The Transition to IFRS and the Market Impact on European Banks

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Dipl.-Kfm. Joachim Walter Brixner
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Dekan:	Professor Dr. rer. soc. Josef Schmid
1. Gutachter:	Professor Dr. rer. pol. Werner Neus
2. Gutachter:	Professor Dr. rer. pol. Renate Hecker

Vorwort

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Stuttgart, im Juli 2014 *Joachim Brixner*

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1 Introduction

The continuing harmonization of European law led to regulation (EC) No. 1606/2002 ruling that all publicly traded companies in the European Union have to prepare their consolidated financial statements in accordance with International Financial Reporting Standards (IFRS) for financial years starting on or after 1 January 2005. At the same time, many other non-member countries in Europe also started to require IFRS, at least for specific sectors.[1] The obligatory transition to IFRS is one of the most important challenges for European banks in the last few years. For many banks, the changeover from national Generally Accepted Accounting Principles (GAAP) to International Financial Reporting Standards means a lot of changes concerning accounting assumptions in general. There are many differences in the accounting rules, starting with the objective that financial statement information according to IFRS is more suitable for investors to make well-founded investment decisions whereas local GAAPs serve as information instruments for many kinds of stakeholders.[2] Prior to the application of IFRS in banks, critics often claimed that the application of IFRS might favor procyclical lending, i.e., reducing the amount of debt in bad times and enhancing lending in good times, thereby intensifying booms and recessions. Some critics even identified the application of fair values in the valuation of many assets and liabilities as one fundamental problem (Soderstrom and Sun 2007, p. 689).

One of the reasons for the introduction of IFRS in Europe was the harmonization of accounting rules in order to make financial statement information comparable and transparent for financial statement users. However, the technical implementation of IFRS leads to surging costs for banks and firms in other industries in terms of preparation and auditing costs for their financial statements according to the new rules. One reason is that banks very often have to prepare consolidated financial statements in addition to national GAAP financial statements so that two accounting systems are used simultaneously. Another reason is that IFRS increase costs by imposing additional requirements in the preparation process. The application of IFRS would only make sense for firms and capital markets if these additional costs of preparing the financial statements are compensated by the benefits arising through the application, i.e., lower information costs and transaction costs as well as capital costs which can be interpreted as expressions of increasing market transparency and efficiency. Therefore, the central question in this work is whether the application of IFRS in European banks really led to increasing

[1] For example, countries such as Hungary, Poland, or Switzerland (for specific sectors).
[2] See Ashbaugh and Olsson (2002, p. 108) and Hung and Subramanyam (2007, p. 624).

transparency, market efficiency and accounting quality. If this question can be positively answered, the application might lead to economic benefits. Otherwise, the benefits of the application of a common accounting system have to be questioned in light of additional preparation costs.

Market efficiency and transparency can be measured by several dimensions. One dimension is the abnormal market reaction after the dissemination of new information on capital markets. Another dimension of efficiency costs are costs in terms of frictional losses of markets, e.g., bid-ask spreads. Another way to query the superiority and benefits of an accounting system is the question of accounting quality, which might be defined as stringency and information value of an accounting system. Accounting quality can be measured by, e.g., value relevance of accounting information, i.e., how strong the financial statement information is reflected in market values of the respective firm. In other words, one might ask if financial statement information is useful and, therefore, incorporated in investors' decisions. Another aspect of accounting quality is the reduction of earnings management. In order to answer the question whether IFRS are positive for the markets, the following investigation addresses these issues and tries to cover each of the dimensions.

However, one has to be cautious, since empirical investigations in this strand of literature often use the effect of a change in information policy, i.e., a change in accounting system, and relate this aspect to the measures of information efficiency mentioned above. This presumes a direct link between cause and effect which can be dangerous in relationships where connections between these two are far from compulsive and definite. In fact, the links are often ambiguous and obvious results could also be created or distorted by concurrent causes for which many sources seem to exist in empirical capital market investigations. One mitigation could be the use of robustness checks, in order to minimize the potential distorting influences of concurrent causes. In this kind of investigations, one decisive premise is that there is a resilient and robust connection between changes in accounting policies and measurable effects on information efficiency. It is based on a semi-strong form of capital market efficiency which has to be accepted as a basic premise. Many of the studies referred to in the following chapters more or less implicitly or explicitly build their argumentation on this basis. Many of them concentrate on the transition to IFRS from one perspective only. In other words, they use just one dimension of information efficiency in order to measure possible transitional effects.

This is different in our studies. We restrict the investigation to one industry widely neglected in the investigation of transition effects – banks. Furthermore, our studies cover the period of the mandatory application of IFRS in 2005 in Europe which is different to many prior studies investigating voluntary transitions. Additionally, one central advantage of our studies is that they shed light on the transition to IFRS from different angles using different measures of information efficiency in four studies while focusing on the banking industry in Europe. Therefore, we should be able to gather a more comprehensive picture by putting the pieces of the puzzle together. If we are able to find substantial evidence of lower information cost and higher information efficiency that is attributable to the accounting system in most studies it could be safe to say that there is a robust and measurable effect, which is a clear advantage over prior studies only shedding light on the connection between the transition to IFRS and economic benefits from one point of view.

In the first part, covering Chapter 2 and 3, the direct effects of the transition to IFRS are investigated. Chapter 2 concentrates on changes in balance sheets. We do this by comparing national GAAP financial statements before IFRS became obligatory and their restated IFRS counterparts for the same year. Furthermore, the sources for changes in equity are identified, and their impact on regulatory equity capital. Chapter 3 studies the market reaction to the publication of quarterly earnings announcements. One focus is on the abnormal market reaction after the publication of earnings which is measured by abnormal returns and variances. The second part concentrates on the indirect effects after the IFRS transition. Chapter 4 investigates the development of information efficiency and market liquidity for a longer period before and after the transition, while Chapter 5 concentrates on the value relevance of accounting measures and earnings management. In Chapter 4, the impact of IFRS on market efficiency and transparency is studied using several measures, such as bid-ask spreads, turnover, the number of daily zero returns, and the price impact of trades. Also, the long-term development of market valuation is investigated using Tobin's Q and price-to-book value. Chapter 5 concentrates on the impact of the transition on the value relevance of accounting measures. Value relevance is measured by the relation between book values and market values. To begin with, the Ohlson model is tested (Ohlson 1995). Furthermore, the relevance of single financial statement items is studied. In the second part of Chapter 5, possible changes in earnings management are investigated. Finally, Chapter 6 summarizes the results and provides a conclusion.

2 Transition to IFRS: The Effect on Balance Sheets of European Banks[3]

2.1 Introduction

One explicit goal of IFRS[4] reporting is the information supply of users of financial statements about the economic situation of a company.[5] The comparability of financial statements between companies and across country borders is one implicit objective of IFRS. The transition is a very important topic since consolidated financial statements of companies whose equity securities are traded on a regulated market in the European Union have to be prepared under IFRS for financial years starting 2005.[6] For many companies the transition implies mainly, among other differences to local GAAP, fundamental changes in the valuation of assets and liabilities. It is often argued that the application of IFRS completely changes the structure of balance sheets since there is no uniform format for balance sheets and income statements (Hoogendoorn 2006, p. 25).[7] The changes are highly correlated with the amount of financial assets and liabilities measured at fair value contributing a great deal to the balance sheet items of financial institutions (Armstrong et al. 2010, p. 34). The application of the fair value measurement under IFRS led to the reluctance of some continental European countries to apply the new accounting rules.[8] One interesting question arising at this point is how the application of different accounting standards changes the general picture of financial statements. Another question to be answered is which implications transition effects might have on regulatory requirements of banks. This matter becomes even more urgent with reference to the fact that in countries of the European Union IFRS figures can be used as a basis to calculate consolidated regulatory capital later on.[9]

[3] Together with Prof. Dr. Jens Grunert, Tuebingen University.
[4] For purpose of convenience and to simplify matters, we refer to IFRS, comprising both International Accounting Standards (IAS) and International Financial Reporting Standards (IFRS) that are issued both by the International Accounting Standards Committee (IASC) and by the International Accounting Standards Board (IASB).
[5] See IASB Framework as of 2001, paragraph 12.
[6] See Regulation (EC) No 1606/2002 which is often referred to as "IAS regulation".
[7] E.g., IAS 30 sets out only a very basic structure for financial statements of banks.
[8] For example, France strongly opposed against IAS 39 since it feared an increased volatility through the application of fair value in accounting, see Aisbitt (2006, p. 117), or Armstrong et al. (2010, pp. 34-35 and pp. 38-39). For a different opinion on the influence of fair values, see Cairns (2006).
[9] See CRD Directive 2006/48/EC, Article 74(1).

Having these ideas in mind, we study a sample of consolidated annual reports of 56 European banks, both listed and unlisted. In order to ensure a consistent IFRS transition environment, we analyze solely annual reports of banks changing to IFRS in 2005, and, in some cases 2006, to rule out any influences of varying transition periods and differing regulations.[10] Concretely, we study the restated 2004 consolidated financial statements under IFRS, published in 2005, and compare them to the original financial statements under local GAAP for 2004.[11] The basic idea is that we are able to compare the same economic conditions under two different reporting regimes. Using this approach, we try to study specific changeover effects on financial institutions' balance sheets and analyze the contribution of specific standards to changes of reported equity. In order to examine potential differences in the transition, we also use changes in the variability of reported figures to measure those changes. Additionally, we try to identify differences and impacts on accounting for listed and unlisted banks and analyze whether prior accounting backgrounds and traditions have implications for IFRS reporting. As a last point, we endeavor to identify the transition impact on regulatory capital.

Concentrating on the entire sample, we find that there are profound and significant effects on individual balance sheet items related to financial assets in the transition from local GAAP to IFRS. The positive effect on equity is mainly caused by the abandonment of the funds for general banking risk, the recognition of dividends and valuation effects of financial instruments. Cross-sectional variability increases in some reported balance sheet items due to the changeover. Furthermore, we find, on average, a slightly stronger reaction for unlisted banks in some balance sheet positions. However, the study has its limitations. We fail to draw a clear picture for specific effects based on accounting backgrounds and traditions. Contrary to the commonly mentioned concerns of the IFRS implementation inflating regulatory capital, we observe that the transition has rather, in general, a negative effect on the total level of regulatory capital.

The remainder of the chapter is organized as follows: Section 2.2 describes the relevant research that has already been done on the topic of accounting regimes and changeover effects. In section 2.3, the investigated hypotheses are introduced. Section 2.4 describes the dataset and the applied research design, followed by section 2.5 where empirical results are presented. Section 2.6 concludes the chapter.

[10] We use 2006 financial statements if these are the first to be mandatorily prepared in accordance to IFRS rules. This is the case for some banks with deviations in their financial years.
[11] See Hung and Subramanyam (2007), using a comparable approach.

2.2 Literature

The topics analyzed by empirical studies concerning the transition from local GAAP to IFRS can be classified into two categories: Effects on balance sheet items and changes in accounting quality which is often measured indirectly by value relevance and information efficiency. The main findings are highlighted in the following.

The first strand of literature examines specific balance sheet effects due to the transition to IFRS. Aisbitt (2006) mainly discusses the influence on the book value of equity analyzing UK companies. Overall, no significant effect can be found. However, individual balance sheet items exhibit (minor) changes.[12] The latter result is in line with Ormrod and Taylor (2004). They state that the change in the accounting basis to IFRS could have unexpected consequences for reported figures without differences in the company's economic situation. Hung and Subramanyam (2007) investigate financial statements of German companies, excluding banks switching from German GAAP to IAS between 1998 and 2002. They ascertain an increase in book values of equity and assets. Furthermore, they determine a higher variability of book value and income due to the application of IFRS. Closest to our paper is the investigation of the Committee of European Banking Supervisors (CEBS 2006). The changes to the main balance sheet items containing financial assets and liabilities for banks in 18 countries are discussed.[13] CEBS (2006) observe that the balance sheet total increases 9% due to the raise of financial assets and liabilities. In contrast, total equity decreases 5% causing a negative impact on regulatory capital.

In a second strand, the quality of different accounting regimes is discussed. Information content and decision usefulness are self-imposed topics of the IFRS-based financial statements which has implications for their information value. Information value in turn is measured – for example – by using value relevance as the effect of balance sheet items or profit or loss items on market value or information efficiency measures such as market liquidity or cost of capital. Many of these studies focus on the difference between IFRS and U.S. GAAP. Bartov, Goldberg and Kim (2005) investigate German companies listed at the 'Neuer Markt' over a period from 1998 to 2000 which have to use either IAS or U.S. GAAP for their financial statements. They find that earnings under IAS and U.S. GAAP have higher value relevance

[12] See Aisbitt (2006, p. 123). It has to be mentioned that no significance tests have been conducted.

[13] The study only shows some basic descriptive statistics mainly for financial assets and liabilities without consideration of statistical significances. Another decisive drawback is that 5 of the 18 countries already apply IFRS or local GAAP comparable to IFRS which means that there is no unambiguous transition database to IFRS used, see CEBS (2006, p. 2). It has to be noted that Germany is not part of the sample.

than earnings prepared under German GAAP. Bae, Tan and Welker (2008) identify that differences in accounting systems are associated with the forecast accuracy of financial analysts. They observe that analyst following increases after transition to IAS through analysts with IAS experience. Investigating the mandatory application of IFRS in a worldwide study, Daske et al. (2008) conclude that capital markets perceive the new accounting rules positively by exhibiting higher market liquidity and lower cost of capital for these firms. However, they also find that mandatory adopters profit less by the adoption when directly compared to voluntary adopters. They also point out that concurrent institutional background changes play a crucial role in the capital market effects which makes it difficult to measure the contribution of the change in accounting systems. The results of the studies suggest that accounting information seems to have an impact on capital markets, albeit they often lack information in respect to specific differences in accounting information contributing to these observations which seems a relevant aspect to investigate.

We contribute to the literature of accounting transition in several ways. Firstly, we examine a sample consisting of banks only. This is an interesting aspect since most of the previous investigations do not take banks into consideration, mainly in view of the fact that these institutions embody a special kind of business and do not fit in datasets consisting of companies from industrial sectors. From this point of view, new insights into the transition effects on single balance sheet items, especially on equity, and balance sheet structures of banks in general can be expected. Secondly, we want to add to the strand of literature examining the effects on balance sheet variability by investigating the immediate transition effects. Thirdly, in addition to the question of how balance sheet structures change due to the transition to IFRS, we also investigate the hypothesis that the changeover effect is stronger for banks that are not publicly traded on regulated markets. Fourthly, another interesting question arises from the fact that we investigate a European sample, i.e., the banks in the sample exhibit differences in accounting system backgrounds and traditions. Fifthly, we examine the transition impact on consolidated regulatory capital.

2.3 Hypotheses

As already outlined above, the application of the new accounting standards means fundamental changes in accounting assumptions and techniques. The major part of our sample are banks that are situated in continental European countries and are dominated by continental European accounting traditions, e.g., the principle of prudence, and cost-based valuation. Those accounting traditions have been further aligned by European directives.[14] Under IFRS, prudential accounting is abandoned in favor of a true and fair view principle which is reflected, for example, by the fair value valuation of many financial assets and liabilities and by the reversal of the fund for general banking risk as a measure of prudence which is not allowed under IFRS. Therefore, our expectation is that there is a significant change in balance sheet positions due to the changeover to IFRS accounting.

H1: The transition to IFRS will cause significant value changes to balance sheet items of banks.

In booming markets we should be able to identify stronger value increases for items measured at market values.[15] As opposed to industry companies, banks have more financial instruments with quoted market prices both on the asset and the liability side of balance sheets. A direct market valuation (mark-to-market) of these assets and liabilities is easier to carry out, and falling back on valuation methods (mark-to-model) is not necessary in this case. On the other hand, in recessions, necessary impairments on items measured at market prices mean greater corrections in value. In other words, the valuation at fair value might cause greater volatility in the annual accounts of financial institutions. A greater market value orientation of IFRS might amplify the variability in reported figures for individual balance sheet items as a consequence of the transition to IFRS both cross-sectionally by reducing smoothing effects of local GAAPs and over time. This is in contrast to the variability in figures reported under prior national GAAP regimes. These often allow hidden reserves and are claimed to have an income-smoothing effect due to the possibility of discretionary valuation.[16] Therefore, we should be able to observe a greater cross-sectional variance in individual balance sheet items between

[14] See several council directives, e.g. the fourth and seventh directive (78/660/EEC and 83/349/EEC) as well as the council directive (86/635/EEC) specific for financial institutions.
[15] For a definition of fair value, see for example IAS 39.AG69-39.AG82. In IAS 39.48A the best evidence of fair value is defined by the *'quoted prices in an active market'*.
[16] See Hung and Subramanyam (2007, p. 637), investigating the difference in cross-sectional variance between German accounting regulation and IFRS.

figures reported under IFRS and local GAAP, especially in items which are strongly affected by market values. Hence, we can state

H2: The cross-sectional variability is greater under IFRS than under local GAAP requirements for balance sheet items strongly affected by market values.

A difference between unlisted and listed companies is that unlisted firms are, on average, less dependent on market valuation and market developments due to their closed ownership structure. An exception might be banks having issued debt securities. A reason for this is that the owners of unlisted banks may rather have individual access to company information and, therefore, financial statement information does not need to satisfy the information requirements of capital markets. Additionally, unlisted banks are often subject to private or politically influenced objectives and specific businesses with specific goals, e.g., public sector banks or home savings and loan associations. Consequently, we claim that unlisted banks use *ex ante* an even more conservative and prudent approach to valuation of financial assets and liabilities, contrary to listed banks for which it is commonly suggested to use less conservative valuation approaches in order to signal competitiveness and attractiveness to capital markets. Therefore, we predict that unlisted banks experience a stronger reaction through the application of IFRS. This leads to our third hypothesis

H3: Unlisted banks record higher changes in balance sheet items than listed banks.

The transition to IFRS represents a major change in elementary assumptions concerning accounting purposes for most continental European banks. In the relevant literature, basically, a dichotomous differentiation in accounting systems is made, identifying code law and common law countries.[17] Code law countries are usually identified by a number of institutional factors in order to separate them from countries with a common law tradition. There are several institutional factors associated with accounting quality, for example, capital structure, development of capital markets, and ownership structure.[18] Usually, common law economies are associated with stronger equity markets. Furthermore, financial statements are claimed to serve better the principle of providing decision-useful information to investors and follow the concepts of fair presentation, thus possessing higher accounting quality. IFRS are strongly asso-

[17] For an overview, see, e.g. Meek and Thomas (2004, pp. 29-31).
[18] See, e.g. La Porta et al. (1998). For an overview on these topics, see Soderstrom and Sun (2007).

ciated with these ideas.[19] Countries associated with common law economies are, for example, the United States, the United Kingdom, and Ireland. It is often claimed that equity markets in code law economies in which most of continental European countries can be classified are less developed since they are stakeholder-dominated rather than shareholder- or investor-oriented and accounting serves several purposes.[20] In tendency, in these economies accounting systems are more interdependent with tax accounting and influenced by ideas of creditor protection, prudent valuation and debt financing. Therefore, it is interesting to study the effects of the implementation of IFRS in continental European countries, i.e., the application of common law-based accounting in traditionally code law-oriented economies.[21] For companies in countries with a stronger association to code law, the application of IFRS should cause greater adjustments to balance sheet items.[22] On the other hand, there is less impact expected on balance sheets for companies from common law countries. Two not mutually exclusive reasons might be identified for this: First, these accounting regimes make use of comparable valuation principles prior to changeover, since the basic ideas of IFRS originally stem from the common law area. Second, they are more familiar with the application of common law accounting. From this point of view, we can stipulate our fourth hypothesis

H4: The impact of the transition effects on balance sheet items is higher for banks located in a country with a code law accounting tradition.

Lastly, another interesting matter is the question whether the newly adopted IFRS do have any impact on regulatory figures. Many banks in the dataset report tier ratios for both local GAAP and IFRS in 2004 on a pro-forma basis.[23] One example is that an increasing amount of financial assets valued at fair value under the application of IFRS leads either to an increased position of revaluation reserves (category: *available-for-sale*) or growing profits if the assets are valued *at fair value through profit or loss*. Independent of the categorization of the financial items, both categories could lead directly or indirectly to an increase of the regulatory capital base by inflating Tier I capital which is the central limit for the regulatory capital base. In

[19] See IASB Framework as of 2001, paragraph 12.
[20] Exemplary for code law countries, German accounting rules serve several purposes, as for example the calculation of distributable income and taxable income, see Nobes (2006, p. 235).
[21] Some authors argue that a dichotomous classification cannot be maintained. See, for example, d'Arcy (2001).
[22] Christensen, Lee and Walker (2007, p. 343) put it differently by stating that *"…German IFRS adopters will typically experience a greater leap in disclosure quality."*
[23] The possibility to use IFRS consolidated financial statements as a basis to measure the regulatory capital was enacted by CRD Directive 2006/48/EC, Art. 74 (1), transforming the CEBS (2004) propositions concerning 'prudential filters' into European law. The directive was implemented on national levels in single EU member states. However, this possibility did not exist in 2005 yet.

other words, the application of fair value on specific assets might lead to a disclosure of hidden (and therefore unrealised) reserves, i.e., a shift from Tier II to Tier I capital. Generally, hidden reserves have to be resolved, since they distort the true and fair view principle stipulated in the IFRS Framework.[24] Therefore, we can postulate

H5: The application of fair values in IFRS has a positive impact on regulatory capital, i.e., there is a positive change in the Tier I capital ratio and the total capital ratio.

[24] See IASB Framework as of 2001, paragraph 37.

