta$ GWimp (5)	-0.1620	0.0331	0.3155	0.7539		
D*Earn (6)	-0.0169	0.2221	0.0160	0.3689	-0.0093	
America, Pharmaceutical						
	(1)	(2)	(3)	(4)	(5)	(6)
Return (1)						
Earn-GWimp (2)	0.0869					
GWimp (3)	-0.1819	0.0899				
$\Delta$ Earn-GWimp (4)	0.1674	0.7000	0.0385			
$\Delta$ GWimp (5)	-0.4630	0.1189	0.7079	0.1208		
D*Earn (6)	0.0620	0.9821	0.0174	0.7059	0.0973	
Europe, Pharmaceutical						
	(1)	(2)	(3)	(4)	(5)	(6)
Return (1)						
Earn-GWimp (2)	0.2036					
GWimp (3)	-0.2225	-0.1981				
$\Delta$ Earn-GWimp (4)	0.1200	0.9481	-0.0566			
$\Delta$ GWimp (5)	-0.2117	-0.1894	0.9735	-0.0687		
D*Earn (6)	0.2007	0.9878	-0.2919	0.9346	-0.2829	

Where  $RET_{it}$  is the change of the dividend-adjusted stock price ( $P^{ret}$ ) from April 1 in year  $t$  to April 1 in year  $t+1$  for firm  $i$ .  $Earn_{it}$  is the net profit for firm  $i$  in year  $t$ .  $GWimp_{it}$  is the value of goodwill impairment (if any) for firm  $i$  in year  $t$ .  $D_{it}$  is a dichotomous variable that takes the value of 1 if net profit for firm  $i$  is negative in year  $t$ .  $\Delta$  is the change of the variable from year  $t-1$  to year  $t$ .

## Appendix 2 Correlation Matrices: Price Model

**Table 8**

*Pairwise Correlations (Pearson) – Price Model*

Price Model							
America (Banks)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Price (1)							
BEV-GW (2)	0.9296						
GW (3)	0.1274	0.1260					
Earn-GWimp (4)	0.9325	0.9631	0.1712				
GWimp (5)	-0.0635	-0.0134	0.1009	0.0134			
D*Earn (6)	0.0262	0.0306	0.0271	0.0691	-0.0154		
D*BVE (7)	-	-	-	-	-	-	-
Europe (Banks)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Price (1)							
BEV-GW (2)	0.4638						
GW (3)	0.0251	0.8070					
Earn-GWimp (4)	0.5103	0.9786	0.8133				
GWimp (5)	-0.066	-0.0705	-0.0059	-0.0439			
D*Earn (6)	0.0577	0.0521	0.0447	0.0838	0.0127		
D*BVE (7)	-	-	-	-	-	-	-
America (Pharma)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Price (1)							
BEV-GW (2)	0.6054						
GW (3)	0.3446	-0.2841					
Earn-GWimp (4)	0.3636	0.5529	-0.2340				
GWimp (5)	-0.1477	0.0365	-0.0761	0.3876			
D*Earn (6)	0.1986	0.4950	-0.4790	0.08091	0.0538		
D*BVE (7)	0.0994	0.1169	0.0401	0.0378	0.0378	0.033	
Europe (Pharma)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Price (1)							
BEV-GW (2)	0.8192						
GW (3)	0.7230	0.9530					
Earn-GWimp (4)	0.1288	-0.0520	-0.1649				
GWimp (5)	0.0010	0.0489	-0.0317	0.2885			
D*Earn (6)	-0.4295	-0.6604	-0.6086	0.7195	-0.0132		
D*BVE (7)	0.0809	0.0702	0.0264	0.1820	-0.1525	0.2140	

Where  $Price$  is market value of equity for firm  $i$  in the end of year  $t$  and  $BVE_{it}$  is the book value of equity for firm  $i$  in year  $t$ .  $GW_{it}$  is the book value of goodwill for firm  $i$  in year  $t$ .  $Earn_{it}$  is the net earnings for firm  $i$  in year  $t$ .  $GWimp_{it}$  is the impairment of goodwill (if any) for firm  $i$  in year  $t$ .