2.4 Database and Research Design

In order to ensure comparability, the first financial statements according to IFRS have to be published in combination with pro-forma information under IFRS for all amounts reported for the previous year, i.e., the comparative period.[25] The basic idea in this study is to compare the last consolidated financial statements according to previous GAAP requirements with the re-stated figures under IFRS of the transition period accounts (Hung and Subramanyam 2007). Concretely, in the financial statements of 2005, we find the restated IFRS figures for the previous year (comparative period 2004) and compare them to the original balance sheet in local GAAP in the annual report of the year 2004. Another way to enable comparability is the obligatory reconciliation of equity items from previous GAAP to IFRS or the voluntary publication of the IFRS opening balance sheets for the first IFRS reporting period.[26] As outlined in Hung and Subramanyam (2007), with this idea in mind it is possible to compare the same economic situation within a specific year resulting in different accounting entries in the balance sheets. In other words, there are two balance sheets reflecting identical events, albeit drawing a different picture and possibly conveying different implications to the addressee.

One problem arising from the comparison is the determination of an unambiguous transition. This is due to the fact that *IFRS 1 –First-time Adoption of International Financial Reporting Standards*, came into force in 2004 and hence, the transition considering IFRS 1 did not have to take place until 2004.[27] So as to exclude any kind of mismatch from different changeover regulations, we use IFRS reports which were prepared after the end of 2004 in order to work with a sample as homogenous as possible with identical IFRS in force at that time. This also reduces potential selection biases through voluntary early adoptions before 2005. Furthermore, to rule out biasing time lag effects in the enforcements of IFRS standards we decided to use the annual reports for the financial year ending in 2005, and 2006 for banks with deviations in financial years, respectively.

As a starting point, we use *Bankscope* which is a dataset comprising thousands of banks around the world and limit our search to banks located in the European Union and Switzerland. Furthermore, we restrict the search to banks that are considered at the highest level from an owner's perspective and have no identified shareholder with the majority of shares accord-

[25] IFRS 1.36. See IFRS 1.IG63 for an example of a reconciliation of balance sheet, income statement and equity.
[26] IFRS 1.39-40.
[27] First-time adoptions for earlier transitions had to consider *SIC-8 – First Time Application of IASs as the Primary Basis of Accounting*.

ing to *Bankscope.* In a second step, we use total assets as of 2006 as the criterion to identify the largest bank groups according to the *Bankscope* dataset. [28] With these preparations done, we start with a basis of 100 banks and try to investigate whether they adopted IFRS in 2005 for their consolidated accounts, see Table I.

Table I: Descriptive Statistics

This table contains descriptive statistics for the total sample. The second column 'Other GAAP' comprises the number of annual reports which were prepared in accordance with other GAAP, e.g., as a result of a delayed application of IFRS. The third column 'Early Adoption of IFRS' summarizes banks that implemented IFRS before 2005. The fourth column 'Insufficient Data/ Data not available' contains all banks for which comparisons are not feasible or reasonable, e.g., due to unavailability of annual reports, incomplete balance sheet data or other inadequacies. Hence, the last column depicts our final sample of banks that use IFRS for the first time in 2005 and 2006, respectively.

Countries	Total	Other GAAP	Early Adoption of IFRS	Insufficient Data/ Data not available	Dataset used Data
Total Sample	100	17	7	20	56
Austria	6	0	3	2	1
Belgium	4	0	0	2	2
Denmark	2	0	0	1	1
Finland	2	0	0	1	1
France	10	2	0	3	5
Germany	16	9	2	2	3
Greece	4	0	0	0	4
Ireland	2	0	0	0	2
Italy	12	1	0	1	10
Luxemburg	2	0	1	0	1
Netherlands	4	1	0	0	3
Portugal	4	1	0	1	2
Spain	14	0	0	3	11
Sweden	4	0	0	0	4
Switzerland	4	3	1	0	0
United Kingdom	10	0	0	4	6

Of those banks, 17 prepared their financial statements in accordance with local GAAP or U.S. GAAP in 2005. This is often the case for banks that are not required to apply the new accounting rules since they are not entities with listed equity which are required to prepare their statements according to IFRS under the EU regulation or are allowed to use U.S. GAAP in-

[28] We complete manually the missing figures for total assets. The dataset was set up in June 2011. In order to ensure that banks are also included that may no longer exist, we include both banks labeled active and inactive in the dataset. For some banks, total assets as of 2006 are not available since they are established later. Those banks are not used in the final dataset. We also manually correct the dataset for banks that are no consolidating banking groups and for which only aggregated balance sheets of the member banks are provided (consolidation code "A1").

stead.[29] Seven already implemented IFRS before 2005, further reducing the sample. A group of 20 banks was excluded since there were, e.g., no annual reports available for the years 2005 and 2004, comparability problems of balance sheet structures or overall insufficient information that prevents a reasonable comparison. This reduces our dataset to a final sample of 56 banks. Additionally, in order to identify the sources of changes in equity, we also gather information about the transition effects on equity for those 56 banks by using equity reconciliations showing sources of changes in equity due to the transition. These limitations reduce the dataset of equity changes to 27 banks in the respective section of the study.[30]

For the code law and common law classification in H4, we follow the basic idea outlined by Nobes (1983, p. 13) by putting banks from Ireland, the Netherlands and the United Kingdom in one cluster, which we will refer to as *common law*. The other cluster *code law* consists of Belgium, France, Germany, Italy, Spain and Sweden. In addition to that, we also put observations from Denmark, Finland and Portugal in the cluster *code law* and Luxemburg in *common law*, following an extended classification of Doupnik and Salter (1993).[31] Furthermore, we add banks from Austria and Greece to *code law* since those countries are closely associated with classic code law traditions. Hence, we count 44 banks in the cluster of countries with a *code law* background and 12 banks in the cluster *common law*.

In order to get an impression of the regulatory impact of the first-time adoption of IFRS in H5, we gather information about the capital ratios, i.e., information concerning the Tier I ratio and the total capital ratio, if available. Sometimes there is no information available whether the ratios changed in the course of the transition or whether the ratios are simply reprinted from previous reports with or without further reference to the applied accounting system. In this case, we drop these observations. We obtain a sample of 34 pairs of observations of the Tier I ratio, and 35 of the total capital ratio, respectively.

[29] See for example, Delvaille, Ebbers and Saccon (2005, p. 144) discussing this possibility for German firms.
[30] Often, banks publish changes in equity across the transition period which means that the changes cannot be solely attributed to changes in accounting systems but are also affected by the business activities during that period. Another drawback is that some banks report only the changes in equity positions, and do not refer to the reasons or accounting standards that cause the change.
[31] See Doupnik and Salter (1993, p. 51) who extend the classification to fifty countries.

Standardized Definition of Balance Sheet Items

IFRS does not require companies to use a completely uniformly defined and obligatorily applicable balance sheet structure (e.g., Hoogendoorn, 2006, p. 25). There were requirements concerning the basic items in the balance sheets and profit or loss outlined for banks in IAS 30.[32] However, they only outlined the most basic assets and liabilities and profit or loss items. In 2007, IAS 30 was replaced by IFRS 7 which is not sector-specific. A problem to be solved is the fact that the basic requirements concerning the balance sheet structure allow companies some autonomy in the presentation of their financial statements. Therefore, we face a two-sided dilemma: On the one hand, balance sheet line items on a very detailed level could be applied bearing a higher risk of gaps and wrong classifications. On the other hand, using a highly aggregated level lowers information content considerably, albeit enabling comparability. An aggregation of some balance sheet items is necessary in order to ensure comparability among the balance sheets of the sample and to avoid classification errors. Another argument in favour of an aggregation is that the investigation starts at the item of the previously applied GAAP. In financial statements under national GAAP there are often balance sheet items that cannot be categorized unambiguously into one specific IFRS account and vice versa. Therefore, we use a two-step approach and classify all balance sheet items into a standardized format to enhance comparability of the single items in a first step, basically following a categorization depending on IAS 30 and the OECD (2005) report of bank profitability.[33] However, we extend the classification by introducing specific balance sheet items relating to insurance specific items which might also be separately presented and evaluated through the transition. In cases where the description of the balance sheet item is ambiguous and cannot be unambiguously attributed to one accounting item according to our classification, we extend the analysis to the notes of the financial statements in a second step. The categorization is as follows:

- On the asset side, *Cash and Balances at Central Banks* comprise cash and cash equivalents as well as deposits at central banks.
- The items *Loans to other Banks* and *Loans to Customers* comprise all granted loans to the respective group, such as loans, advances or to customers or credit institutions as well as receivables.
- The item *Strategic Investments* contains balance sheet items such as long-term participating interests, investments in associates, or joint ventures.

[32] See IAS 30.19 and IAS 30.10.
[33] OECD (2005), pp. 7-9.

- *Insurance-related Assets* contains all insurance related assets if they are separately shown in the balance sheet, for example, investments on behalf of insurance policyholders, insurance investment portfolios, or long-term insurance business assets.
- On the liability side, *Loans from Banks* and *Customer Deposits* consist of the liabilities of the bank owed to those respective groups, such as deposits due to credit institutions or customers. The item *Insurance-related Liabilites* comprises, for example, liabilities under insurance contracts, liabilities to policyholders as well as insurance specific technical reserves.
- The items *Other Assets* and *Other Liabilities*, respectively, comprehend all accounts which cannot be classified into one of the other items. Examples for *Other Assets* are property, plant and equipment, goodwill, investment property, or accruals or 'other assets' as presented by the banks. *Other Liabilities* are, for example, accrual accounts, tax or subordinated liabilities, provisions, retirement liabilities or 'other liabilities'. *Total Equity* comprises shareholders' equity components provided by the banks as well as minority interest.

We use a balance sheet classification that could particularly give insights into the effect of the recognition and valuation of financial instruments, i.e., the application of IAS 32 and IAS 39. Due to this, we use the balance sheet item called *Securities and Financial Assets at Fair Value* on the asset side. This category comprises, for example, financial assets held for trading, all kinds of debt securities and equity shares held by the bank as well as hedging derivatives – if explicitly stated in the balance sheet. Under IFRS the classification contains financial securities referring to *held-to-maturity*, all securities and other financial assets that are categorized as *at fair value through profit or loss*, *held for trading*, and *available-for-sale*.

On the liability side there is *Securities and Financial Liabilities at Fair Value* containing, for example, issued debt securities, certificates, bonds or short positions and derivatives, if explicitly presented in the balance sheet. Under IFRS, the items included also comprise financial liabilities at fair value through profit or loss, if available. The crucial question is how these items will react under IFRS accounting in comparison to the previously published GAAP figures.

We are aware that the changes in the items can be attributed to both changes in valuation and reclassifications. Therefore, in order to separate the pure valuation effects, we also analyze the changes in equity in order to identify the sources of valuation changes, which directly or indirectly have to influence equity. Through this, we should get a more complete impression of how much the change in the accounting system actually influences the valuation of assets and liabilities and the structure of balance sheets and how much of the effects is only attributable to pure reclassifications.

Calculation of Changes

In order to ease comparisons, we try to gather balance sheet information based on a full application of the standards IAS 32, IAS 39 and IFRS 4 which have to be obligatorily applied for fiscal years starting on or after 1st January 2005. In some cases, the standards have already been applied voluntarily at the end of the prior year for comparison reasons. Therefore, we follow the rule to use the data covering these standards – if available – at the end of 2004 or the opening balances for 2005.

To compare the figures of the reports, we simply calculate the change in percent for every balance sheet item caused by the transition and calculate the unweighted average across all banks, i.e., the average value. In order to measure the changes in percent in the balance sheet items and to prevent distortions, we abstain from including items with no value under either IFRS or local GAAP, since a calculation of changes would not be reasonable in this case. Mainly, this is the case for insurance related assets that are explicitly stated under only one accounting system. In Table II, the number of values for each item and accounting system are reported separately. In order to test for significance of means and differences between means we use a common *t*-test (two-tailed), and a Wilcoxon signed rank test to test the significance of medians and differences in medians.

2.5 Empirical Results

Total Sample (H1)

Testing H1 for the entire sample, it can be clearly shown that there is a strong change in balance sheet structures. Turning to Table II, we find that the average change in balance sheet totals amounts to +5.48% (+3.30%).[34] This result supports our hypothesis H1 of a significant change since both the mean and the median are highly significant (1%-level). This result is also supported by the results of CEBS (2006) finding an even stronger reaction of +9% for the balance sheet total.[35]

Securities and Financial Assets at Fair Value shows a remarkable leap of +60.51% (+38.89%) and is highly significant for both means and medians (1%-level). This fact is mainly confirmed by the findings of CEBS (2006) for which, after recalculating the figures according to our classification, an increase in financial assets of over 50% can be observed. For this reaction basically two potential reasons can be identified: The first reason concerns the new classification of financial items. As already mentioned above, we try to capture this effect using a higher aggregation level of the position of financial assets which reduces the potential distortion effect of reclassifications. The second reason is the revaluation effect of the securities items under IFRS, i.e., the disclosure of hidden reserves, which, consequently, has to be also responsible for the strong increase. This observation unambiguously shows the change due to the transition to IFRS, strongly confirming hypothesis H1.

For *Strategic Investments* a reduction of -36.89% (-44.60%) can be observed. The main reason for this observation is that under IFRS only investments in associates and jointly controlled entities are considered whereas under most local GAAPs, there are also other equity securities separately considered that are held as strategic investments. Under IFRS, those equity securities are mostly reclassified in accordance to IAS 39, e.g., to available-for-sale, increasing the item *Securities and Financial Assets at Fair Value*. However, the reclassification effect from *Investments* has to be rather low, since it only contributes to a minor part of the total item value under local GAAP (1.2 %).

[34] Unless otherwise expressed, we report medians in parentheses.
[35] See CEBS (2006, p. 2-3).

Insurance-related Assets experience a decline of -31.48% (-4.13%) which is significant to the 10%-level only. Under local GAAP, for example, this item comprises assets in insurance operations whereas under IFRS, this item refers to financial assets for which the policyholders bear the risk. Furthermore, sometimes mentioned in the financial statements, insurance contracts with very low risk have to be considered investment contracts. Thus, potential reclassifications reducing *Insurance-related Assets* explain to a lesser degree the overall reclassifications, since the contribution to total assets of that position under local GAAP if explicitly stated is rather small, i.e., about 7.6%.

As a consequence, the item *Capital and Reserves* is expected to increase since asset items valued at fair value, which are not classified as *at fair value through profit or loss*, have to change the value of the reserves directly. However, this item shows no significant reaction, even though the magnitude seems to be in line with -5% in the observations of CEBS (2006).

CEBS (2006, p. 2-3) find that although revaluation reserves increase strongly, the reaction is offset by the first-time adoption effect of post-employment obligations and a reduction in minority interests for preference shares held by third parties that are accounted for as debt under IFRS. We classified the fund for general banking risk as well as minority interests in total consolidated equity which makes a direct comparison more meaningful, albeit reducing the comparability of single effects. From a creditor's perspective, an equity reduction might be negatively interpreted on first glance at the balance sheet. However, recalculating the ROE yields a higher profitability which might be positively perceived by equity investors. An in-depth analysis of transition effects on equity is carried out below in the discussion of equity changes.

Loans to Other Banks containing loans and advances to other banks shows no significant reaction, whereas *Loans to Customers* increases by a highly significant +2.40% (+0.89%). The largest increases reported can be attributed to consolidation effects and securitized loans that were not included under local GAAP. One observation is that the reactions of *Loans to Other Banks* are caused, for the most part, by reclassifications to other financial items that are categorized at fair value.

Table II: Total Sample – Changes of Single Balance Sheet Items

This table depicts the changes in percent of single balance sheet items. The second column shows the change in percent for the respective balance sheet position in the changeover from local GAAP to IFRS. The corresponding values in the third column report the respective values for the t-test statistics. ***,**,* indicate significance on the 1%-,5%,-10%- level for a t-test (two-tailed). The values in parentheses show the median values for the respective change for each balance sheet position. The values in italics in the third column indicate the test values for a Wilcoxon signed rank test. +++,++,+ indicate a significance to the 1%-, 5%-, 10%-level.
N denotes the number of observations in the comparison (comp.), the number of observations under LGAAP and IFRS, respectively. 'N > 0', 'N < 0' and 'N=0' denote the increases, decreases and observations with no change in the specific line item.

Assets	Mean (Median)	t-value *Wilcoxon*		N comp.	N LGAAP	N IFRS	N N > 0	N N = 0	N N < 0
Cash and Balances with Central Banks	+10.99% (+0.00%)	1.53 *2.65*	*** +++	55	55	55	30	13	12
Loans to other Banks	-4.02% (+0.31%)	-1.51 *0.28*		56	56	56	33	1	22
Loans to Customers	+2.40% (+0.89%)	3.13 *3.34*	*** +++	56	56	56	39	0	17
Securities and Fin. Assets at Fair Value	+60.51% (+38.89%)	6.26 *5.89*	*** +++	56	56	56	51	0	5
Strategic Investments	-36.89% (-44.60%)	-5.11 *-4.56*	*** +++	50	53	52	11	1	38
Insurance-related Assets	-31.48% (-4.13%)	-2.16 *-1.36*	*	9	17	25	3	0	6
Other Assets	-12.34% (-25.00%)	-1.42 *-3.36*	+++	56	56	56	18	0	38
Liabilities									
Loans from Banks	-3.01% (+0.00%)	-1.36 *-0.39*		56	56	56	28	5	23
Customer Deposits	-1.31% (-0.16%)	-1.86 *-1.84*	* +	56	56	56	21	4	31
Securities and Liabilities at Fair Value	+58.13% (+27.59%)	4.85 *6.23*	*** +++	56	56	56	52	0	4
Insurance-related Liabilities	-3.59% (-0.88%)	-0.56 *-0.61*		18	18	38	7	1	10
Other Liabilities	-18.33% (-22.93%)	-3.12 *-3.30*	*** +++	56	56	56	19	0	37
Capital and Reserves	-3.18% (-1.06%)	-1.45 *-1.31*		56	56	56	27	0	29
Balance Sheet Total	+5.48% (+3.30%)	5.46 *5.24*	*** +++	56	56	56	49	0	7
Balance Sheet Total IFRS (in Thousand €)	13,631,284								

The item *Other Assets* shows a negative reaction of -12.34% (-25.00%) concerning means (medians) which is, however, significant only concerning medians. One main factor leading to a reduction is that under many local GAAPs derivatives are included in *Other Assets*. According to IFRS, they are explicitly accounted for at fair value in financial assets. In addition, this item contains the remainder that is not affected directly by banking-specific business and

comprises simply items, such as positions relating to property, plant and equipment, goodwill and intangible assets. However, as the focus of our investigation is on items related to banking and *Other Assets* accounts only for a minor part of total assets, we do not intend to speculate about this observation and instead concentrate on the reactions of bank-specific positions in the following.

The financial liability position *Securities and Liabilities at Fair Value* shows a highly significant reaction with +58.13% (+27.59%) according to means and medians (1%-level). The reaction is attributable, for a large part, to the reclassification of derivatives that were classified as 'other liabilities' until the changeover.

Customer Deposits exhibits a negative reaction with -1.31% (-0.16%) which is significant for both means and medians. However, the slight decrease might source in various reasons, e.g., reclassifications as well as valuation changes.

To summarize, we find that the reaction in single balance sheet items is a strong signal for a profound change in basic accounting assumptions concerning inclusion and measurement of items, strongly supporting our first hypothesis H1.

Sources for Equity Changes

In order to identify the specific changes in equity, we analyze the main sources for the changes in shareholders' equity in the transition to IFRS. In Table III, we classify the main changes in shareholders' equity which are expressed as a percentage of equity under previous GAAP. As the overall change in equity is +1.58% (+2.40%), this seems to be contrary to the results of the previous section. However, we have to keep in mind that the "aggregate item" *Capital and Reserves* in the previous section also contains the fund for general banking risk under local GAAP, and minority interests. Additionally, in this section we work with a smaller subsample of 27 banks which is nearly half the sample of the previous section.

We find that several items change especially strongly: The fund for general banking risk covers non-specific banking risks which was allowed under many national GAAPs according to

the European Directive on bank accounts.[36] In the transition to IFRS, the fund for general banking risk has to be resolved and reclassified to reserves.[37]

Another positive effect stems from dividends which are recognized as a liability according to local GAAP have to be reversed and accounted for in equity. The reason for this is that according to IFRS dividends have to be accounted for in equity until they are approved by the shareholders. Under several local GAAPs dividends are accounted for as a liability when they are proposed by a bank's management. The application of IAS 32, IAS 39 and IFRS 4 has a positive impact on equity. In order to identify separate effects, we attempt to classify the sources into the specific accounting standards.[38]

Overall, we find that valuation of financial instruments increases equity. One effect contributing a great deal to the increase is that many financial assets that were previously recognized at amortized cost are now categorized as available-for-sale. This implies a fair value valuation of these assets with a positive effect on 'other comprehensive income' in equity.

Another positive effect can be reported from Goodwill accounting which leads on average to an increase of 2.06 %. One effect often reported is that Goodwill was written off over time according to some local GAAPs while according to IFRS it is subject to an impairment test. Therefore, equity has to be adjusted for the Goodwill depreciation already recognized.

Tax effects such as deferred tax assets that were previously not accounted for according to local GAAP, increase equity on average by 1.42%.

[36] See Article 38 of the Directive 86/635/EEC, ruling the details of the Fund for general banking risks prior to IFRS.

[37] According to IAS 30.50-IAS 30.52, any changes have to be separately disclosed as appropriations of retained earnings.

[38] In some cases, we have to make assumptions since some of the effects of the application of IAS 32, IAS 39 and IFRS 4 are reported only in combination and could not be separated. We try to classify these effects based on further explanations given in the financial statements. If not, we add them to the largest effect available. However, in total, they are immaterial.

Table III: Average Adjustment of Equity Through Transition

This table depicts the average and median effect of single adjustments on equity, as share of local GAAP equity. N denotes the number of banks in this calculation.

Source	Mean *(Median)*	N
Treasury Shares (IAS 32)	-2.25% *(-1,74%)*	9
Profit or Loss (IAS 8)/ Dividends (IAS 10)	3.93% *(4.88%)*	14
Funds for General Banking Risk (IAS 30)	6.97% *(6.10%)*	6
Intangible Assets (IAS 38), PP&E (IAS 16), Investment Property (IAS 40)	0.15% *(0.07%)*	24
Gains and Losses on Financial Instruments (IAS 39) and Insurance Contracts (IFRS 4)	1.43% *(1.02%)*	26
- *Financial Instruments (IAS 32/39) (w/o Debt/Equity)*	2.21% *(1.71%)*	26
- *Debt/Equity (IAS 32)*	1.35% *(1.75%)*	10
- *Insurance Contracts (IFRS 4)*	*-2.59%* *(-1.43%)*	13
Employee Benefits (IAS 19), Share-based Payments (IFRS2)	-5.45% *(-1.23%)*	26
Goodwill/ Goodwill Impairment (IFRS 3/IAS 36)	2.06% *(1.33%)*	16
Investments in Associates (IAS 28), Business Combinations (IFRS3), Consolidated and Separate Financial Statements (IAS27)	0.67% *(0.00%)*	20
Tax Effects (IAS 12)	1.42% *(-0.32%)*	20
Leases (IAS 17)	-0.40% *(-0.05%)*	9
Other	-0.17% *(0.05%)*	24
Total Average	**+1.58%** ***(2.40%)***	27

A negative effect on equity is caused by accounting for employee benefits (IAS 19) such as salaries or pension benefits and share-based payments (IFRS 2), reducing equity by 5.45%. Very often changes in the basic assumptions such as discount rates, growth rates, or the retrospective application of the new rules are reported to have a negative effect on the recalculation of employee benefits. An offsetting effect might have share-based payments in the transition since option plans are accrued until the shares and options are available according to IFRS. Under local GAAPs, option plans are often reported to be accounted for as expenses in the year they arise.

According to IFRS, treasury shares and short positions in the respective options have to be directly deducted from equity leading to a reduction of -2.25%. The rationale is that under local GAAPs these shares and options are often recognized as assets with an offsetting balance sheet entry in equity.

Comparably, accounting for insurance contracts reduces equity on average by -2.59%. One major effect mentioned is that the value of in-force business decreases in the course of the transition which means that liabilities from insurance contracts are higher than the expected future payments leading to adjustments in equity.

The accounting for leasing reduces equity on average by -0.40%. One effect mainly reported results from the application of different depreciation methods for operating lease assets under local GAAP and IAS 17. The largest effects can be seen from banks using a different depreciation method under UK GAAP prior to transition.

Cross-sectional variance (H2)

In order to test H2 and to check for variability in reporting between accounting systems, we calculate the cross-sectional variance for every balance sheet item under national GAAP rules and IFRS.[39] Then we test for equality of variances using a common F-test. Since the F-test is sensitive to deviations from non-normality, we also use the Levene's Test and the Brown-Forsythe Test as robustness checks. For purpose of better interpretations, we also provide the standard deviations for both IFRS and local GAAP in order to make the direction of changes transparent, i.e., an increase or decrease in variance.

[39] Hung and Subramanyam (2007, p. 637) use a comparable approach to investigate the cross-sectional variability of their sample of German companies.

In Table IV, we find that there is a significant increase in cross-sectional variance after transition in balance sheet items strongly related to valuation at fair value. Especially the items concerning securities and financial assets at fair value, and financial liabilities at fair value, respectively, are significant for all tests applied at least at the 10%-level. This means that a greater variability is imported in crucial items of the reported balance sheets by using IFRS, and especially by the application of IAS 39 on financial assets and liabilites leading to reclassifications and revaluations, supporting H2.

The variability on *Strategic Investments* decreases after the application of IFRS. This is attributable to the recognition of investments in associates and joint ventures. To be classified as an associated company in the consolidated financial statements of the investor, it has to have significant influence over the investee. This is usually presumed if the investor holds at least 20% of the voting power according to IAS 28. Under many local GAAPs, this position comprises also, e.g., equity securities which were held as fixed assets and participating interest of which many did not reach the 20% shareholdings to be accounted for at equity. After transition, those were treated as financial assets according to IAS 39 leading to reclassifications of those assets.

As mentioned above, one main reason for the variability decrease in *Insurance-related Assets* might be that for assets for some insurance contracts with no significant insurance risk borne by the bank, the respective contracts are treated as investment contracts. The underlying financial assets are then reclassified into the financial asset categories according to IAS 39 and are, therefore, in many cases not separately stated in the financial statements. These results are in line with the observations of Hung and Subramanyam (2007, p. 637) who identify a greater fair value orientation as a possible reason for increasing the differences across companies under IFRS.

The observation of a greater cross-sectional variance in balance sheets after transition to IFRS can be interpreted ambivalently. On the one hand, a greater cross-sectional variance can be seen positively by the fact that, after transition, differences between single banks become more obvious in terms of widening the possible scale for reported balance sheet figures. Abstractly, this means that differences between investment alternatives become more transparent for investors to make investment decisions since they better reflect differences in the individual economic situations of companies (e.g., Barth et al. 2008, p. 471). Following this reason-

ing, it becomes easier for an investor to put those banks in an investment order on the basis of balance sheet analysis according to the accounting system with higher variances. On the other hand, we have to keep in mind that the cross-sectional variability could be influenced – if not dominated – by a one-time effect of the transition.

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Table IV: Total Sample –Test of Differences in Cross-Sectional Variances between National GAAP and IFRS

This table depicts the test statistics for the hypothesis that cross-sectional variances for single balance sheet items are the same under local GAAP and IFRS. 'STD IFRS' and 'STD LGAAP' report the respective cross-sectional standard deviations of the respective balance sheet items (in million Euro). The third column depicts the direction of the change, i.e. cross-sectional variance is larger under IFRS reported figures if 'STD IFRS/STD LGAAP' >1. The bold values in the fourth column depict the test statistics of a common F-test. The bold values in the column 'Prob' show the respective probability. ***,**,* indicate a significance on the 1%-,5%,-10%- level for a common F-test. The values in italics depict the test statistics of a Levene's Test. The values in italics in the column 'Prob' show the respective probability. +++,++,+ indicate a significance on the 1%-,5%,-10%- level for a Levene's Test. The last values depict the values of a Brown-Forsythe test statistics replacing the mean in the Levene-Test by the median. The last values in the column 'Prob' show the respective probability of the respective Brown-Forsythe test statistics. °°°,°°,° indicate a significance on the 1%-,5%,-10%- level for a Brown-Forsythe test statistics .

Total Sample

Assets	**STD IFRS**	***N***	**STD LGAAP**	***N***	**STD IFRS/ STD LGAAP**	**F-Test** *Levene Test* Brown-Forsythe	**Prob** *Prob* Prob
Cash and Balances with Central Banks	5,244	*55*	4,271	*55*	1.23	**0.66** *0.81* 0.26	**13%** *37%* 61%
Loans to other Banks	24,906	*56*	36,098	*56*	0.69	**2.10** *3.02* 1.17	**1%** *** *9%* + 28%
Loans to Customers	135,227	*56*	129,726	*56*	1.04	**0.92** *0.01* 0.00	**76%** *92%* 96%
Securities and Fin. Assets at Fair Value	153,341	*56*	76,092	*56*	2.02	**0.25** *8.79* 2.96	**0%** *** *0%* +++ 9% °
Strategic Investments	1,348	*52*	2,372	*53*	0.57	**3.10** **11.12** **3.66**	**0%** *** **0%** +++ **6%** °
Insurance-related Assets	17,245	*25*	39,518	*17*	0.44	**5.25** *14.27* 6.55	**0%** *** *0%* +++ 1% °°
Other Assets	22,073	*56*	33,082	*56*	0.67	**2.25** *7.18* 2.72	**0%** *** *1%* +++ 10%
Balance Sheet Total	317,370	*56*	279,843	*56*	1.13	**0.78** *0.45* 0.13	**35%** *50%* 72%

Liabilities	**STD IFRS**	***N***	**STD LGAAP**	***N***	**STD IFRS/ STD LGAAP**	**F-Test** *Levene Test* Brown-Forsythe	**Prob** *Prob* Prob
Loans from Banks	37,297	*56*	50,119	*56*	0.74	**1.81** *1.71* 0.60	**3%** ** *19%* 44%
Customer Deposits	125,364	*56*	124,291	*56*	1.01	**0.98** *0.01* 0.00	**95%** *92%* 95%
Securities and Liabilities at Fair Value	123,700	*56*	42,279	*56*	2.93	**0.12** *15.58* 5.35	**0%** *** *0%* +++ 2% °°
Insurance-related Liabilities	43,176	*38*	55,986	*18*	0.77	**1.68** *2.27* 1.14	**18%** *14%* 29%
Other Liabilities	25,199	*56*	46,720	*56*	0.54	**3.44** *11.43* 4.39	**0%** *** *0%* +++ 4% °°
Capital and Reserves	14,377	*56*	15,990	*56*	0.90	**1.24** *0.31* 0.07	**43%** *58%* 79%

Listed and unlisted banks (H3)

Another interesting insight is expected from a division into the subsamples of listed and unlisted banks. As already hypothesized in H3, the reaction of unlisted banks is expected to be higher due to the necessity of more adjustments caused by the transition to IFRS.

In Table V, we can observe a similar reaction of total assets for 44 banks in *Listed* in comparison to the 12 in *Unlisted*. Different reactions of unlisted and listed banks can be reported from *Loans to other banks* with no significant reaction for unlisted banks and a negative and significant reaction of -6.01% (-0.39%) for listed banks. Testing for differences confirms the perception of two individual reactions of each subsample, basically supporting H3. For listed banks, one cause often reported for the decrease is the reclassification of reverse repos from loans and advances to other credit institutions which are, for example, separately disclosed or categorized as held-for-trading or available-for-sale and are recognized, as a consequence, at fair value after transition.

We have to be cautious about interpreting the differences in *Insurance-related Assets* due to very small sample sizes. For listed companies, the decrease can be attributed to the insurance contracts that are treated as investment contracts due to their low insurance risk. Usually, the respective assets are therefore reclassified and recognized as financial assets. However, for both *Loans to other banks* and *Insurance-related Assets*, differences in the reactions are only significant for means, but not for medians. This indicates that some large reactions influence these balance sheet items.

For *Securities and Financial Liabilities at Fair Value,* we find that the increase in means for listed banks is about twice the reaction for unlisted banks. For both groups of listed and unlisted banks, the reclassification of derivatives, e.g., hedging derivatives and recognition in a separate line item, leads to an increase in this position. Furthermore, other reclassifications of financial liabilities as well as a valuation at fair value of some liabilities contribute to the increase. This would also explain the decreases in *Other Liabilities* as the position in which the derivatives were usually recognized prior to transition.

Table V: Listed and Unlisted Banks - Change of Single Balance Sheet Items

This table depicts the changes in percent of single balance sheet items for the subsamples of listed and unlisted banks. The first column of each sample shows the change in percent for the respective balance sheet position in the changeover from local GAAP to IFRS. The corresponding values in the second column show the respective values for a common t-test (two-tailed). ***,**,* indicate a significance on the 1%-,5%,-10%- level for a two sided t-test. The values in parentheses show the median values for the respective change for each balance sheet item. The values in italics in the second column indicate the test values for a Wilcoxon signed rank test. +++,++,+ indicate a significance to the 1%-, 5%-, 10%-level.

The column 'Listed vs Unlisted' depicts the differences in means for the respective balance sheet position in the changeover for each pair of corresponding subsamples. The corresponding values in the second column show the respective values for the common t-test statistics. ***,**,* indicate a significance on the 1%-,5%,-10%- level for a t-test (two-tailed). The values in parentheses show the difference in median values for each balance sheet item. The values in italics in the second column indicate the test values for a Wilcoxon rank-sum test. +++,++,+ report a significance to the 1%-, 5%-, 10%-level.

	Unlisted			Listed			Listed vs. Unlisted	
Assets	Mean (Median)	t-value *Wilcoxon*	N	Mean (Median)	t-value *Wilcoxon*	N	Mean (Median)	t-value *Wilcoxon*
Cash and Balances with Central Banks	+3.01% (+0.00%)	0.83 *0.91*	12	+13.21% (+0.01%)	1.45 *2.56* ++	43	-10.21% (-0.01%)	-1.04 *-0.57*
Loans to other Banks	+3.25% (+0.99%)	1.52 *1.49*	12	-6.01% (+0.18%)	-1.83 * *-0.39*	44	+9.26% (+0.82%)	2.36 ** *1.36*
Loans to Customers	+1.82% (-0.52%)	1.11 *-0.24*	12	+2.56% (+1.58%)	2.92 *** *3.59* +++	44	-0.74% (-2.10%)	-0.40 *-1.72* +
Securities and Fin. Assets at Fair Value	+66.31% (+45.15%)	2.36 ** *2.35* ++	12	+58.93% (+38.89%)	6.00 *** 5.36 +++	44	+7.38% (+6.26%)	0.25 *-0.44*
Strategic Investments	-29.52% (-44.42%)	-2.11 * -1.88 +	12	-39.22% (-44.60%)	-4.63 *** -4.18 +++	38	+9.70% (+0.18%)	0.59 *0.93*
Insurance-related Assets	+4.43% (+4.43%)	1.60 *1.34*	2	-41.74% (-45.55%)	-2.48 ** *-1.86* ++	7	+46.17% (+49.98%)	2.70 ** *1.46*
Other Assets	+19.82% (-0.41%)	0.64 *-0.16*	12	-21.11% (-27.19%)	-3.10 *** *-3.56* +++	44	+40.93% (+26.77%)	1.28 *1.76* +
Liabilities								
Loans from Banks	+3.31% (+0.38%)	0.69 *0.31*	12	-4.74% (+0.00%)	-1.92 * *-0.58*	44	+8.04% (+0.38%)	1.48 *0.76*
Customer Deposits	-2.57% (-1.93%)	-1.71 *-1.54*	12	-0.97% (-0.12%)	-1.21 *-1.20*	44	-1.60% (-1.81%)	-0.94 *-0.92*
Securities and Liabilities at Fair Value	+25.78% (+18.04%)	2.94 ** 2.51 ++	12	+66.95% (+32.67%)	4.51 *** 5.68 +++	44	-41.17% (-14.63%)	-2.39 ** *-1.62*
Insurance-related Liabilities	-21.41% (-21.41%)	-1.00 *-1.00*	2	-1.36% (-0.88%)	-0.20 *-0.26*	16	-20.05% (-20.53%)	-0.89 *-0.84*
Other Liabilities	+13.60% (+10.79%)	0.77 *0.94*	12	-27.04% (-28.84%)	-5.30 *** *-4.11* +++	44	+40.64% (+39.64%)	2.21 ** *2.52* ++
Capital and Reserves	-2.30% (-1.80%)	-0.43 *-0.39*	12	-3.42% (-0.55%)	-1.42 *-1.30*	44	+1.12% (-1.25%)	0.19 *0.10*
Balance Sheet Total	+5.66% (+3.96%)	2.52 ** 2.28 ++	12	+5.42% (+3.30%)	4.79 *** *4.84* +++	44	+0.23% (+0.66%)	0.09 *0.44*

However, for listed banks, we find higher amounts of derivatives and other financial liabilities that are reclassified, e.g., hedging derivatives that are shown in this position. Furthermore, the shares of liabilities using fair value seem to be generally higher leading to a stronger increase. This may be also attributable in part to the fact that listed banks often make use of financing by tradable liabilities that can be valued at fair value.

To summarize, we find evidence of different reactions between unlisted and listed banks. Listed banks show greater reactions concerning financial liabilities due to the transition to IFRS which may be caused by higher levels of derivatives that are separately stated and more financial liabilities that are valued at fair value after transition. This perception is confirmed by the higher increase in *Securities and Financial Liabilities at Fair Value* for listed banks, refuting H3.

Accounting regimes in force prior to transition to IFRS (H4)

As already hypothesized in H4, the specific accounting system differences between local GAAP and IFRS should be reflected by the total change in balance sheet items due to transition to IFRS. The differences between the country-specific accounting regimes have been reduced due to the increasing harmonization developments in the European Union in the last decades. Nevertheless, using the classification of common law and code law countries, we should be able to identify country cluster specific differences depending on the institutional background and especially on the accounting background. As stated in H4, the effects of the transition to IFRS are greater for companies from countries of the *code law* cluster since the institutional environment is "more distant" from the IFRS accounting practice which, in general, is claimed to be situated closer to common law accounting.

In Table VI, *Balance Sheet Total* virtually reports comparable reactions for both means and medians concerning both subsamples. However, we can observe a significant negative reaction of *Strategic Investments* for the subsample of *Code Law* only. Therefore, we have to be careful when interpreting the results. The main reasons mentioned for the decrease are investments in non-consolidated investments, i.e. long term equity investments in securities which are recognized as financial assets according to IAS 39. As mentioned above, prior to transition, those investments are shown separately as a separate item within the item *Strategic Investments*. For *Common Law* banks, we are unable to find a significant reaction at all. This reaction is in support of H4.

For *Securities and Financial Liabilities at Fair Value* we notice significant reactions according to means and medians for both subsamples. However, we fail to find evidence for two dichotomous groups since testing for differences lacks significance, although the reaction for common law is about 60% to 100% higher. One of the main reasons for the reactions are, as mentioned above, the reclassifications of derivatives into this item which in turn would ex-

plain, at least in part, the significant reductions of *Other Liabilities* for both groups. The reductions in this item match, more or less, the increase in *Securities and Financial Liabilities at Fair Value.* However, the reported transition reactions are higher for common law, contradicting H4.

Table VI: Common and Code Law - Change of Single Balance Sheet Items

This table depicts the changes in percent of single balance sheet items for the subsamples of banks from common law-oriented and code law countries. The first column of each sample shows the change in percent for the respective balance sheet position in the changeover from local GAAP to IFRS. The corresponding values in the second column show the respective values for a common t-test statistics. ***,**,* indicate a significance on the 1%-,5%,-10%- level for a t-test (two-tailed). The values in parentheses show the median values for the respective change for each balance sheet item. The values in italics in the second column indicate the test values for a Wilcoxon signed rank test. +++,++,+ indicate a significance to the 1%-, 5%-, 10%-level.

The column 'Code vs Common' depicts the differences in means for the respective balance sheet position in the changeover for each pair of corresponding subsamples. The corresponding values in the second column show the respective values for the common t-test (two-tailed). ***,**,* indicate a significance on the 1%-,5%,-10%- level for a two sided t-test. The values in parentheses show the difference in median values for each balance sheet item. The values in italics in the second column indicate the test values for a Wilcoxon rank-sum test. +++,++,+ report a significance to the 1%-, 5%-, 10%-level.

	Code Law			**Common Law**			**Code vs Common**	
Assets	Mean (Median)	t-value *Wilcoxon*	N	Mean (Median)	t-value *Wilcoxon*	N	Mean (Median)	t-value *Wilcoxon*
Cash and Balances with Central Banks	+8.90% (+0.00%)	1.01 *1.32*	43	+18.47% (+0.86%)	2.06 * *2.73* +++	12	-9.57% (-0.86%)	-0.76 *-2.67* +++
Loans to other Banks	-4.82% (+0.22%)	-1.69 * *-0.02*	44	-1.09% (+3.95%)	-0.16 *0.55*	12	-3.73% (-3.73%)	-0.50 *-1.26*
Loans to Customers	+2.43% (+0.89%)	3.27 *** *2.89* +++	44	+2.27% (+1.01%)	0.95 *1.65* *	12	+0.16% (-0.12%)	0.06 *-0.58*
Securities and Fin. Assets at Fair Value	+62.21% (+48.07%)	5.84 *** *5.33* +++	44	+54.27% (+20.94%)	2.32 ** *2.67* +++	12	+7.94% (+27.13%)	0.31 *0.78*
Strategic Investments	-43.31% (-62.52%)	-5.53 *** *-4.60* +++	42	-3.21% (+2.44%)	-0.22 *0.07*	8	-40.10% (-64.97%)	-2.46 ** *-2.44* ++
Insurance related Assets	-26.66% (-24.84%)	-1.90 *-1.83* +	4	-35.33% (+1.67%)	-1.40 -0.405	5	+8.68% (-26.51%)	0.30 -0.49
Other Assets	-8.33% (-23.23%)	-0.77 *-2.54* ++	44	-27.02% (-32.10%)	-3.42 *** *-2.43* ++	12	+18.69% (+8.86%)	1.40 *0.56*
Liabilities								
Loans from Banks	-4.61% (+0.00%)	-2.01 * *-0.58*	44	+2.87% (+0.04%)	0.48 *0.20*	12	-7.48% (-0.04%)	-1.17 *-0.62*
Customer Deposits	-1.31% (-0.15%)	-1.69 * *-1.60*	44	-1.31% (-1.28%)	-0.76 *-0.90*	12	-0.00% (+1.13%)	-0.00 *0.15*
Securities and Liabilities at Fair Value	+50.96% (+25.96%)	4.53 *** *5.56* +++	44	+84.40% (+55.92%)	2.21 ** *2.82* +++	12	-33.44% (-29.96%)	-0.84 *-0.92*
Insurance related Liabilities	-6.39% (-2.85%)	-1.38 *-1.13*	9	-0.78% (+0.00%)	-0.06 *0.12*	9	-5.62% (-2.85%)	-0.43 *-0.66*
Other Liabilities	-15.43% (-17.17%)	-2.19 ** *-2.53* ++	44	-28.97% (-28.84%)	-3.18 *** *-2.28* ++	12	+13.54% (+11.67%)	1.18 *0.84*
Capital and Reserves	-2.23% (+0.34%)	-0.83 *-0.30*	44	-6.68% (-9.47%)	-2.46 ** *-2.04* ++	12	+4.46% (+9.82%)	1.17 *1.46*
Balance Sheet Total	+5.16% (+3.30%)	5.49 *** *4.66* +++	44	+6.64% (+2.81%)	2.03 * *2.43* ++	12	-1.48% (+0.49%)	-0.44 *0.04*

A comparable observation can be made for the item *Capital and Reserves* for which we find a significant decrease in equity only for common law. This does not indicate common law banks have a significantly lower need for accounting adjustments or are able or willing to

reduce the transition effects due to their experience with the previously applied accounting systems which was believed to lead to lower adjustments in the transition to IFRS.