## Appendix 3 Descriptive Statistics: Return Model

**Table 9**  
*Descriptive Statistics; Return Model*

American Banks					
Variable	N	Mean	Std Dev	Min	Max
Return	274	-0.0188	0.6570	-0.9571	3.3503
Earn-GWimp	209	0.2081	0.3435	-1.522	3.1345
GWimp	209	0.0197	0.1770	0	2.5435
$\Delta$ Earn-GWimp	205	0.0192	0.3624	-2.377	2.7925
$\Delta$ GWimp	205	0.0038	0.2497	-2.4687	2.5435
D*Earn	357	-0.0286	0.2374	-3.5333	0
European Banks					
Variable	N	Mean	Std Dev	Min	Max
Return	201	0.0649	0.677	0.898	3.631
Earn-GWimp	181	0.244	0.705	-0.933	6.311
GWimp	181	0.0192	0.098	0	0.990
$\Delta$ Earn-GWimp	94	-0.070	0.430	-3.507	1.884
$\Delta$ GWimp	94	-0.020	0.280	-2.894	0.990
D*Earn	222	-0.021	0.102	-0.934	0
American Pharma					
Variable	N	Mean	Std Dev	Min	Max
Return	287	0.2387	1.4522	-0.9463	16.125
Earn-GWimp	56	-0.1367	0.5956	-3.5381	0.3394
GWimp	56	0.01391	0.035	0	0.1662
$\Delta$ Earn-GWimp	55	-0.0710	0.6780	-3.435	2.414
$\Delta$ GWimp	55	-0.0004	0.0558	-0.1662	0.1662
D*Earn	314	-0.2222	0.7480	-9.444	0
European Pharma					
Variable	N	Mean	Std Dev	Min	Max
Return	226	-0.0712	0.5755	-1	4.25
Earn-GWimp	109	-0.0880	0.4320	-3.366	0.5197
GWimp	109	0.0092	0.0423	0	0.3617
$\Delta$ Earn-GWimp	105	-0.0485	0.3491	-2.652	0.5823
$\Delta$ GWimp	105	0.0022	0.0435	-0.170	0.3442
D*Earn	285	-1554	0.4748	-4.437	0

Where  $RET_{it}$  is the change of the dividend-adjusted stock price ( $P^{ret}$ ) from April 1 in year  $t$  to April 1 in year  $t+1$  for firm  $i$ .  $Earn_{it}$  is the net profit for firm  $i$  in year  $t$ .  $GWimp_{it}$  is the value of goodwill impairment (if any) for firm  $i$  in year  $t$ .  $D_{it}$  is a dichotomous variable that takes the value of 1 if net profit for firm  $i$  is negative in year  $t$ .  $\Delta$  is the change of the variable from year  $t-1$  to year  $t$ .

## Appendix 4 Descriptive Statistics: Price Model

**Table 10**  
*Descriptive Statistics; Price Model*

American Banks					
Variable	N	Mean	Std Dev	Min	Max
Price	375	51.1874	127.12	0	1002.21
BEV-GW	326	59.3778	123.92	-1.516	997.361
GW	265	3.08605	5.2513	0	36.1823
Earn-GWimp	211	6.72878	16.939	-7.117	145.45
GWimp	211	0.13577	0.5746	0	5.9155
D*Earn	365	-0.05789	0.4973	-7.449	0
D*BVE	326	-0.00421	0.0260	-1.3731	0
European Banks					
Variable	N	Mean	Std Dev	Min	Max
Price	230	44.5	123.3	0.36	1065
BEV-GW	190	66.28	204	0.62	1842
GW	230	5.472	18.18	0	216.5
Earn-GWimp	103	8.028	23.26	-25.62	277.3
GWimp	103	0.1818	0.772	0	5.915
D*Earn	230	-0.392	1.799	-25.9	0
D*BVE	190	0	0	0	0
American Pharma					
Variable	N	Mean	Std Dev	Min	Max
Price	343	17.553	19.687	0.179	112.8
BEV-GW	313	3.8402	5.2638	-11.885	24.355
GW	335	1.5243	5.6202	0	87.893
Earn-GWimp	57	0.0101	1.2064	-3.549	3.325
GWimp	57	0.1307	1.2064	0	3.444
D*Earn	328	-0.5978	0.9786	-7.614	0
D*BVE	313	-0.1588	0.6621	-4.690	0
European Pharma					
Variable	N	Mean	Std Dev	Min	Max
Price	303	30.637	67.888	0	599.78
BEV-GW	279	19.785	73.574	-10.261	866
GW	279	4.814	23.001	0	280.23
Earn-GWimp	110	1.719	8.678	59.508	45.0364
GWimp	110	0.1221	0.7399	0	7.5
D*Earn	286	-0.5029	3.668	-59.508	0
D*BVE	286	-1377	1.2321	-14.752	0

Where  $Price$  is market value of equity for firm  $i$  in the end of year  $t$  and  $BVE_{it}$  is the book value of equity for firm  $i$  in year  $t$ .  $GW_{it}$  is the book value of goodwill for firm  $i$  in year  $t$ .  $Earn_{it}$  is the net earnings for firm  $i$  in year  $t$ .  $GWimp_{it}$  is the impairment of goodwill (if any) for firm  $i$  in year  $t$ .