Our results do not indicate that due to the 'closer' accounting regime for banks in the *Common law* subsample prior to the changeover, the adjustments of *Common Law* banks to be significantly lower. However, we hypothesized those banks to be more experienced and better able to interpret and apply the IFRS accounting rules in their favor, reducing adjustment effects. Our results provide only mixed evidence for the differences in application effects depending on previous *Common Law* and *Code Law* accounting practice. Therefore, we find only some evidence and just weak support for hypothesis H4.

Regulatory impact (H5)

Our results so far show that the introduction of IFRS increases the values of financial instruments on both assets and liabilities. This might lead to an increase in the capital buffers of a bank. As stated in H5, we expect higher regulatory capital ratios due to the transition to IFRS.

In Table VII, we find that there is a decrease due to the changeover to IFRS in both Tier I and total capital ratios for almost all subsamples. For regulatory figures not to be influenced by accounting effects, so called prudential filters were proposed by CEBS (2004) on consolidated accounting figures in order to make them applicable for regulatory purposes. However, these had to be implemented by national authorities.[40] Therefore, the banks published the corresponding figures mostly on a pro-forma basis which were usually not commented in detail. In the absence of binding rules in all countries and some divergence in supervisory practices at the time of the transition, we have to be cautious in interpreting the results.[41]

The observations yield that the application of IFRS leads nearly symmetrically to lower ratios across all subsamples, except for *Unlisted*. This result is in line with the observations of CEBS (2006) finding similar developments. Using unweighted means, the relative decrease of the Tier I capital ratio in the total sample with -2.34% is significant (5%-level) for means whereas the relative effect on total capital ratio amounts is not significant. This indicates a reduction in Tier I capital and a transition to other levels of regulatory capital since the risk

[40] For example, in Germany the Konzernabschlussüberleitungsverordnung (KonÜV) ruling the prudential filters for German banks came into force in 2007.
[41] See CEBS (2006a) for an overview of divergences in the applicability of regulatory funds across countries in the European Union.

weighted assets remain unchanged respectively in the calculations of both quotas. This result is in line with CEBS (2006, p. 2) finding that first-time adoption leads to a decrease in own funds which is attributable mainly to a reduction of reserves. They also find that the application of prudential filters eliminates the effect of revaluation reserves caused by fair value, which is partly offset by the possibility to include those revaluation reserves in Tier II capital.

Table VII: Regulatory Impact

This table depicts average regulatory capital ratios published in the respective annual reports under IFRS or local GAAP for the year 2004. The first panel 'Tier I Ratio' comprises regulatory core capital which is the central limit for the capital adequacy calculation. The second panel 'Total Capital Ratio' depicts the total regulatory equity as percentage of total risks taken by the bank. The column 'Change (abs.)' indicates the absolute change of the regulatory ratio, whereas 'Change (rel.)' depicts the change in relation to the ratio published under the prior GAAP regime. 'Average Individual Change' shows the average across all indivudal changes, i.e. unweighted average of changes. The column 't-value' reports the t-value according to a common t-test (two-tailed) on average individual changes. ***,**,* indicate a signficance on the 1%-,5%- or 10%-level.The corresponding median values are not reported. The column 'Wilcoxon' depicts the test statistics according to a Wilcoxon signed rank test. +++,++,+ indicate signficance on the 1%-,5%- or 10%-level according to the Wilcoxon signed rank test.

Tier I Ratio

	IFRS	**Local GAAP**	***Change (abs.)***	***Change (rel.)***	***Average Individual Change***	***t-value***	***Wilco-xon***	**N**
Total Sample	8.26%	8.46%	*-0.20%*	*-2.34%*	*-2.25%*	*-2.21 ** *	*-1.94 +*	34
Listed	8.09%	8.36%	*-0.26%*	*-3.14%*	*-3.06%*	*-2.84 *** *	*-2.38 ++*	28
Unlisted	9.03%	8.93%	*0.11%*	*1.18%*	*1.53%*	*0.63*	*0.42*	6
Common Law	8.23%	8.47%	*-0.24%*	*-2.82%*	*-2.78%*	*-1.80*	*-1.63*	10
Code Law	8.27%	8.45%	*-0.18%*	*-2.13%*	*-2.03%*	*-1.55*	*-1.34*	24

Total Capital Ratio

	IFRS	**Local GAAP**	***Change (abs.)***	***Change (rel.)***	***Average Individual Change***	***t-value***	***Wilco-xon***	**N**
Total Sample	11.59%	11.64%	*-0.05%*	*-0.42%*	*-0.40%*	*-0.51*	*-0.15*	35
Listed	11.50%	11.57%	*-0.07%*	*-0.63%*	*-0.53%*	*-0.64*	*-0.11*	29
Unlisted	12.07%	12.01%	*0.06%*	*0.54%*	*0.23%*	*0.10*	*0.00*	6
Common Law	11.12%	11.28%	*-0.16%*	*-1.43%*	*-1.36%*	*-1.13*	*-0.68*	10
Code Law	11.78%	11.79%	*0.00%*	*-0.03%*	*-0.02%*	*-0.02*	*0.19*	25

This is in line with our observations of a stronger decrease in the Tier I ratio and no significant effect on the total capital ratio. A reduced Tier I capital might also be caused by increases in the corrections of intangible assets and Goodwill that have to be deducted from Tier I capital. For example, the impairment-only approach for Goodwill through the IFRS application would, in the absence of a triggering event, lead to higher corrections of Tier I capital over time. Financial assets classified available-for-sale are valued at fair value with changes directly recognized in equity. The effect of the revaluation reserves of the financial assets are neutralized through the prudential filters. Those revaluation reserves can only be recognized

as Tier II capital (CEBS 2004, p. 3). For unlisted banks, we find that the absolute levels for both the Tier I and total capital ratios are generally higher. However, we observe a strong and significant decrease in the Tier I capital ratio (total capital ratio) for listed banks with -3.06% (-0.53%). However for *Unlisted*, we cannot confirm this observation. The overall effect discussed above seems to be driven by the negative impact on listed banks.

Turning to the subsamples of *common law* and *code law* countries, neither for the *common law* subsample nor for banks from *code law* countries can significant reactions for banks on Tier I capital be reported. Concerning total capital ratios, we make a comparable observation.

To summarize, the strongest reactions are reported from the sample of listed banks, those banks that are commonly supposed to possess more tradable assets and liabilities in their portfolios. The application of fair value does not lead to a substantial inflation in regulatory figures which can be interpreted positively by banking regulators at first glance. Counterintuitively, a negative impact of IFRS reporting on regulatory capital can be observed for listed banks, refuting our hypothesis H5 and also refuting the common suspicion of IFRS expanding the regulatory capital base of banks. This result is in line with the findings of CEBS (2007) investigating the impact of prudential filters on regulatory capital for later periods. However, it has to be kept in mind that all reported figures are on a pro-forma basis at this date. Therefore, they might be distorted by subjective influences and country specific arrangements in absence of binding rules throughout Europe to calculate regulatory capital based on IFRS figures at that time.

2.6 Conclusion

We find that there are profound effects on single balance sheet items of banks due to the transition from local GAAP to IFRS. The effects on items of financial assets and financial liabilities record the largest increases, documenting fundamental changes in assumptions underlying the new accounting regime. The in-depth analysis of changes in equity shows that most of the positive effects stem from the cancellation of the fund for general banking risk, the recognition of dividends in equity and valuation effects of financial instruments. Comparing the cross-sectional variance across single balance sheet items for both GAAP regimes shows that there is a significant increase for items strongly related to financial instruments. However, we do not find evidence of higher reactions for the transition of unlisted banks. In fact, the contrary reaction can be observed for some items. The division into countries with *common law* and *code law* orientation does not lead to clear results. For code law countries, we are able to find some balance sheet items to react more in the transition to IFRS, in support of our hypothesis. However, the mixed evidence suggests that banks from countries with an accounting regime 'closer' to IFRS do not experience significantly weaker adjustments of all balance sheet items due to application of the new rules. This fact questions allegations of a smoother transition by a superior anticipation of the new rules' impact. Turning to the regulatory impact, we find that there is a significant reduction of Tier I capital which is the central figure to determine total regulatory capital. Nevertheless, dividing the sample into subsamples does not yield unambiguous results. However, it has to be kept in mind that these figures were only voluntarily provided on a pro-forma basis by the reporting banks.

3 Information Value of Earnings Announcements and the Obligatory Transition to IFRS - The Case of European Banks

3.1 Introduction

The mandatory application of International Financial Reporting Standards (IFRS) in the European Union for consolidated financial statements in 2005 imposes many changes on basic assumptions towards financial reporting. (Continental) European countries already had more or less comparable accounting systems until 2005 since every member country of the European Union had to implement prior EC Directives.[42]

However, contrary to the gradual accounting harmonization in the EU, many of the accounting systems' basic assumptions have changed with the transition to IFRS. Firstly, starting with the objectives of accounting, local GAAP financial statements often served several purposes before, for example as information instruments for equity investors as well as creditors and banks (e.g., Daske 2006, p. 336). Secondly, the accounting rules often closely interacted with tax regulations or other regulatory duties. For example, elements of the financial statements were also partly used in the calculation of taxes.[43] IFRS accounting rules better serve the information needs of investors in that IFRS financial statements are supposed to provide information mainly for capital market participants in order to enable rational investment decisions, i.e., primarily equity investors but also debt investors.[44] Therefore, IFRS are often believed to be superior in meeting the information needs of capital markets.

Additionally, the banking business is often claimed to be particularly opaque in that banks are non-transparent concerning their asset and liability structure.[45] Furthermore, prior to IFRS adoption, the impact and consequences of the application of IAS 39 led to discussions in the European Union, since the standard's requirements led to grave changes in the valuation and presentation of financial instruments and hedge accounting which is highly relevant for bank-

[42] For an overview, see, e.g., Joos and Lang (1994, p. 145-147). For a short review of the EU harmonization efforts, see Soderstrom and Sun (2007), p. 677-678.

[43] One example for the close interaction between tax accounting and financial accounting is the tax-book-conformity in Germany. For the influence of taxation on accounting, see Joos and Lang (1994), p. 145. Concerning tax alignment in some European countries, see for example Burgstahler, Hail and Leuz (2006, p. 1008).

[44] See for example, Auer (1996, p. 593), Bonse (2004, p. 22) or Soderstrom and Sun (2007, p. 680).

[45] See Morgan (2002). In the following, for purpose of convenience, "banks" and "banking institutions" are referred to synonymously.

ing institutions.[46] Therefore, if IFRS reports are superior information instruments, the application should lead to a leap in a bank's transparency in comparison to local GAAP requirements prior to transition.

In this chapter, we investigate the information value for a sample of large European banks for both local GAAP and IFRS earnings announcements in a classic event study approach at first. Besides the question if stronger market reactions to earnings announcements for the different accounting regimes can be observed before and after mandatory transition to international standards, we try to give an answer to whether the reaction to the obligatory first-time application of IFRS is really dependent on the applied accounting system or whether other factors concurrently influence the effect as well. Therefore, the study attempts to identify other factors that influence the market reaction to the publication of the quarterly earnings announcements, e.g., information concerning specific balance sheet items such as financial instruments or differences in the institutional and informational environment. Besides the absolute abnormal return reaction to the earnings announcements, we use abnormal trading volumes in stock market reactions as an alternative measure.

The initial finding is that the total market reaction is higher for earnings announcements of the IFRS subsample. However, an analysis of the influence specific factors refutes the responsibility of IFRS accounting for this observation. Furthermore, the institutional environment seems to play a major role in the information value of earnings announcements, as well as the quality of the *ex ante* accounting rules in force. However, there is only weak evidence for accounting information concerning specific financial statement items being responsible for the reactions.

The chapter is organized as follows. Section 3.2 gives a review of related literature, and develops the hypotheses. Section 3.3 introduces the event study approach and the dataset used in this investigation. Section 3.4 presents the findings of the investigation, provides further analyses, robustness checks and a discussion. Section 3.5 summarizes the results and concludes the chapter.

[46] As a consequence, only a carve-out version of IAS 39 was introduced in the European Union. For a discussion, see Armstrong et al. (2010), p. 33-39, or Soderstrom and Sun (2007), p. 689.

3.2 Related Literature and Hypotheses

3.2.1 Literature

Basically, the investigations related to this study can be classified into two categories. The first strand of literature concentrates on the impact of earnings announcements on markets. The second stream investigates the information efficiency of accounting systems and their relation to the informational environment and institutional background. In the first strand, extensive literature has been testing market reactions to the publication of earnings announcements (e.g., Ball and Brown 1968; Beaver 1968; Auer 1996; Landsman and Maydew 2002; DeFond, Hung and Trezevant 2007; Landsman, Maydew and Thornock 2012). Some studies concentrate specifically on the market reaction to the announcement of the change of the accounting systems (Karamanou and Nishiotis 2005; Armstrong et al. 2010).[47] For example, Armstrong et al. (2010) analyze the capital market reaction to 16 events that increase or decrease the probability of an IFRS adoption in the European Union. They find a positive market reaction to events increasing the probability of an IFRS adoption. However, they investigate only the effects of a commitment to the application of international standards in general which itself does not convey any valuable information concerning company specific application effects. Christensen, Lee and Walker (2007) concentrate on the announcements of the mandatory application of IFRS in the UK. They find that the mandatory adoption has either a positive or negative effect on the cost of capital, depending on firm characteristics. With respect to the approach, Auer (1996) is closer to this investigation. He provides early evidence of the information effect, i.e., the market reactions to earnings announcements before and after the voluntary transition to IAS and EC Directives for a sample of Swiss firms. He shows that markets seem to appreciate the application of the new standards when measured by abnormal variances. However, he does not find evidence that market reactions differ significantly between both newly applied accounting regimes, indicating no fundamental difference in information content of their earnings announcements. Brixner (2011) investigates the market reactions to quarterly earnings announcements of European banks and detects no significantly higher information value of earnings announcements under the IAS accounting regime. In this closely related setup, he uses last quarters' earnings per share as a best estimate for next quarters' earnings per share neglecting the dissemination of new positive or negative information in the meantime which might weaken the results. Furthermore, he uses a sector-specific index to measure abnormal returns which might additionally reduce the effects, especially in the light of an ongoing capital market integration. Landsman, Maydew and

[47] For a general overview, see Soderstrom and Sun (2007).

Thornock (2012) investigate the mandatory adoption of IFRS and find that information content of earnings announcements increases. They find that the effect is greater for countries with strong enforcement.

It has to be kept in mind that many of the investigated transitions are voluntary adoptions of new accounting standards. Therefore, the results might be subject to a self-selection bias, i.e., only firms expecting to benefit from the application of new accounting standards voluntarily choose to implement these standards (e.g., Hung and Subramanyam 2007; Daske et al. 2008). Another argument is that the investigated firms are often larger in size which might have, in turn, implications for *ex ante* availability of information through alternative sources such as more intense analyst coverage leading to lower unexpected earnings.[48] This would, however, contradict the semi-strong form of the efficient market hypothesis (Fama 1970), except in the case when analysts are supplied with private, non-public information. Assuming a stable information policy of firms and using the same set of firms before and after the transition could be a mitigation in that the weakening effect on earnings could be comparable before and after transition.

In a second stream, several investigations try to measure the transition to non-domestic accounting standards by investigating effects on information asymmetry proxies, as cost of capital, bid-ask spreads, trading turnover, and forecast accuracy (e.g., Ashbaugh and Pincus 2001; Leuz 2003; Cuijpers and Buijink 2005; Daske 2006; Daske et al. 2008; Ernstberger and Vogler 2008). Many studies acknowledge that the information effect on markets cannot simply be reduced to accounting standards but there are other factors that play a role, e.g., the institutional background such as the influence of legal and political conditions. Therefore, a topic often referred to in extant literature is the influence of the institutional environment on accounting rules and vice versa (e.g., La Porta et al. 1998; Leuz, Nanda and Wysocki 2003; Ding et al., 2007). Leuz, Nanda and Wysocki (2003) use several measures to distinguish between differences in institutional environment, e.g., outside investor rights, legal enforcement, and disclosure quality, and measure their influence on earnings management. They find that the institutional background plays a key role in the quality of reported earnings. Ding et al. (2007) investigate a sample of 30 countries and find several institutional factors such as the development of equity markets that explain the differences between local GAAP and IFRS. Furthermore, the information content of annual earnings announcements seems to increase with the quality of reported earnings and the enforcement of insider trading laws (DeFond,

[48] See Soderstrom and Sun (2007, p. 679) and Ashbaugh and Pincus (2001).

Hung and Trezevant 2007). The baseline finding of these studies investigating accounting systems is that firms from countries with a stronger institutional background and a lower *ex ante* information asymmetry benefit more from adopting international accounting standards.

In order to exclude any influence of institutional differences on the results, two studies concentrate on German firms where they find a homogenous institutional setup (Leuz, 2003; Hung and Subramanyam, 2007) and positive effects from the application of international standards. For example, Leuz (2003) concentrates on the New Market. However, the universality of the results is questionable, since the firms in this market segment were foremost rather young and smaller start-up firms and often in the information technology industry. Furthermore, it has to be noted that a booming market was investigated in this case. One disadvantage is that many studies do not comprise the effects of increased disclosure of bank holding companies due to their special nature of business. Only some papers concentrate on the analysis of bank transparency (e.g., Morgan 2002; Flannery, Kwan and Nimalendran 2004; Chipalkatti 2005; Ianotta 2006). For example, Chipalkatti (2005) studies the effect of increased mandatory disclosure on Indian banks and finds that investors reward the improved information supply with lower asymmetric information cost and lower bid-ask spreads. Morgan (2002) finds that the opaqueness of specific bank assets such as loans or high shares of trading assets, are rewarded with higher disagreement among bond rating agencies. Ianotta (2006) draws comparable conclusions finding that specific financial assets increase uncertainty if measured by bond ratings.

Our study is different in several respects from previous investigations: Firstly, this dataset differs in that it is not restricted to voluntary adopters, but comprises obligatory adopters of international accounting rules for the most part.[49] Therefore, it does not suffer from this potential source of self-selection bias. Secondly, the sample comprises data from over a decade around the obligatory transition to IFRS and investigates specifically the reaction to earnings announcements of banks. Therefore, the main contribution of this study is that it is one of the few papers concentrating exclusively on European banks in a long term study and analyzing the determinants of information value of earnings announcements. Additionally, this investigation adds to the literature on information content of banks' earnings announcements by covering the period after the obligatory application of IFRS in Europe and banks that are still

[49] This is due to Regulation (EC) No 1606/2002 which rules that IFRS have to be adopted mandatorily for consolidated financial statements by listed European companies for fiscal years starting on or after the beginning of 2005.

in business after the banking crisis. Besides the information value of earnings announcements, the study is unique since it attempts to identify specific factors of the accounting system and institutional conditions that might influence the information content of earnings announcements in the course of the first-time adoption of IFRS. In other words, it tries to answer the question of how much of the market reaction is attributable to the changed accounting standards themselves and whether institutional conditions such as legal systems, legal enforcement, or rights of minority shareholders, might play a concurrent role in this relation. Therefore, this study fills the gap in literature between the voluntary and mandatory adoption of IFRS in European banks and its information impact on capital markets.

3.2.2 Hypotheses

3.2.2.1 Information Value of Earnings Announcements

From a theoretical perspective, the publication of firm-specific information decreases information asymmetry and can change market prices and trading volumes (Diamond and Verrecchia 1991; Kim and Verrecchia 2001). The methodology applied in this paper rests on the presumption that earnings announcements are an adequate measure to transmit firm-specific information to the markets. The main assumption in this kind of investigation is that a larger absolute abnormal return might be interpreted as more unexpected information that is conveyed to the market. Concretely, if the earnings announcements of one accounting system convey more (unexpected) information value, this is reflected in higher absolute abnormal returns (Auer 1996, p. 598). Generally, the semi-strong form of the Efficient Market Hypothesis (EMH) is assumed to hold, i.e., all publicly available information is reflected instantaneously in market prices and no investor is able to earn risk free profits using this information (Fama 1970).

Increased levels of disclosure using IFRS should result in measurable economic benefits (Leuz and Verrecchia 2000, p. 92). Therefore, better information in terms of quality and quantity of superior accounting standards should lead to greater market efficiency. The assumption is that financial statements prepared in accordance with IFRS provide the markets with quantitatively and qualitatively more valuable information in contrast to the prior financial statements following local GAAP requirements in Europe which is referred to as IFRS providing higher decision usefulness.[50] More valuable information available to investors increases information efficiency which rises in consequence to the IFRS transition improving the estima-

[50] E.g., IASB Framework as of 2001, paragraph 14. See for example, Barth, Landsman and Lang (2008), p. 471.

tion of firm values and leads to higher abnormal stock returns. Additionally, the effect is enforced by the reasons that more market participants are able to understand and process the IFRS information and are able to carry out comparisons across country borders.

H1: Earnings announcements under IFRS lead to stronger market reactions.

There should be a stronger market reaction observable due to the systematically higher information content for earnings announcements using IFRS data, resulting in higher absolute abnormal returns. In order to separate effects into positive and negative unexpected information, the sample is divided into positive and negative changes according to the market reaction on event day, as to be outlined in section 3.3. Alternatively to the comparison of abnormal returns, the variances of abnormal returns and abnormal volumes are analyzed as robustness checks with the expectation of higher values under IFRS.[51] Thus, the reactions become independent of the predicted direction by the return reactions on the event day.

3.2.2.2 IFRS and Institutional Environment

As outlined before, information efficiency in stock markets might be influenced by institutional factors such as market structure, legal and political systems. The baseline finding of several studies introduced above is that firms from countries with a strong informational and institutional background such as efficient capital markets and strong enforcement, benefit more from adopting international accounting standards. Obviously, there is evidence for a relationship between information efficiency and the institutional background which enhances the processing of the new accounting information. In the year 2005, IFRS became mandatory for listed firms in the European Union.[52] In this period, many banks in the sample adopted IFRS for the first time for their quarterly earnings announcements which might be an exemplary period with a relatively stable economic situation in Europe. One question that arises at this point is whether the accounting system used to provide information to the markets really contributes to information efficiency in a way that information content of earnings announcements is higher under IFRS and results in higher abnormal returns.

H2: A stronger market reaction to earnings announcements is attributable to the higher information value of IFRS earnings announcements in 2005.

[51] The basic assumptions concerning the investigation of abnormal return variances are outlined in Auer (1998), p. 144-145.
[52] Comparable requirements were introduced in Switzerland for large listed firms with an exception for banks (PriceWaterhouseCoopers, 2008, p. 118-120).

The direct influence of IFRS accounting on abnormal returns of earnings announcements is investigated using an OLS regression setup while controlling for market specific institutional characteristics which might play a concurrent role in the market reaction of the earnings announcement.

3.2.2.3 Accounting System Quality prior to Transition

The investigation of first full year earnings announcements according to IFRS is especially interesting since these are the first that allow a full annual comparison of the results and provide an insight into the economic situation of a bank in relation to prior years' situation presented under local GAAP. Furthermore, banks become comparable to competitors that already have been applying IFRS. If prior to transition accounting systems of "lower quality" in terms of information quality and quantity relevant to investors are applied by those banks, the first IFRS earnings announcements lead to a "level playing field" concerning both the type and quantity of information available to markets. Therefore, IFRS fill the "information gap" that increases with lower quality accounting systems prior to transition, i.e., accounting systems that used to provide less valuable information for investors. The larger the "information gap" that is filled, the higher the expected reactions should be.

> *H3: The market reactions to the first full year earnings announcements in accordance with IFRS are higher for banks with "lower accounting quality" prior to transition*

The *ex ante* accounting systems are measured using two measures representing differences of accounting systems in relation to IFRS, as outlined in Ding et al. (2007).

3.2.2.4 Opaqueness of Banking Specific Assets prior to Transition

As mentioned above, one argument often referred to is that banks are generally perceived as being non-transparent or opaque concerning specific assets and liabilities (e.g., Morgan 2002; Ianotta 2006). Furthermore, hidden reserves are a common measure to build capital buffers in banks that external investors can neither identify nor measure.[53] IFRS prohibit the use of such reserves since it prevents the bank from being transparent.[54] The application of fair value also leads to a disclosure of hidden reserves and a value increase in the affected assets. Hence, more valuable information about assets and liabilities through IFRS is supposed to reduce

[53] They are the result of the fact that the value of an asset can increase above the initially paid price and/ or the current book value. Therefore book values for some assets might be systematically "too low".
[54] See IASB Framework as of 2001, paragraph 37.

uncertainty among investors and to shed light on the valuation premises, making opaque assets and liabilities more transparent to investors.

> *H4: The information value of first full year earnings announcements after IFRS adoption increases with the higher ex ante share of opaque banking assets.*

The opaqueness of banking assets is measured using *ex ante* financial statement information about investments and loans, and is analyzed by the relation to the market reactions to the earnings announcements after the first-time adoption of international standards.

3.3 Dataset and Methodology

3.3.1 Dataset

For the empirical investigation, a time period of over a decade beginning 2000 and ending in 2011 is used.[55] As a starting point, we apply the *Dow Jones Stoxx 600 Banks* consisting of 51 European banks.[56] The websites of the respective banks are checked in order to identify the transition date and the exact publication date of the quarterly earnings announcements.

The raw sample consists of 46 banks.[57] For those 46 banks, we are able to gather 593 publication dates of quarterly results in local GAAP and 1061 publication dates after the transition to IFRS, *cf.* the dataset statistics in Table VIII.[58] In order to ensure a consistent dataset, we solely use data for which both price and volume data is sufficiently available. As can be seen in Table VIII, we have to deal with a break in the structure of earnings announcements, since most of the local GAAP earnings announcements take place in the period before the mandatory transition to IFRS in 2005.

In general, the availability of information about the dissemination of earnings announcements is lower in the early years of the observed period. After the mandatory transition, there is only one bank that still uses local GAAP for its semi-annual publication of earnings announcements. This might cause bias, since there might be overlapping influences of other time-dependent factors such as a growing capital market integration or economic cycles. In order to ensure a consistent investigation, we have to address this issue in our later analyses.

[55] In 2011, only the 2010 fourth quarter earnings announcements are considered.
[56] The constituents of the index as of March 2011 are used in order to ensure that sufficient data concerning earnings announcements after transition is available.
[57] Two banks are excluded because they use U.S. GAAP. For one bank sufficient earnings announcement information is not available and for one bank information is only available for the year 2010 after a spin-off. Those were excluded from the dataset in order to prevent distortions. One bank was excluded because IAS and local GAAP were used simultaneously and there was inconsistent information concerning the transition date. Four banks in the dataset are the product of previous mergers or acquisitions. Therefore, we follow the rule that if the ISIN is available for one bank before the merger or acquisition this bank is included in the dataset.
[58] The publication policies of banks strongly vary across the sample. Therefore, in some cases, the dataset contains incomplete data concerning publication dates.

Table VIII: Descriptive Statistics on Earnings Announcements used in the Event Study

This table provides descriptive statistics for the entire sample from 2000 to 2010. It consists of 593 (1061) earnings announcements pre (post) IFRS adoption. The table presents a breakdown of the information into the year of the publication for the earnings announcement. Data for the year 2011 corresponds to the earnings annoucements of the fourth quarter of 2010.

Year	Announcements under Local GAAP		Announcements under IFRS		Total per Year
	Total	in %	Total	in %	Total
2000	63	11%	9	0.85%	72
2001	91	15%	12	1.13%	103
2002	107	18%	12	1.13%	119
2003	134	23%	12	1.13%	146
2004	136	23%	12	1.13%	148
2005	51	9%	108	10.18%	159
2006	2	0%	162	15.27%	164
2007	2	0%	166	15.65%	168
2008	2	0%	170	16.02%	172
2009	2	0%	177	16.68%	179
2010	2	0%	176	16.59%	178
2011	1	0%	45	4.24%	46
Total	593	100.00%	1061	100.00%	1654

In Table IX, descriptive statistics on earnings announcements per country are depicted. Using a dataset of 46 banks should yield about 184 earnings announcements per year which should consequently lead to 1886 earnings announcements over 10.25 years. However, due to the data availability limitations nearly 88% of all theoretically available earnings announcements are used in the final dataset of the event study.[59] All necessary market price and volume data to carry out this study is obtained via *Datastream*.

[59] For example, one reason is that some banks only reported their results semi-annually leading to a decrease in available data.

Table IX: Descriptive Statistics on Earnings Announcements per Country

This table displays descriptive statistics for the final sample according to their geographic origin from 2000 to 2011 for the quarterly announcements of the respective year. It consists of 593 (1061) earnings announcements pre (post) IFRS adoption. 'Banks' denotes the number of banks located in a country.

Country	Local GAAP	IFRS	Total	Banks
Austria	0	66	66	2
Belgium	22	48	70	2
Denmark	59	72	131	3
Finland	6	23	29	1
France	60	92	152	4
Germany	0	43	43	1
Greece	47	71	118	3
Ireland	6	11	17	1
Italy	124	204	328	9
Norway	5	24	29	1
Portugal	34	48	82	2
Spain	97	132	229	6
Sweden	67	96	163	4
Switzerland	17	44	61	2
United Kingdom	49	87	136	5
Total	593	1061	1654	46

3.3.2 Methodology

3.3.2.1 Information Value of Earnings Announcements

As already outlined above, the main assumption in this study is that a higher information value of earnings announcements results in a larger abnormal return. Therefore, if there is a higher absolute abnormal reaction due to earnings announcements based on one accounting regime, it follows that one accounting regime might convey more unexpected information content compared to another.[60] Thus, unexpected information can be defined as information that just became available to the market and was not anticipated. The same statement is valid for variances of abnormal returns. A higher variance during an event window can be best interpreted as more unexpected information involved in the process of pricing a stock.

[60] See Auer (1996) for an extensive discussion of that approach.

Testing hypothesis H1, we use a standard event study approach with abnormal returns (AR).[61] In order to apply the market model, the total return index *Standard and Poors Europe 350* is used as a market index.[62] This index takes into account the geographical component and is therefore the best estimate for the performance of the overall market in order to use the market model. As an estimation period, a time of -171 to -11 trading days before the publication of the earnings announcements is used, i.e., a total of 160 trading days. In order to test for significance, the *t*-test proposed by Brown and Warner (1985) is applied. As a robustness check, the non-parametric rank test introduced by Corrado (1989) is used as a control for strongly biased distributions. This test is less sensitive to non-normality of distributions (Corrado 1989; Corrado and Zivney 1992).

Alternatively, trading volumes are investigated as robustness checks. The abnormal volumes (AV) during the event window are calculated by putting them in relation to the average volume of the estimation period. In order to test for significance, the non-parametric rank test of Corrado (1989) is applied.

Auer (1996, p. 606) outlines a straightforward approach in order to distinguish between positive and negative abnormal returns. He uses yearly earnings of the preceding financial year as best proxy for earnings of the current financial year ending. If current year earnings are above previous year earnings, he expects that positive unexpected earnings lead to positive abnormal returns and vice versa. In order to prevent the sample from being biased, he works with absolute values. A modified approach is used by Brixner (2011), applying earnings per share (EPS) values before and after the event. The assumption in this procedure is that last quarters' EPS are the best estimate for the (expected) EPS. If there is a positive change in the values for EPS in a specific time period after the event, he infers that positive information was disseminated to the market by the earnings announcement. However this approach implicitly assumes that no new information is disseminated to the market between the publications of earnings announcements and neglects the informational effect of analysts' coverage or other ad hoc announcements such as earnings warnings.

[61] For an overview on the event study methodology, see for example MacKinlay (1997).
[62] *Standard and Poors Europe 350* covers about 70% of the European market capitalization. This total return index accounts for both changes in market value and for dividends paid. Furthermore, a general market index reduces the influence of banks being considered similar as in a bank specific index.

To prevent problems of potential contradictory or conflicting information, we differentiate between positive and negative earnings through the informational effect on the event day itself. The implicit assumption is that the market price includes all available information and new information necessarily leads to market price adjustments. If there is a positive (negative) market reaction on the event day, reflected in positive (negative) abnormal returns, we assume that there is positive (unexpected) information disseminated to the market. This procedure is not dependent on any additional information and simply assumes a positive market reaction if there is positive unexpected information reaching the market. We are aware that this might lead to a potential overstatement of positive and negative return effects since we do not account for potential misconceptions in terms of overreactions of the market on the event day. Therefore, the absolute magnitudes may not be comparable to the market reactions of other studies. This holds especially true in cases for which there are market corrections in the days following the event day. However, an overreaction of the market on the event day which is corrected by the market in the subsequent trading days also provides some information about potential exaggerations and information efficiency in general. In order to exclude potential adverse effects resulting from this division into positive and negative market reactions, we also investigate variances of abnormal returns and abnormal volumes for each subsample.

Additionally, we apply the following procedure as a robustness check and work only with absolute values. In order to measure the definitive influence of IFRS accounting on the information value of the earnings announcements under investigation, we run a fixed effects regression considering banks specific time-independent qualities and control for time-dependent effects by introducing year dummies. Concretely, we test the following simple model (Model I):

$$\left|AR_{it}[0]\right| = \beta_0 + \beta_1 IFRS_{it} + \sum \beta_j Controls_j + \varepsilon \qquad (1)$$

$IFRS_{it}$ is a dummy variable equal to one, if the earnings announcement takes place under the IFRS accounting regime. $Controls_j$ denote the control variables using year dummies for time-dependent and fixed effects for firm-specific and time-independent factors. In addition to the absolute value of abnormal return on event day ($|AR_{it}[0]|$), we also investigate the absolute values of cumulative abnormal returns (CAR) for periods over the next one to five trading days ($|CAR_{it}[0;1]|$, $|CAR_{it}[0;2]|$ and $|CAR_{it}[0;5]|$) as alternative proxies and robustness checks to measure the information value of earnings announcements.

3.3.2.2 IFRS and Institutional Determinants

In order to shed light on hypothesis H2, the relation between market reactions to earnings announcements in 2005 and the influence of the institutional environment, a multivariate regression analysis is applied. The goal of this section is to clarify whether IFRS has an additional impact on the information content of earnings announcements if measured by abnormal returns or whether the stock price reactions are instead determined by possibly concurrent effects of the institutional background or general market conditions. In order to exclude possible influences of time-dependent factors and exclude possibly time-variant influences on tested variables, we use the earnings announcements of 2005. During this period many of the banks apply IFRS for the first time which should result in especially strong "first-time adoption" effects reflecting the strongly increased information value of earnings announcements. Furthermore, the risk of possible distortions in this year from a very low or very high number of observations according to one accounting system is lower. However, since sample sizes become very small, dividing the sample into negative and positive market reactions is not practicable. Therefore, absolute values of market reactions as in the previous section are investigated. Additionally, abnormal volumes on event day (AV_{it} [0]) and the subsequent day (AV_{it} [0;1]) are also used.

The information value of earnings announcements is supposed to increase through IFRS. Therefore, we expect a measurable effect even in the presence of a strong institutional environment that favors the quality of an accounting system. In order to capture the influence of the institutional environment on earnings announcements, we apply a proxy (*LegalSystem*) to control for the general background, dividing the sample in common law and code law countries. Furthermore, empirical findings suggest that institutional prerequisites such as a strong investor protection and stricter insider trading laws, are associated rather with common law countries than code law countries (e.g., La Porta et al. 1998, p. 1129; Beny 2005, p. 159). Therefore, we also use two proxies to explicitly control for the strength of legal enforcement (*LegalEnforcement*) and the level of protection of investor rights (*InvRights*) on a country-level basis.[63] We also control for the general stock specific return behavior by using the stock specific daily return variance prior to the earnings announcement. Concretely, we test the following model:

[63] Leuz, Nanda and Wysocki (2003) use a similar approach to measure the impact of those proxies on earnings management measures.

$$|AR_{it}[0]| = \beta_0 + \beta_1 IFRS_{it} + \beta_2 LegalSystem_{it} + \beta_3 InvRights_{it} + \beta_4 LegalEnforcement_{it} + \beta_5 StockVar_{it} + \varepsilon \quad (2)$$

$IFRS_{it}$ is a dummy variable equal to one, if the earnings announcement takes place under the IFRS accounting regime. $LegalSystem_{it}$ is a dummy variable equal to one, if the bank is domiciled in a country with a common law origin, and zero otherwise. Concretely, as outlined by Leuz, Nanda and Wysocki (2003, p. 516), banks from United Kingdom and Ireland are categorized as common law-based whereas the remaining banks are classified as code law-based. $LegalEnforcement_{it}$ represents the mean score of three values summarized by Leuz, Nanda and Wysocki (2003) and is standardized to 10 points.[64] It consists of three measures that control for the judical system, the rule of law assessment, and the corruption index introduced by La Porta et al. (1998). $InvRights_{it}$ is the country score for the anti-director rights established by La Porta et al. (1998), and is standardized to values between zero and five. [65] In combination, both variables control for the general institutional background and the specific market background. $StockVar_{it}$ is the stock's daily total return variance measured over the estimation period, i.e., from -171 to -11 trading days before the earnings announcement. Alternatively, $|AR_{it}[0]|$ is replaced by $|CAR_{it}[0;+1]|$, $|CAR_{it}[0;2]|$ and $|CAR_{it}[0;5]|$ as well as $AV_{it}[0]$ and $AV_{it}[0;1]$.

$IFRS_{it}$ is supposed to be positively related to absolute abnormal returns since the IFRS earnings announcements lead to higher abnormal return reactions due to superior accounting information. $LegalSystem_{it}$ is expected to be positively related to absolute abnormal returns since companies from common law countries are traditionally more dependent on equity markets. $InvRights_{it}$ is expected to exhibit a positive sign because strong investor rights make it interesting for many small investors to participate and lead to a potentially higher investor interest which results in higher abnormal returns. $LegalEnforcement_{it}$ is also positively related to the market reaction since a strong and reliable enforcement favors and promotes well-functioning capital markets. The inclusion of $StockVar_{it}$ captures the effect of bank specific stock price sensitivity. This variable controls for the stock specific variability before the earnings announcement.

[64] For purpose of convenience, the classification of *Legalsystem* and *LegalEnforcement* according to Leuz, Nanda and Wysocki (2003, p. 516) is applied.
[65] The standardized values are scaled by the maximum value that an item can assume.

3.3.2.3 Accounting System Quality prior to Transition

In this section, in order to investigate H3, we use two different measures to clarify the relation between pre-adoption accounting system quality and the impact on first full year earnings announcements. Furthermore, we try to give an answer to the question whether the observable reaction is influenced by the differences in accounting systems which are caused by financial statement information that was *not available* to investors prior to transition, or by reported information that was *different* from IFRS. In order to clarify this relation, two indexes *Absence* and *Divergence* are applied (Ding et al., 2007). Both indexes put accounting systems in relation to IFRS on a country basis. The first ($Absence_{it}$) denotes the number of international accounting standards that are not reflected by an equivalent standard in local GAAP rules while the second ($Divergence_{it}$) represents the accounting rules that require a different approach in local GAAP standards.[66] $StockVar_{it}$ controls for stock specific price variability as outlined above. The following on the properties of the accounting system quality is estimated:

$$\left|AR_{it}[0]\right| = \beta_0 + \beta_1 Absence_{it} + \beta_2 Divergence_{it} + \beta_4 StockVar_{it} + \varepsilon \qquad (3)$$

The expectation is that coefficients on both indexes $Absence_{it}$ and $Divergence_{it}$ are expected to be positive, since a higher *ex ante* score denotes "lower accounting quality" in relation to IFRS and increases the benefits of a first-time adoption of IFRS caused by an alignment of accounting requirements and transparency gains due to the adoption of internationally acknowledged accounting standards. Alternatively, $|AR_{it}\ [0]|$ is replaced by $|CAR_{it}\ [0;1]|$ and $AV_{it}\ [0]$ and $AV_{it}\ [0;1]$.

3.3.2.4 Banking Specific Asset Structure prior to Transition

As proposed by H3, the information value of the first IFRS full year earnings announcement increases with an *ex ante* higher share of opaque assets in a bank's balance sheet. The reason is that the application of IFRS is supposed to convey more valuable information about a greater share of the previously opaque assets to the market. Morgan (2002) identifies loans as the most opaque assets in banks' balance sheets and finds that raters' uncertainty increases in a growing share of loans and trading assets. In the case of the specific banking asset structure, the *ex ante* opaqueness is measured using the following variables, and applying the following regression model:

[66] Both, *Absence* and *Divergence*, are given in absolute numbers. They are the result of the comparison to the treatment of 111 items under IFRS (Ding et al., 2007, p. 8). Both scores are scaled to the maximum value of 111, so that higher values indicate absence and divergence of accounting items in percent.

$$\left|AR_{it}[0]\right| = \beta_0 + \beta_1 Investments_{it} + \beta_2 NetDebt_{it} + \beta_3 MV_{it} + \varepsilon \quad (4)$$

$Investments_{it}$ denotes the bank's investments, as a share of total assets available in *Datastream* four quarters before the publication of first full year earnings announcements in accordance with IFRS.[67] Alternatively, we replace $Investments_{it}$ by $NetLoans_{it}$ representing the loans granted by a bank, excluding loan loss provisions, and is measured as a share of total assets for the same time period outlined above. Both measures are highly correlated due to the structure of the assets in banks which might lead to collinearity issues. $NetDebt_{it}$ is the share of debt to total assets of the bank four quarters prior to the end of the period. We also control for investor attention and other size effects using MV_{it} as the natural log of the monthly average market value over the last year. Alternatively, we regress the specification for alternative dependent variables. Therefore, we substitute $|AR_{it}[0]|$ by $|CAR_{it}[0;1]|$ and $AV_{it}[0]$ and $AV_{it}[0;1]$.

$Investments_{it}$ and $NetLoans_{it}$ are expected to exhibit a positive sign. Both variables measure the *ex ante* share of opaque assets for which the new accounting system conveys more valuable information to the markets which is supposed to increase the information value after transition. $NetDebt_{it}$ is also expected to exhibit a positive sign, since, *ceteris paribus*, a more highly leveraged bank should be able to profit by more detailed and accurate accounting information in that it reduces the uncertainty for investors to evaluate the bank's debt situation. Specifically, IFRS is supposed to provide more detailed and relevant information for larger shares of financial liabilities for investors carrying out such debt analyses.

[67] For a further list of constituents of the respective measures, see *Datastream*. According to *Datastream* definition, *Investments* (WC02255A) includes but is not restricted to U.S. treasury securities, federal agency securities, state and municipal securities, federal funds sold, trading account securities, securities purchased under resale agreements, mortgage backed securities, federal funds, other securities, total securities available for sale, and other investments. Therefore, for purpose of this study, *Investments* is deducted by *Other Investments* (WC02250A).

3.4 Empirical Results and Discussion

3.4.1 Market Reaction to Earnings Announcements

3.4.1.1 Positive Market Reactions

In order to test the first hypothesis H1, we divide the sample into earnings announcements that are accompanied by positive and negative abnormal returns on event day reactions, respectively, in order to distinguish between the directions of effects. As already outlined above, according to this differentiation, we use two subsamples which are initially investigated separately in the following.

The main finding is that the total market reaction to positive earnings announcements under local GAAP leads to an abnormal return of 1.93% on event day, i.e., the initial day of the announcement, see Table X. Highly increased trading volumes corroborate the perception of an impact of new information on the markets. The trading volumes for both reporting regimes are highly significant and in both cases about 180% of the usual trading volume. Highly increased trading volumes for both subsamples depict new information reaching the market through the earnings announcements. For IFRS earnings announcements, there is a significant price reaction observable for the event with an abnormal return of 2.77% (1%-level) on event day. Thus, there is evidence that the publication of IFRS earnings announcements also leads to a sustained price reaction of the stock markets for positive market reactions.

Independent of the explanation, there is a significant reaction for both reporting regimes. For both groups, trading volumes are at comparable levels. However, there is a higher reaction for positive IFRS earnings announcements which might be an indication of earnings announcements conveying more unexpected information content to the markets and causing stronger abnormal returns. This finding seems to corroborate H1 for market reactions associated with positive market reactions on event day.

Table X: Abnormal Returns, Cumulative Abnormal Returns, and Abnormal Volumes for Positive Reactions on Event Day

This table displays abnormal returns (ARs) based on the market model returns for the entire event period calculated by using 308 (508) positive quarterly announcements. It also displays cumulative abnormal returns (CARs) starting on day [-10] and abnormal volumes (AVs). Abnormal returns and cumulative abnormal returns are tested for statistical significance using the parametric *t*-test of Brown and Warner (1985) and the non-parametric rank test of Corrado (1989). ***,**,* represents the significance level at the 1%-,5%-,10%-level for a two-tailed *t*-test . +++,++,+ indicates significance at the 1%-,5%-,10%-level of a two-tailed non-parametric rank test statistic of Corrado (1989). To test for significance of abnormal volumes (AVs), also the non-parametric rank test of Corrado (1989) is used. N denotes the total number of observations.

	Local GAAP										**IFRS**									
Day_t	AR_t	*t*-value			CAR_t	*t*-value			AV_t		Day_t	AR_t	*t*-value			CAR_t	*t*-value			AV_t	
-10	-0.03%	-0.19			-0.03%	-0.19			98%		-10	0.06%	0.24			0.06%	0.24			100%	
-9	0.08%	0.48			0.05%	0.20			103%		-9	0.01%	0.03			0.06%	0.19			101%	
-8	-0.08%	-0.46			-0.03%	-0.10			106%		-8	0.14%	0.61			0.21%	0.50			99%	
-7	0.09%	0.53			0.06%	0.18			107%		-7	-0.10%	-0.42			0.11%	0.23			97%	
-6	0.10%	0.56			0.16%	0.41			98%		-6	0.06%	0.26			0.17%	0.32			97%	
-5	0.12%	0.72			0.28%	0.67			107%		-5	0.05%	0.23			0.22%	0.39			103%	
-4	0.07%	0.42			0.35%	0.78			109%		-4	-0.12%	-0.51			0.10%	0.16			104%	
-3	-0.21%	-1.22			0.14%	0.30			109%		-3	0.04%	0.18			0.14%	0.22			104%	
-2	-0.01%	-0.03			0.14%	0.27			106%		-2	-0.02%	-0.08			0.13%	0.18			107%	
-1	-0.14%	-0.79			0.00%	0.01			107%		-1	-0.03%	-0.12			0.10%	0.13			118%	++
0	1.93%	11.28	***	+++	1.93%	3.41	***	+++	179%	+++	0	2.77%	11.76	***	+++	2.87%	3.67	***	+++	181%	+++
1	0.15%	0.86			2.08%	3.51	***	+++	157%	+++	1	0.33%	1.38			3.19%	3.91	***	+++	159%	+++
2	-0.08%	-0.46			2.00%	3.25	***	+++	125%	+++	2	0.03%	0.11			3.22%	3.79	***	+++	126%	+++
3	0.02%	0.14			2.02%	3.16	***	+++	120%	++	3	-0.11%	-0.48			3.10%	3.52	***	+++	121%	+
4	0.05%	0.32			2.08%	3.14	***	+++	121%	+	4	-0.08%	-0.35			3.02%	3.31	***	+++	115%	
5	0.03%	0.20			2.11%	3.09	***	+++	127%	+	5	-0.16%	-0.68			2.86%	3.04	***	++	113%	+
6	-0.06%	-0.34			2.05%	2.91	***	++	117%		6	-0.03%	-0.11			2.83%	2.92	***	++	114%	
7	0.21%	1.23			2.27%	3.12	***	+++	106%		7	-0.02%	-0.11			2.81%	2.81	***	++	111%	
8	-0.15%	-0.89			2.11%	2.84	***	++	116%		8	-0.21%	-0.87			2.60%	2.54	**	++	108%	
9	-0.01%	-0.07			2.10%	2.75	***	++	118%		9	-0.24%	-1.01			2.37%	2.25	**	+	106%	
10	-0.01%	-0.07			2.09%	2.66	***	++	105%		10	0.19%	0.80			2.56%	2.37	**	+	105%	
N	308				308				308			508				508				508	

3.4.1.2 Negative Market Reactions

For local GAAP announcements, the significant market reaction on the event day is -1.82% (1%-level), followed by an insignificant negative reaction the day after the announcement, see Table XI. The market reaction on the event day is highly significant according to the *t*-test as well as the non-parametric rank test. For negative IFRS earnings announcements, there is a stronger significant reaction on the event day with -2.58% (1%-level) which is followed by a further significant decrease of -0.46% (5%-level).

The results indicate that there is a significant reaction to earnings announcements for both reporting regimes. Concerning abnormal volumes, there are greatly increased trading and significant volumes during event windows for both subsamples, peaking on the event day with highly significant 180% (182%) for local GAAP (IFRS) announcements. This confirms the perception that markets process information in reaction to the earnings announcements. This corresponds basically to the observation of positive market reactions from above. For negative market reactions, we also find a higher market reaction with respect to IFRS earnings announcements which might indicate a higher information value in line with hypothesis H1.

Table XI: Abnormal Returns, Cumulative Abnormal Returns, and Abnormal Volumes for Negative Market Reactions on Event Day

This table displays abnormal returns (ARs) based on the market model returns for the entire event period calculated by using 285 (553) negative quarterly announcements. It also displays cumulative abnormal returns (CARs) starting on day [-10] and abnormal volumes (AVs). Abnormal returns and cumulative abnormal returns are tested for statistical significance using the parametric *t*-test of Brown and Warner (1985) and the non-parametric rank test of Corrado (1989). ***,**,* represents the significance level at the 1%-,5%-,10%-level for a two-tailed *t*-test . +++,++,+ indicates significance at the 1%-,5%-,10%-level of a two-tailed non-parametric rank test statistic of Corrado (1989). To test for significance of abnormal volumes (AVs), we use also the non-parametric rank test of Corrado (1989). N denotes the total number of observations. Due to limited data availability, the number of observations in AVs may deviate.

	Local GAAP										**IFRS**									
Day_t	AR_t	*t*-value			CAR_t	*t*-value			AV_t		Day_t	AR_t	*t*-value			CAR_t	*t*-value			AV_t	
-10	0.04%	0.23			0.04%	0.23			120%		-10	-0.04%	-0.16			-0.04%	-0.16			99%	
-9	-0.02%	-0.11			0.02%	0.08			102%		-9	0.19%	0.87			0.16%	0.50			98%	
-8	0.02%	0.15			0.04%	0.15			97%		-8	-0.09%	-0.42			0.06%	0.17			100%	
-7	0.07%	0.45			0.12%	0.35			104%		-7	0.02%	0.09			0.08%	0.19			99%	
-6	-0.05%	-0.29			0.07%	0.19			106%		-6	-0.01%	-0.06			0.07%	0.14			98%	
-5	-0.02%	-0.13			0.05%	0.12			101%		-5	-0.12%	-0.53			-0.05%	-0.09			105%	
-4	0.06%	0.34			0.10%	0.24			103%		-4	0.04%	0.19			0.00%	-0.01			108%	
-3	0.05%	0.31			0.15%	0.33			103%		-3	-0.08%	-0.37			-0.09%	-0.14			105%	
-2	0.18%	1.07			0.33%	0.67			104%		-2	0.27%	1.22			0.18%	0.28			107%	
-1	0.15%	0.92			0.48%	0.93			108%		-1	0.24%	1.06		++	0.42%	0.60			111%	
0	-1.82%	-11.14	***	+++	-1.34%	-2.48	**	+++	180%	+++	0	-2.58%	-11.57	***	+++	-2.16%	-2.92	***	++	182%	+++
1	-0.11%	-0.68			-1.45%	-2.57	**	+++	165%	+++	1	-0.46%	-2.05	**	+	-2.61%	-3.39	***	+++	147%	+++
2	-0.01%	-0.08			-1.47%	-2.49	**	+++	126%	+++	2	-0.18%	-0.82			-2.80%	-3.48	***	+++	123%	+++
3	0.07%	0.45			-1.39%	-2.28	**	++	146%	++	3	-0.22%	-0.97			-3.01%	-3.62	***	+++	118%	++
4	0.01%	0.09			-1.38%	-2.18	**	++	127%	+++	4	-0.20%	-0.89			-3.21%	-3.72	***	+++	115%	
5	-0.16%	-0.97			-1.54%	-2.35	**	++	120%	++	5	-0.10%	-0.46			-3.31%	-3.72	***	+++	117%	+
6	0.01%	0.04			-1.53%	-2.27	**	++	118%	++	6	0.01%	0.02			-3.31%	-3.60	***	+++	110%	
7	-0.05%	-0.31			-1.58%	-2.28	**	++	107%		7	0.11%	0.48			-3.20%	-3.39	***	+++	106%	
8	-0.04%	-0.25			-1.62%	-2.27	**	++	112%		8	-0.09%	-0.42			-3.29%	-3.40	***	+++	103%	
9	0.10%	0.63			-1.52%	-2.08	**	++	112%		9	0.01%	0.05			-3.28%	-3.30	***	+++	107%	
10	0.12%	0.71			-1.40%	-1.87	*	++	113%		10	0.03%	0.14			-3.25%	-3.19	***	+++	104%	
N	285				285				285			553				553				553	

Mean, Medians and Variances

We use a t-test and a Wilcoxon ranksum test in order to compare the means and medians for positive and negative market reactions. Testing for equality of means and medians for AR[0] refutes the alternative hypothesis to H1 of equal reactions at conventional levels, and testing for differences for CAR[0;1], CAR[0;2] and CAR[0;5] confirms the perception of two separate subsamples for most means and most medians for positive and negative market reactions, see Panel A of Table XII. This cannot be reported testing abnormal volumes since both tests for means and medians cannot refute the perception of a common distribution at conventional levels for most comparisons which was already the impression from above.

Turning to variances, we test for differences in variances using a variance ratio test (*F*-test) and a Levene test for homogeneity of variances, which makes fewer assumptions concerning the underlying distributions, see Panel B of Table XII. Both comparisons indicate that variances are highly increased for most abnormal returns and abnormal volumes in the subsample of IFRS earnings announcements which suggests a higher information value of IFRS earnings announcements concerning abnormal variances. However, with respect to variances of abnormal volumes there seems to be a higher variability in trading volumes for the local GAAP group which might be interpreted as a higher information value of local GAAP earnings announcements.

Table XII: Test of Equality of Means, Medians, and Homogeneity in CARs

Panel A displays the test for equality of means and medians of IFRS vs LGAAP earnings announcements, divided into positive and negative market reactions. It comprises 508 (553) positive (negative) IFRS earnings announcements, and 308 (285) positive (negative) earnings announcements in accordance to local GAAP. The absolute values depict the test statistics in accordance to an ordinary *t*-test (means) and a Wilcoxon ranksum test (medians). The values in parentheses present the respective probabilities for the test statistics.

Panel B displays the test for equality of variances between samples of IFRS vs LGAAP earnings announcements, divided into positive and negative market reactions. It comprises 508 (553) positive (negative) IFRS earnings announcements, and 308 (285) positive (negative) earnings announcements in accordance to local GAAP. The first column shows the respective quota of standard deviations. The absolute values depict the test statistics in accordance to an F-Test and a Levene Test. The values in parentheses present the respective probabilities for the test statistics.

Panel A: Test for Equality of Means and Medians

Equality of Postive market reactions		**Means** *t*-value *(prob)*	**Medians** Wilcoxon ranksum *(prob)*	**Equality of** Negative market reactions		**Means** *t*-value *(prob)*	**Medians** Wilcoxon ranksum *(prob)*
LGAAP (308) - IFRS (508)	AR[0]	- 3.812 *(0.000)*	- 4.096 *(0.000)*	LGAAP (285) - IFRS (553)	AR[0]	3.155 *(0.002)*	3.186 *(0.002)*
	CAR[0;1]	- 3.159 *(0.002)*	- 2.227 *(0.026)*		CAR[0;1]	3.398 *(0.001)*	3.734 *(0.000)*
	CAR[0;2]	- 3.061 *(0.002)*	- 2.455 *(0.014)*		CAR[0;2]	3.785 *(0.000)*	3.511 *(0.000)*
	CAR[0;5]	- 1.531 *(0.126)*	- 1.287 *(0.198)*		CAR[0;5]	4.337 *(0.000)*	4.501 *(0.000)*
	AV[0]	- 0.237 *(0.812)*	- 2.352 *(0.019)*		AV[0]	- 0.182 *(0.856)*	- 1.753 *(0.080)*
	AV[0;1]	- 0.276 *(0.782)*	- 1.601 *(0.110)*		AV[0;1]	0.747 *(0.456)*	- 0.737 *(0.461)*

Panel B: Test for Equality of Variances

Postive market reactions	sd (LGAAP)/ sd (IFRS)	Variance Ratio Test *(prob)*	Levene Test *(prob)*	Negative market reactions	sd (LGAAP)/ sd (IFRS)	Variance Ratio Test *(prob)*	Levene Test *(prob)*
AR[0]	0.58	0.336 *(0.000)*	11.678 *(0.001)*	AR[0]	0.49	0.241 *(0.000)*	11.901 *(0.001)*
CAR[0;1]	0.56	0.314 *(0.000)*	23.130 *(0.000)*	CAR[0;1]	0.55	0.297 *(0.000)*	8.178 *(0.004)*
CAR[0;2]	0.60	0.361 *(0.000)*	17.781 *(0.000)*	CAR[0;2]	0.55	0.306 *(0.000)*	16.113 *(0.000)*
CAR[0;5]	0.68	0.467 *(0.000)*	10.038 *(0.002)*	CAR[0;5]	0.65	0.420 *(0.000)*	13.588 *(0.000)*
AV[0]	1.54	2.366 *(0.000)*	5.675 *(0.017)*	AV[0]	1.55	2.399 *(0.000)*	0.943 *(0.332)*
AV[0;1]	1.20	1.436 *(0.000)*	3.635 *(0.057)*	AV[0;1]	1.79	3.191 *(0.000)*	4.111 *(0.043)*

The comparison of positive and negative abnormal returns yields a significant reaction for both reporting regimes, indicating that information value is conveyed to the market. Hypothesis H1 has to be refuted for trading volumes indicating comparable market reactions to the earnings announcement. However, there is an indication and necessary condition that IFRS earnings announcements might provide more information content in terms of higher abnormal returns, supporting the hypothesis H1 initially made. This would be in line with the basic results of Auer (1996) concerning abnormal return variances and contrary to the results of Brixner (2011). As already discussed, the absolute magnitudes may not be comparable to prior studies. However, we have to clarify if IFRS are responsible for this finding and to exclude any negative or concurrent effect, e.g., time-dependent effect. In order to analyze the relation

between the return reaction to earnings announcements and the contribution of IFRS, we carry out the regression analysis as in equation (1) outlined above.

Since we work with a dataset of 46 banks over a time period from 2000 to 2011, we have to make sure that our observations are not influenced by time-dependent effects such as the on-going capital market integration. This concurrent capital market integration effect could be caused, for example, by the transition to a common currency in the European Union in 2002 or the general activities to create a common capital market in Europe. Thus, we also control for time-varying effects such as general economic conditions in the European area in the different years, by including dummy variables for the single years in the regression analysis.

The effect of IFRS on abnormal returns could also be influenced by bank-dependent qualities that do not vary over time since there are several observations for each bank in the dataset every year. We apply a fixed effects regression, since this kind of regression controls for any time independent causes between the individual banks and any estimators cannot be distorted by missing time-invariant qualities of the individual banks (Kohler and Kreuter 2006, p. 259). We exclude any effect of separating the sample into positive and negative market reactions by using absolute values of abnormal returns for the total sample of 1654 observations.

Table XIII: Fixed Effects Regression Analysis on Abnormal Returns (Model (1))

This table displays a fixed effects regression analysis on the absolute of the abnormal return (AR) at event day and the cumulative abnormal returns (CARs) using the total sample of 1654 earnings announcements. IFRS denotes a dummy variable equal to one if the earnings announcement takes place under the IFRS accounting regime. Also included are dummy variables for each year of the earnings announcement (not reported). The fixed effects regression covers any time independent qualities specific to each of the 46 banks in the dataset. The values in parantheses denote the t-values to robust standard errors. ***,**,* indicate significance to a (two-sided) t-test on the 1%, 5% or 10%-level. The values of the F-test are presented in the line F-Stat. The corresponding ***,**,* indicate significance to an F-test on the 1%, 5% or 10%-level.

	|AR[0]|	|CAR[0;1]|	|CAR[0;2]|	|CAR[0;5]|
Constant	0.030 ***	0.038 ***	0.039 ***	0.055 ***
	(7.03)	*(7.57)*	*(7.10)*	*(9.25)*
IFRS	- 0.001	0.001	0.002	- 0.001
	(-0.39)	*(0.50)*	*(0.75)*	*(-0.23)*
Year Dummies, Firm-Fixed Effects	*Included*	*Included*	*Included*	*Included*
R^2	0.09	0.12	0.12	0.14
F-Statistic	(11.65) ***	(9.60) ***	(9.23) ***	(15.58) ***
N	1654	1654	1654	1654

Table XIII displays the results of the fixed effects regression analysis. The estimated coefficient on IFRS changes signs and is not significant for any period of abnormal returns. We also run this fixed-effects model on the subsamples of positive and negative abnormal returns and cumulative abnormal returns (not reported). The application of both the original and absolute

values of abnormal returns as a dependent variable does not indicate that IFRS earnings announcements are related to significantly higher abnormal returns. Obviously, bank-specific as well as time-dependent effects rather seem to play a crucial role in the higher abnormal returns. The observed higher reactions might be accounted for by the fact that most of the IFRS earnings announcements take place in the latter phase – starting about 2005 – of the investigated period when the new accounting rules become mandatory. Therefore, the higher abnormal returns might be explained by an increasing capital market integration in general or influences of the banking crisis which lead to increasing volatility in the markets or higher market reactions for the latter phase.[68]

To summarize this section, even though finding higher abnormal returns for the IFRS subsample, this does not seem to play a significant role in the market reaction of abnormal returns to earnings announcements of banks over the entire time period in this investigation. In combination with the trading volume reactions around event day at comparable levels for both subsamples reported above, H1 has to be refuted. Only the comparison of abnormal return variances yields a contrary impression that IFRS might convey a higher information value which would be in line with the results of Auer (1996).

3.4.2 IFRS and Institutional Determinants

Since the structure of our data indicates that there may be a strong influence of time-dependent effects, we run the following regression on the year 2005 where we find 51 local GAAP earnings announcements and 108 earnings announcements under IFRS. This is the year of the transition for most of the banks in the dataset and we are able to test H2 in a stable and comparable institutional setup. As outlined in H2, it is hypothesized that the market reaction measured by abnormal returns is due to the higher information content of IFRS earnings announcements in the year 2005.

Table XIV presents the correlation matrix for the independent and dependent variables for this investigation. As can be seen in the table, the correlations for the independent variables are not very high. The variance inflation factors (VIF) indicate that a potential distortion through multicollinearity of independent variables is also rather low.[69] Unsurprisingly, the correlation

[68] This might explain the results of Brixner (2011) who uses a bank-specific index as market index. This sector-specific index might be more volatile and stronger correlated with individual return specifications and therefore lead to regression results with lower abnormal returns. An increase in the capital market integration might also play a role in an increasing correlation.

[69] Studenmund (2001, p. 258) refers to a common rule of thumb of a VIF > 5 as indicator for severe multicollinearity.

of *StockVar* and the respective dependent absolute abnormal return measures indicates a positive relationship between stock price variability and the absolute height of the reaction. The correlation of *IFRS* and *StockVar* indicates a positive relation between IFRS and *ex ante* variability of stock prices. The correlation of *InvRights* and *LegalSystem* indicates that investor rights in common law countries might be better protected, maybe due to the greater tradition of equity financed markets.

Table XIV: Correlation Matrix and Variance Inflation Factors

This table displays the correlation matrix for independent and dependent variables in the regression analysis. * indicates signficance on the 5%-level. The last column 'VIF' presents the variance inflation factors for the independent variables in the regressions.

	AV 0	AV 01	|AR[0]|	|CAR[0;1]|	|CAR[0;2]|	|CAR[0;5]|	IFRS	LegalSys.	InvRights	LegalEnf.	StockVar	*VIF*
AV 0	1.000											
AV 01	0.919 *	1.000										
|AR[0]|	0.297 *	0.328 *	1.000									
|CAR[0;1]|	0.162 *	0.289 *	0.751 *	1.000								
|CAR[0;2]|	0.141	0.256 *	0.740 *	0.874 *	1.000							
|CAR[0;5]|	0.137	0.246 *	0.568 *	0.752 *	0.837 *	1.000						
IFRS	-0.148	-0.104	0.083	0.136	0.143	0.143	1.000					*1.09*
LegalSystem	0.047	0.009	0.168 *	0.150	0.103	0.063	-0.090	1.000				*1.50*
InvRights	0.059	0.005	0.116	0.110	0.133	0.060	0.051	0.548 *	1.000			*1.51*
LegalEnf.	0.351 *	0.328 *	0.177 *	0.050	0.083	0.104	0.108	0.180 *	0.160 *	1.000		*1.07*
StockVar	-0.121	-0.094	0.213 *	0.228 *	0.308 *	0.294 *	0.175 *	-0.053	-0.174 *	-0.129	1.000	*1.10*

Table XV, Panel A, presents the results of the regression model measuring the impact of IFRS and institutional determinants on earnings announcements in 2005. In line with the predictions, the coefficient estimates exhibit the expected signs. Remarkably, the *ex ante* stock return variability plays a significant role in the abnormal return on event day and the subsequent trading days. This suggests that higher stock market reactions can – in part – be explained by a generally higher stock price variance. *LegalEnforcement* reflecting the evaluation of strength of the enforcement seems to have a positive impact on event day. However, the estimated coefficient loses power in the subsequent days. *IFRS* exhibits a positive coefficient. It does not seem to play a role in the market reactions due to earnings announcements in the year 2005. In other words, we could argue that IFRS does not lead to a superior information supply leading to higher abnormal returns in 2005. However, one might argue that in 2005 many banks applied the new accounting system for the first time. This could lead to confusion in the market in the transition year, since investors are less experienced in processing the new information (Cuijpers and Bujink 2005, p. 513).

As a robustness check, we apply the regression analysis on abnormal volumes (AV[0], and AV[0;1]) as dependent variables in order to identify possible influences for which we found comparable trading volume levels before. In Panel B of Table XV, we find that the coefficient on *IFRS* is significantly negative for the regression on AV[0] even in the presence of the control variables. This suggests that trading volumes for IFRS earnings announcements in 2005 are lower. This might be best interpreted as confusion among investors who may have problems interpreting the new accounting information. However, we also observe that the coefficient on *LegalEnforcement* is positive and significant which could be interpreted as a country's enforcement playing a significant role in the height of investor interest leading to higher trading volumes. This observation is in line with the results of DeFond, Hung and Trezevant (2007) who find that earnings announcements are more informative in countries with a stronger institutional environment and better investor protection.

To summarize, individual bank factors such as stock price variability, seem to play a more important role rather than the accounting system itself. More to the point, the impact of the accounting system seems to be limited in concurrence with the general institutional background for which we find only weak evidence of an impact on information value during 2005 if measured by abnormal returns and abnormal volumes. Contrary to expectations, the new accounting system seems to have no significant impact on market reactions to IFRS earnings announcements in 2005. This refutes H2.

Table XV: Impact of IFRS and Institutional Determinants in 2005 (Model (2))

This table presents the results of an ordinary least square (OLS) regression on informational value in absolute abnormal returns on event day und subsequent time periods (|AR [0]|), |CAR [0;1]|, |CAR [0;2]| and |CAR [0;5]|) for 2005 earnings announcements (159 observations). The values in parentheses denote the t-values for the respective coefficients. We report t-values for White heteroscedasticity-consistent standard errors only. ***,**,* indicate significance to the 1%-,5%-, and 10%-level to a ordinary t-test (two-sided).

		Panel A: Abnormal Returns				Panel B: Abnormal Volumes	
		|AR [0]|	|CAR [0;1]|	|CAR [0;2]|	|CAR [0;5]|	AV [0]	AV [0;1]
Constant		-0.010 *	0.001	-0.009	-0.014	-2.053 ***	-0.452
		(-1.71)	*(0.14)*	*(-0.92)*	*(-1.17)*	*(-2.74)*	*(-0.89)*
IFRS	(+)	0.001	0.004	0.003	0.004	-0.783 *	-0.350
		(0.35)	*(1.26)*	*(0.94)*	*(1.01)*	*(-1.90)*	*(-1.56)*
LegalSystem	(+)	0.006	0.009	0.002	0.002	-0.403	-0.254
		(0.97)	*(1.17)*	*(0.21)*	*(0.21)*	*(-0.84)*	*(-0.83)*
InvRights	(+)	0.003	0.005	0.012 *	0.007	0.242	-0.070
		(0.80)	*(0.79)*	*(1.85)*	*(0.85)*	*(0.64)*	*(-0.24)*
LegalEnforcement	(+)	0.019 **	0.005	0.013	0.023	5.593 ***	3.157 ***
		(2.55)	*(0.48)*	*(1.20)*	*(1.63)*	*(3.78)*	*(3.79)*
StockVar	(+)	56.888 **	72.221 **	106.379 ***	124.472 ***	-1191.750	-564.837
		(2.49)	*(2.22)*	*(3.25)*	*(3.78)*	*(-0.48)*	*(-0.35)*
Adjusted R^2		0.084	0.066	0.117	0.092	0.135	0.104
F -statistic		4.03 ***	2.58 **	4.15 ***	4.52 ***	6.19 ***	3.84 ***
N		159	159	159	159	159	159

3.4.3 Impact of Accounting System Quality Determinants prior to Transition

As outlined in H3, the question to be answered in this section is which of the properties of accounting system quality in force before transition might influence the information value of first full year earnings announcements. Table XVI presents the correlation coefficients of independent and dependent variables. |AR[0]| is significantly negatively correlated with *Absence*. Comparably, *Divergence* is negatively correlated with AV[0;1]. For both correlations a positive value was expected. The VIFs indicate that multicollinearity among independent variables is not a problem in this dataset.

Table XVI: Correlation Coefficients and VIFs

This table displays the correlation matrix for independent and dependent variables in the regression analysis. * indicates signficance on the 5%-level. The last column 'VIF' presents the variation inflation factors for the independent variables in the regressions.

	AV [0]	AV [0;1]	|AR[0]|	|CAR[0;1]|	Absence	Divergence	StockVar	*VIF*
AV [0]	1.000							
AV [0;1]	0.730 *	1.000						
|AR[0]|	0.382 *	0.230	1.000					
|CAR[0;1]|	0.143	0.440 *	0.394 *	1.000				
Absence	-0.177	0.054	-0.603 *	-0.024	1.000			*1.04*
Divergence	-0.268	-0.388 *	0.118	0.036	-0.163	1.000		*1.10*
StockVar	0.093	-0.022	0.067	-0.022	0.060	0.245	1.000	*1.08*

In Table XVII, the results of the OLS regression on absolute abnormal returns and abnormal volumes are presented. Contrary to expectations, the coefficient estimate on *Absence* is negatively related to all dependent variables. However, it is only highly significant for the regression on |AR[0]|, after controlling for the magnitude of *ex ante* stock price variability. These observations are consistent with the notion that earnings announcements for first full year results are decreasing in a higher absence score, i.e., the more accounting rules that are not available in the local GAAP regime prior to adoption, the lower the information value of the first-time announcements in accordance with IFRS. This suggests a higher "accounting information gap" that is now closed under the application of IFRS leads – at least at first – to lower information value reflected by abnormal returns. In other words, this might be cautiously interpreted as market confusion in the wake of the obligatory introduction of IFRS.

The coefficient on *Divergence* does not seem to have any significant impact on information value if measured by absolute abnormal returns as dependent variables. However, for the specifications on trading volumes *Divergence* is strongly negatively related to abnormal volumes in both specifications. A similar interpretation as for *Absence* seems obvious. The higher the differences in accounting prior to the first-time adoption of IFRS, the lower the market reactions in terms of abnormal trading volumes. This suggests also some market uncertainty due to confusing information that is now different to the information before which results in prudent behavior of market participants leading to lower trading activity.

Table XVII: Multivariate Regression Analysis on Accounting System Quality (Model (3))

This table presents the results of an ordinary least square (OLS) regression of accounting system quality determinants of market reactions measured in absolute abnormal returns at event day (|AR 0|), |CAR [0;1]| and abnormal volumes at event day (AV 0) and AV[0;1] for the first full year earnings announcements in accordance to IFRS. The sample is reduced to 40 observations due to limited data availability. The values in parentheses denote the t-values for the coefficients. We report t-values for White heteroscedasticity-consistent standard errors only. ***,**,* indicate significance to the 1%-,5%-, and 10%-level to an ordinary t-test (two-sided).
Absence denotes the number of international accounting standards that are not reflected by an equivalent standard in local GAAP rules, whereas *Divergence* represents the accounting rules that require a different approach in local GAAP standards (Ding *et al*. 2007). *StockVar* is daily stock return variance over the estimation period.

		|AR 0|	|CAR[0;1]|	AV 0	AV[0,1]
Constant		0.034 **	0.022	5.679 ***	4.751 ***
		(2.14)	*(1.13)*	*(3.57)*	*(4.01)*
Absence	(+)	-0.096 ***	-0.003	-3.784	-0.197
		(-3.45)	*(-0.08)*	*(-1.24)*	*(-0.09)*
Divergence	(+)	-0.002	0.018	-11.353 *	-9.409 **
		(-0.04)	*(0.30)*	*(-1.94)*	*(-2.32)*
StockVar		31.561	-12.966	5746.566	1690.512
		(0.90)	*(-0.30)*	*(0.81)*	*(0.43)*
Adjusted R^2		0.32	-0.08	0.09	0.09
F -statistic		5.09 ***	0.05	2.13	2.62 *
N		*40*	*40*	*40*	*40*

As a robustness check, we also estimate the regression equation controlling for stock-specific characteristics via the natural log of the market value measured as an average over the last 12 months instead of the stock return variance. This yields qualitatively the same results as in our analysis carried out above.

This result is contrary to the expectation that especially local GAAPs of "lower quality" with many new accounting rules in place after transition experience a greater leap in transparency. However, it is in line with the observations from the investigation of accounting system ratings in the previous section. There are several possible explanations for this result: As already mentioned above, investors and analysts might have difficulties in interpreting the new information and may need some time to understand the new accounting information (Cuijpers and

Bujink 2005, p. 513) or may suffer some kind of "information overload" due to the IFRS application. Another explanation could be that the local GAAP rules better serve the information needs of local markets as "best solutions", i.e., they are better integrated in the institutional environment of the bank's home country (Auer 1996, p. 590). Therefore, the first earnings announcements according to international accounting standards could have reduced the information value by introducing confusion. Since we find no evidence that the information value of the first-time earnings announcements under IFRS is higher for banks using "lower quality" accounting systems prior to adoption, this refutes H3.

3.4.4 Banking Specific Asset Structure

As outlined in H4, the information value is expected to increase in a growing share of opaque assets prior to transition. Table XVIII presents the correlations of the dependent and independent variables of the regressions on asset structure. As suspected, *NetLoans* and *Investments* are highly negatively correlated since both asset groups account for a large part of assets in the asset structure of a bank. Therefore, we abstain from including both variables simultaneously in the regressions as this could lead to a multicollinearity problem. Furthermore, we find that *Investments* is positively correlated with *MV*, whereas *NetLoans* is negatively correlated with it. This is an interesting observation, since higher market valuations seem to correlate with the asset structure, i.e., larger banks, with higher market values, seem to have higher percentages invested in market related *Investments*.

Table XVIII: Correlations of Asset Structure

This table displays the correlation matrix for independent and dependent variables in the regression analysis. * indicates signficance on the 5%-level. The last columns 'VIF' presents the variation inflation factors for the independent variables in the respective regressions.

	AV[0]	AV [0;1]	|AR[0]|	|CAR[0;1]|	Investments	NetLoans	NetDebt	MV	*VIF*	*VIF*
AV[0]	1.000									
AV [0;1]	0.799 *	1.000								
|AR[0]|	0.431 *	0.312	1.000							
|CAR[0;1]|	0.177	0.268	0.590 *	1.000						
Investments	-0.349 *	-0.426 *	-0.036	0.082	1.000				*1.13*	
NetLoans	0.303	0.446 *	-0.092	-0.097	-0.886 *	1.000				*1.31*
NetDebt	-0.104	-0.081	-0.024	0.096	-0.083	0.218	1.000		*1.08*	*1.09*
MV	0.066	-0.080	0.268	0.144	0.344 *	-0.478 *	-0.277	1.000	*1.22*	*1.35*

In Table XIX, we present the results for the regression on banking specific asset groups that are often perceived as being opaque. In this panel, we report the regression results on first full-year earnings announcements under IFRS in 2005. Due to limited data availability, there are only 38 banks included.

The results of abnormal returns as dependent variables suggest that the regressions are rather of low quality since the explanatory power of specifications is quite low. Better specified are the regressions on abnormal volumes where we are able to report significantly positive coefficient estimates for *NetLoans* which is in line with expectations. For *Investments*, contrary to expectations, we observe significantly negative coefficient estimates in the regressions on abnormal volumes. These observations provide two approaches for interpretations.

Firstly, a higher share of *NetLoans* prior to adoption suggests an opaqueness concerning these assets that are becoming more transparent to investors through the application of IFRS. By inverse inference, this would suggest that a higher *ex ante* share of *Investments* seems already to be transparent to investors, causing a negative impact on the trading volumes along with the first full-year earnings announcements to IFRS. In other words, *Investments* were already transparent and easy to evaluate for investors before the application of IFRS.

Secondly, as a higher share of loans always implies a lower share of investments as concurrent utilization of funds, investors reward a higher share of already transparent loans on the banks' balance sheet – which purportedly stands for a lower riskiness in comparison to other investments – with a higher investors' interest reflected in higher trading volumes. This would mean, however, that higher shares of *Investments* do not become transparent in the transition to IFRS.

Following the second line of reasoning, this would mean that there is no higher "surprise" in the valuation of loans. More likely, market participants appreciate higher shares of loans since the IFRS accounting treatment is not completely different in comparison with the accounting regulations previously in force, whereas investments require rather different accounting treatments under the new accounting regime. For example, just considering the valuation of financial assets under IAS 39 requires quite different accounting treatments subject to the specific financial asset classification. Therefore, the first-time adoption leads rather to market confusion for the valuation of investments along with the first-time adoption leading to lower

trading volumes. This also would correspond to the explanation that a higher *ex ante* share of investments is still perceived as not being transparent in the transition to IFRS and markets are not, or not yet, able to interpret the new IFRS information concerning specific asset classes properly. This explanation would also be in line with the observations from prior sections and seems to be the reasonable deduction.

Table XIX: Multivariate Regression Analysis on Asset Structure (Model 4)

This table presents the results of an ordinary least square (OLS) regression on informational value in absolute abnormal returns on event day (|AR [0]|), |CAR [0;1] |and abnormal volumes on event day (AV [0]) and AV[0;1] for the first full-year earnings announcements in accordance to IFRS. The sample is reduced to 38 observations due to limited data availability. The values in parentheses denote the t-values for the coefficients. We report t-values for White heteroscedasticity-consistent standard errors. ***,**,* indicate significance to the 1%-,5%-, and 10%-level to a t-test.
Panel A is a regression on the influence of banking specific assets on information value of earnings announcements. *Investments* denotes the net investments one year prior to adoption of the bank's investments, as share of total assets.
In Panel B, *NetLoans* represents the value of granted loans, excluding loan loss provisions, as share of total assets, measured one year prior to the adoption. *NetDebt* is net debt, as the share of total assets of the bank, measured one year prior to adoption. Additionally, we control for firm size via *MV* which is the natural logarithm of the market value of equity for the respective bank, measured as a 12 month average prior to changeover.

Panel A: First Full Year Earnings Announcements under IFRS and Investments

		|AR [0]|	|CAR[0;1]|	AV [0]	AV[0,1]
Constant		-0.022	-0.013	1.938	3.266 *
		(-1.06)	*(-0.51)*	*(0.76)*	*(1.94)*
Investments	(+)	-0.022	0.006	-6.710 *	-4.725 **
		(-0.96)	*(0.19)*	*(-1.98)*	*(-2.57)*
Net Debt	(+)	0.007	0.023	-1.174	-0.942
		(0.31)	*(0.73)*	*(-0.55)*	*(-0.65)*
MV		0.005 **	0.003	0.267	0.043
		(2.19)	*(1.06)*	*(1.28)*	*(0.30)*
Adjusted R^2		0.013	-0.043	0.095	0.126
F -statistic		1.66	1.07	1.79	2.30 *
N		*38*	*38*	*38*	*38*

Panel B: First Full Year Earnings Announcements under IFRS and Net Loans

		|AR [0]|	|CAR[0;1]|	AV [0]	AV[0,1]
Constant		-0.026	-0.004	-4.183	-1.678
		(-0.73)	*(-0.09)*	*(-1.37)*	*(-0.75)*
Net Loans	(+)	0.005	-0.008	6.168 **	4.940 **
		(0.26)	*(-0.29)*	*(2.07)*	*(2.61)*
Net Debt	(+)	0.006	0.024	-1.811	-1.445
		(0.27)	*(0.77)*	*(-0.81)*	*(-1.03)*
MV		0.004	0.003	0.348 *	0.128
		(1.68)	*(0.91)*	*(1.76)*	*(0.91)*
Adjusted R^2		-0.006	-0.042	0.092	0.179
F -statistic		1.42	1.15	2.14	2.35 *
N		*38*	*38*	*38*	*38*

As a robustness check, we also apply the regression analysis on the first quarter earnings announcements under IFRS using the last quarter's asset structure information under local GAAP (results not reported). Interestingly, the coefficient estimates of *Investments* and *Net-Loans* do not exhibit significant signs for the same specifications as above. However, we find that the coefficient estimate on *NetDebt* is significantly negatively related to market reactions for all specifications.

Due to the ambiguity of the findings above, we have to be cautious in interpreting the results. This impression becomes even stronger when considering the rather low explanatory power of several of the tested model specifications above. However, we find no sustainable evidence that the first-time application leads to higher information value concerning opaque assets if measured by abnormal returns. Only the *ex ante* share of loans might be best interpreted as contributing to a higher trading volume. Therefore, based on the results in this section there is no sustainable evidence in support of H4.

3.5 Conclusion

We analyze the information value of quarterly earnings announcements of European banks before and after transition to international accounting standards. We find that the information value after the obligatory transition to international accounting standards increases over time if measured by abnormal returns and variances of returns. However, testing the specific influence of IFRS while controlling for bank-specific characteristics and time-dependent effects, we reach the conclusion that there is no sustainable indication of IFRS being responsible for a superior information value of quarterly earnings announcements in general. However, we have to be cautious, since the sample is biased, i.e., observations of IFRS earnings announcements take foremost place in the latter phase of our investigated period and the number of observations in the control group of local GAAP earnings announcements for this period is very low.

Therefore, we carry out an analysis of the earnings announcements during 2005 for which we find a comparably stable setup. However, we are not able to find evidence suggesting IFRS earnings announcements possessing a higher information value while controlling for the institutional setup which seems rather to play a role in the information value of earnings announcements. An in-depth analysis of the reactions to first full year earnings announcements after the obligatory IFRS adoption yields that the information value seems to be lower for banks from countries which have accounting systems in place that are more divergent and have more accounting rules not available under local GAAP. This observation might be interpreted as the new accounting rules introducing confusion into markets at first which could be caused by a lower comparability of the accounting rules (Cuijpers and Buijink 2005, p. 513). An analysis of bank-specific balance sheet items indicates that the information value of first financial year earnings announcements rather decreases with a higher share of investment assets prior to adoption. The expectation is that a gain in transparency concerning these specific assets increases the information value. This might indicate that investments mostly consisting of traded financial assets are still perceived as non-transparent in the transition.

Overall, our results cast doubts on the perception that earnings announcements in accordance with IFRS alone are able to convey significantly more information to the markets for banks in Europe. In fact, the informational and institutional environment seems to play a crucial role in the information value of earnings announcements which is in line with prior research.

4 Mandatory IFRS Adoption of European Banks and the Effects on Information Asymmetry

4.1 Introduction

Improving the information efficiency of capital markets is a major goal of financial reporting. The basic perception is that a change to a "higher quality" accounting system leads to higher information efficiency. One main criticism is that the research results concerning voluntary transition to higher quality accounting standards leading to higher information efficiency and market liquidity might possibly be driven by a self-selection bias (e.g., Hung and Subramanyam 2007; Daske et al. 2008). This means that only firms that expect to profit from the transition will change their accounting systems and might not necessarily represent the general market. The situation changed in 2005, when the application of International Financial Reporting Standards (IFRS) became obligatory in consolidated accounts for capital market oriented companies in Europe. Empirical research on this strand of literature faces several problems. Firstly, there is an omitted variables problem. In fact, some studies acknowledge that differences in institutional backgrounds and incentives strongly interfere with each other and the potential positive effects of financial reporting (e.g., Ball, Robin and Wu 2003; Burgstahler, Hail and Leuz 2006). Secondly, there is a problem of practical relevance for empirical studies: In order to find a suitable peer group to test the findings research has to find comparable firms that do not have to apply mandatorily IFRS accounting rules yet. However, most of the highly developed economies around the globe have already implemented international accounting standards or have comparable local GAAP accounting rules in force, e.g., U.S. GAAP. Hence, the remaining countries not yet having implemented international standards might not be directly comparable (e.g., Daske et al. 2008, p. 1086) which gives rise to concerns about the potential risk of comparing apples and oranges.

Considering these facts, a reasonable approach is to compare an identical set of firms prior to and after the changeover to IFRS in a comparable institutional setup. This also might limit the power of statements concerning time-dependent changes in information asymmetry proxies. The change of these proxies over time can be accounted for, at least partly, by explicitly controlling for time. As mentioned above, cross-country comparisons of firms for which in one country the application of IFRS is not mandatory are not necessarily feasible without restrict-

ing conclusions. In this study, this problem can be faced by also including benchmark firms from the same countries that did not have to change the accounting regime after 2005.[70]

Bank transparency seems to be relevant considering the vulnerable interrelations in the worldwide banking system. Prior investigations of the transition often excluded banks because of their different balance sheet structures and earnings' sources in comparison to other industries (e.g., Cuijpers and Buijink 2005, p. 493). However, in this investigation, we claim that if there is a difference in capital market efficiency through IFRS adoption it should be measurable best by the investigation of banks. Allegedly, a bank's business is especially opaque to markets and financial statements do not sufficiently explain the sources of earnings and risks in comparison to financial statements from other industries, which is also reflected in an opaque asset structure (e.g., Morgan and Stiroh 2001; Morgan 2002; Chipalkatti 2005; Ianotta 2006). In other words, if capital markets do reward increasing transparency, banks should benefit more than firms from other industries if the application of IFRS leads to lower opacity of assets. Firstly, the stronger fair value orientation for financial assets and liabilities often uses market prices thereby uncovering hidden reserves, and importing volatility in consolidated balance sheets (e.g., Soderstrom and Sun 2007, p. 689).[71] Furthermore, the true and fair view principle of IFRS is supposed to reduce earnings management and discretionary degrees of freedom, leading to a further increase in information efficiency of capital markets. Both effects interact and are not mutually exclusive. Assuming efficient capital markets, one might argue that the true and fair view principle does not convey new information to the market because the market has already incorporated the fair values of the assets in the market price of the firm (Schildbach 2009, p. 582). Assuming inefficient markets, one might argue that capital markets do not have information about the structure and riskiness of individual bank's assets. However, fair value does not necessarily mean that market prices are used.[72] Additionally, other assets and liabilities are not valued at fair value at all. Therefore, in this study, we expect capital markets to be efficient in that they do evaluate the information received correctly. An implication is that information asymmetry is reduced in the application of higher quality accounting standards that are closer to the true and fair view principle.

[70] For example, banks that do not have to prepare *consolidated* accounts in accordance with IFRS.
[71] This volatility has then to be caused by market risk, since firm-specific risks can be diversified. Furthermore, increasing volatility in earnings and assets structure might reduce the financial stability of a bank which is also a point worth considering.
[72] Fair values can also be deducted from mark-to-model approaches which probably contain information not available to capital markets before publication.

This study extends the existing literature in several ways. We try to fill the gap in research for obligatory transitions and the effect on banks. Additionally, data for empirical investigations of the time after the obligatory transition is now available enabling new insights which were not available to prior research. Furthermore, this study concentrates on the change in information efficiency proxies for banks in Europe only. This assures a relatively stable and homogenous institutional background. Furthermore, we try to clarify whether the potential benefits are really attributable to the change in accounting systems or rather an effect of the still ongoing capital market integration in general. We provide answers in respect of both questions for research dealing with accounting regimes and banking institutions in general, and with the cost and benefits of the IFRS transition in particular.

The investigation covers different approaches and dimensions of information asymmetry and the impact on market valuations: At first, the implications of a mandatory change in accounting systems on information efficiency and market liquidity are investigated. Secondly, the direct relation between accounting measures of equity and equity valuations as well as value relevance of accounting measures, in general, is covered. Thirdly, the last part adds to the literature on IFRS transition on mandatory adoption in the European Union and Europe. One advantage is that a large dataset of 151 European banks is analyzed for all three dimensions in this investigation. This allows a complete and comprehensive picture of the impact of the IFRS adoption on European banks.

Overall, the results provide mixed evidence. They indicate a significant influence of IFRS on bid-ask spreads and the price impact of trades whereas trading volume or the number of zero returns seem to be unaffected. However, a significant influence of the accounting system on asset and equity valuation as suggested by previous studies cannot be confirmed. The first mandatory application of IFRS in the European Union seems to introduce confusion initially. However, except for price sensitivity, the mandatory application of IFRS has a limited impact on information asymmetry measures. Rather, banks located in member states of the European Union seem to benefit for some measures of information asymmetry. Additionally, an early voluntary adoption of IFRS seems not to be a significant advantage over mandatory adoption.

The chapter is organized as follows: Section 4.2 provides the related literature. Section 4.3 introduces the hypotheses. Section 4.4 describes the dataset and the methodology. Section 4.5 presents the results and a discussion. Section 4.6 concludes.

4.2 Related Literature

Depending on the definition of accounting quality, three streams of literature in the investigation of transition effects on accounting quality can be distinguished. An increase in accounting quality can be measured, e.g., as a reduction in cost of equity capital for firms, or via an improvement in information efficiency.

The first stream concentrates on accounting regimes in force and tries to relate them to measures of cost of equity capital while controlling for alternative influences (e.g., Daske 2006). Hail and Leuz (2006) employ a cross-country analysis to identify the reasons for differences in cost of equity capital. They find that firms from countries with stricter enforcement, more stringent regulations and higher disclosure requirements experience a significantly lower cost of equity capital. Furthermore, over 35% of cross-sectional variation in cost of equity capital seems to be related to firm risk proxies, e.g., firm size, volatility, book-to-market ratio, and country-specific factors such as inflation and macroeconomic variability (Hail and Leuz 2006, p. 487). Poshakwale and Courtis (2005) study the effects of disclosure on cost of equity capital on banks via a disclosure index in order to measure the extent of the impact of increased disclosure. They show that increases in disclosures are more pronounced for European banks if measured by cost of equity capital.

The second stream identifies a relation between financial reporting and information asymmetry and market liquidity. A larger strand studies the effect of voluntary transition to international accounting standards (e.g., Leuz and Verrecchia 2000; Cuijpers and Buijink 2005). Information efficiency is then measured by proxies such as bid-ask spreads, stock price volatility, and forecast dispersion. Higher quality financial reporting mirrored in increased disclosure of financial information should be reflected in lower estimation risk and a reduction in adverse selection costs enabling investors to better differentiate between the quality of firms (Daske et al. 2008, pp. 1091-1092). Chipalkatti (2005) concentrates on the mandatory bank disclosures introduced in India in 2000 and studies the effect on spreads and asymmetric information costs. He identifies lower spreads and costs in the aftermath of the new regulation. Platikanova (2007) investigates market liquidity effects of the IFRS adoption in several European countries and finds that cross-country differences in information asymmetry are predominantly reduced after transition to IFRS in Europe. Christensen, Hail and Leuz (2013) investigate the mandatory IFRS application and the impact on market liquidity and find that

concurrent changes in reporting enforcement seem to be highly relevant whereas accounting regime changes alone seem to have limited impact on market liquidity.

Two approaches are closely related to this paper. The first one is applied by Leuz (2003). He investigates differences in information asymmetry by comparing bid-ask spreads, turnover and forecast dispersion, and puts these measures in relation to differences in accounting regimes, while controlling for institutional and firm-specific factors. Concretely, Leuz (2003) studies the impact on information asymmetry measures of U.S. GAAP versus IFRS annual results in Germany's New Market. He finds no evidence for a significant difference between both accounting systems which he interprets as both accounting systems being comparable in reducing information asymmetries since the institutional background and settings are unchanged. The second approach rests on the investigation by Daske et al. (2008). They also investigate changes in information asymmetry measures. Additionally, they study the impact on equity valuation using Tobin's Q. Contrary to Leuz (2003) comparing IFRS and U.S. GAAP, they study the effects in relation to the obligatory IFRS transition in a worldwide sample comprising data from 2001 to 2005. One result is that even though mandatory adopters are able to report liquidity increases, voluntary adopters benefit more around the mandatory adoption date. Furthermore, Tobin's Q does not change significantly for mandatory adopters. Daske et al. (2008) also point out that effects such as reporting incentives and the institutional background may play an important role in the observations which might cast doubts on the clearness and immediacy of the IFRS impact.

In our paper, these approaches are modified in order to clarify the question whether the transition to IFRS leads to any positive influence on information asymmetry measures for banks in the longer run after the application. Furthermore, we use a relatively stable institutional environment reducing the possible influences of concurrent effects. Therefore, the implications on information asymmetry and market liquidity measures, and equity valuations of the mandatory application of IFRS in European banks are at the heart of this investigation in order to generate a more comprehensive picture from all the different angles mentioned above.

4.3 Hypotheses

4.3.1 Reduction of Information Asymmetry

Theory suggests that reductions in information asymmetry through disclosure will increase the future liquidity of a firm's securities (Diamond and Verrecchia 1991, p. 1326). Under the prerequisite that IFRS provide higher quality information for investors than local GAAP financial statements, the dissemination of information contained in IFRS financial statements suggests a reduction in information asymmetry and an increase of liquidity for financial markets. The rationale is that the increase in available information makes it easier for investors to implement the information in their valuation models and evaluate the respective firm, thereby reducing estimation error and raising information efficiency and market liquidity. Another argument is that banks especially are often supposed to be difficult to understand concerning their business and often intransparent to investors and, therefore, difficult to evaluate (e.g., Morgan and Stiroh 2001; Morgan 2002; Ianotta 2006). Additionally, their highly regulated disclosures do not necessarily meet the information needs of investors. This is supposed to change with the application of accounting standards that better serve the information requirements of capital markets. Furthermore, the changeover to IFRS enables a wider circle of investors to compare firms across country borders in order to serve a reasonable allocation of funds.[73] This also increases stock turnover after transition to IFRS. All these arguments increase information efficiency. Therefore, the terms reduction in information asymmetry and an increase in market liquidity are applied synonymously in this paper. Hence, the first hypothesis to be tested is:

> *H1: Information asymmetry decreases and market liquidity increases after the transition to IFRS.*

There are several proxies in literature capturing information asymmetry. Two of them often used are bid-ask spreads and turnover (e.g., Leuz 2003; Daske et al. 2008). To measure market liquidity, the number of zero returns (Daske et al. 2008) and the price impact of trades (Amihud 2002) are applied. Concretely, a decrease in bid-ask spreads can be interpreted as an increase in information efficiency, whereas this also holds true for a higher stock turnover

[73] However, this argument is only valid if institutional environment is comparable. In the European area, we assume that this requirement can be regarded as fulfilled.

level.[74] The price impact of trades and a lower number of zero returns are measures for market liquidity. A decrease in price sensitivity and a smaller number of zero returns across the sample period is an indicator for increased information efficiency and market liquidity.[75]

4.3.2 Equity Valuation

Another point often addressed in empirical studies concerning information asymmetry is the fact that higher transparency increases firm value. Among others, Lang et al. (2003) find that cross-listings in the United States increase market values of the respective firms. The cross-listing can therefore be interpreted as a commitment to higher transparency if other information environments lead to lower transparency. One fact often at the focal point of debates is that financial statements in accordance with international accounting standards are often perceived as being more transparent if the information facilitates better forecasts of a firm's future value. However, this depends on the prerequisite that financial statement information is decision-relevant for investors, i.e., the information is not superseded by more timely information (Barth, Beaver and Landsman 2001, p. 80).[76] Concretely, it should be easier for investors to predict future cash flows on the basis of the information contained in the financial statements according to IFRS. This, in turn, would decrease the uncertainty in the forecasted measures and increase information efficiency. The superior ability to forecast future cash flows should be reflected in systematically higher equity valuations, since the risk premiums in the discount factors are reduced. Additionally, fair value accounting allows investors to be better informed about the fair value of many bank assets which leads to lower uncertainty. This, on average, leads to higher equity and asset valuations.

> *H2: Equity and asset valuation is higher for firms preparing financial statements according to IFRS.*

As a proxy for asset valuations, *Tobin's Q* is used. It is measured as the market value of assets in relation to their book values.[77] A higher average valuation of assets should be reflected by

[74] For example, Grammig, Schiereck and Theissen (2000) empirically show that turnover is a good measure to capture information asymmetry effects since the risk to trade with (better) informed traders is negatively associated with higher trading volumes (see Leuz 2003, p. 454).

[75] There are other factors influencing these measures. For example, bid-ask spreads can be driven by order processing costs and inventory holding costs (Leuz 2003) and not only by adverse selection costs which is the interesting component to measure information asymmetry (Platikanova 2007). This issue is addressed in section 4.4.2.

[76] However, they admit that accounting information may also only be value-relevant, i.e., reflected in equity valuations without being decision-relevant (Barth, Beaver and Landsman 2001, p.80).

[77] Originally, Tobin's Q is the relation of replacement costs of assets in relation to their book values. However, since the replacement costs are not measurable from an external point of view, the proxy of market values of assets to book value of assets is used, as outlined by Daske et al. (2008). This approach leads to a close relation

an increase in *Tobin's Q*. Furthermore, *Tobin's Q* also captures a firm's cost of capital besides the effect on investments (Daske et al. 2008, p. 1115). An alternative measure is the *Price-to-book Value*, which puts the market value of equity in relation to the book value of equity of a specific firm.

4.3.3 Impact of Mandatory Adoption in the European Union

As outlined above, most studies acknowledge that institutional factors play a major role in the determination of information efficiency of capital markets and only a limited impact can be attributed to the mere change in accounting systems (e.g., Barth, Landsman and Lang 2008). Armstrong et al. (2010) find that the stock market perceives the IFRS introduction positively by showing lower information asymmetry in reaction to events increasing the probability of the IFRS introduction. They find that banks especially show an even stronger reaction which they explain with higher transparency through the application of IAS 39. The impact of the mandatory adoption versus the voluntary adoption of IFRS has often been addressed in recent literature. Daske et al. (2008) observe that voluntary adopters are able to benefit more than mandatory adopters. For voluntary adopters, one could argue that the information supply of markets for these firms improves. However, this result could be the consequence of a self-selection bias, i.e., only firms anticipating potential benefits use the new accounting system voluntarily (e.g., Hung and Subramanyam 2007; Daske et al. 2008). Furthermore, comparability across firms might not be significantly increased if not all banks change to international standards. At least, the voluntary adoption could then be interpreted as a signal for a commitment to more transparency for investors (e.g., Daske et al 2008, p. 1094). On the other hand, the mandatory adoption increases comparability across sectors and country borders by creating a level playing field when it becomes obligatory to report consolidated accounts in accordance with IFRS for firms with listed equity in the European Union for fiscal years starting in 2005.[78] This reduces information asymmetry and increases market liquidity for all firms in a market.

H3: The mandatory adoption of IFRS has a negative impact on information asymmetry and a positive effect on market liquidity.

Therefore, this hypothesis seeks to investigate the difference between mandatory and voluntary adopters and might be considered a special variant of hypothesis H1.

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between *Price-to-book value* and *Tobin's Q* since it can be shown that the difference between both measures depends ultimately on the respective leverage ratio.

[78] See Regulation (EC) No 1606/2002.

4.4 Dataset and Methodology

4.4.1 Dataset

The constituents list of the market portfolio *Datastream Banks Europe* with 173 banks is used as reference. Our dataset comprises observations of 151 European banks over a period of 8 years from 2001 to 2008.[79] The identification of the transition year is carried out via the coding of the accounting systems available in Datastream.[80] Additionally, for banks without data available, we try to complete missing transition dates manually. In the sample, there are 128 banks changing to IFRS or already applying IFRS during that period. Table XX describes the composition of all banks in the sample according to their location and the total number of observations for each accounting regime. Furthermore, the table indicates whether the banks' countries are members of the European Union as of 2003.

Most of the observations concerning the transition date are from 2005. However, sometimes banks changed their accounting system in 2006 because of differences in the fiscal year period. They are then coded as first-time adoption in 2006. If the banks changed to IFRS before IFRS became obligatory in a specific country, they are included in the subsample 'Voluntary Adopters'. For some banks, the transition is not available due to two reasons. 23 banks have not yet changed to IFRS since they, e.g., do not have to prepare consolidated annual accounts in accordance to IFRS. The reason is that in several countries IFRS are not mandatory for *individual* accounts.[81] These banks are then left in the sample as benchmarks, if data is available. Observations of 22 banks are excluded from the dataset: For 17 banks, information about the transition is not available or not clearly identifiable via the Datastream coding, since the definitions of the underlying accounting systems are ambiguous. Another reason is that the banks switched to U.S. GAAP. In five cases, the index additionally contained preferred shares of some banks. Hence, the initial dataset comprises a maximum of 1208 observations. However, due to data availability, the working samples in the following are smaller.

[79] The constituents list as of June 2009 is used.
[80] A similar procedure is used by Hail and Leuz (2007) and Jeanjean and Stolowy (2008). See also footnote 85.
[81] Another reason might be that some banks are allowed to prepare their financial statements in accordance with IFRS after 2005 if certain criteria are met. E.g., in Switzerland, banks are allowed to continue to report under national GAAP (PriceWaterhouseCoopers, 2008, p. 118-120).

Table XX: Descriptive Statistics of Banks' Origins and IFRS Adoption

This table provides descriptive statistics for the entire sample from 2001 to 2008, separated per countries. It consists of 626 (582) observations pre (post) IFRS adoption. The first column provides the number of banks per country contained in the Datastream Banks Europe index. The second column 'Index Member' indicates the number of banks that are members of the large cap index on the main trading market. The columns 'Voluntary Adopters' and 'Mandatory Adopters' indicate the number of banks that voluntarily or mandatorily changed the accounting system to IFRS. The columns 'ny' ('na') provides the number of banks that either did not yet switch ('ny') to IFRS, or banks for which data is not available or not applicable ('na') . The next columns segregate the maximum total firm year observations into local GAAP or IFRS observations, and the maximum number of observations in the sample for each country. The last column indicates whether the country is a member state of the European Union as of 2003.

Country	Banks per Country	Index Member	Banks					Maximum Firm Year Observations					EU2003 Member
			Voluntary Adopters	Mandatory Adopters	na	ny	Total	Local GAAP	in %	IFRS	in %	Total	
Austria	7	2	2	3	2	0	7	13	2.1%	27	4.6%	40	Y
Belgium	5	3	0	3	1	1	5	20	3.2%	12	2.1%	32	Y
Bulgaria	1	1	0	0	1	0	1	0	0.0%	0	0.0%	0	N
Cyprus	4	3	2	0	2	0	4	1	0.2%	15	2.6%	16	N
Czech Republic	1	1	1	0	0	0	1	0	0.0%	8	1.4%	8	N
Denmark	7	2	1	5	0	1	7	34	5.4%	22	3.8%	56	Y
Finland	1	1	0	1	0	0	1	4	0.6%	4	0.7%	8	Y
Faroe Islands	1	0	0	0	1	0	1	0	0.0%	0	0.0%	0	N
France	11	3	0	10	0	1	11	48	7.7%	40	6.9%	88	Y
Germany	6	3	2	3	1	0	6	13	2.1%	27	4.6%	40	Y
Greece	10	6	0	9	1	0	10	36	5.8%	36	6.2%	72	Y
Hungary	1	1	1	0	0	0	1	0	0.0%	8	1.4%	8	N
Ireland	2	2	0	2	0	0	2	9	1.4%	7	1.2%	16	Y
Italy	21	7	1	18	2	0	21	78	12.5%	74	12.7%	152	Y
Liechtenstein	2	0	1	1	0	0	2	6	1.0%	10	1.6%	16	N
Luxembourg	2	0	0	1	1	0	2	4	0.6%	4	0.7%	8	Y
Malta	4	0	4	0	0	0	4	2	0.3%	30	5.2%	32	N
Monaco	1	0	0	0	0	1	1	8	1.3%	0	0.0%	8	N
Netherlands	1	0	0	1	0	0	1	4	0.6%	4	0.7%	8	Y
Norway	1	1	0	1	0	0	1	4	0.6%	4	0.7%	8	N
Poland	14	5	1	13	0	0	14	59	9.4%	53	9.1%	112	N
Portugal	5	3	0	5	0	0	5	20	3.2%	20	3.4%	40	Y
Romania	3	1	3	0	0	0	3	4	0.6%	20	3.4%	24	N
Russian Federation	4	2	3	1	0	0	4	6	1.0%	26	4.5%	32	N
Slovenia	3	1	3	0	0	0	3	8	1.3%	16	2.7%	24	N
Spain	11	6	0	11	0	0	11	44	7.0%	44	7.6%	88	Y
Sweden	5	4	0	4	1	0	5	16	2.6%	16	2.7%	32	Y
Switzerland	21	2	3	0	2	16	21	136	21.7%	16	2.7%	152	N
Turkey	13	8	3	0	7	3	13	29	4.6%	19	3.3%	48	N
United Kingdom	5	5	0	5	0	0	5	20	3.2%	20	3.4%	40	Y
Sum	**173**	**73**	**31**	**97**	**22**	**23**	**173**	**626**	51.8%	**582**	48.2%	**1208**	

4.4.2 Methodology

4.4.2.1 Dependent Variables

At first, data about the dependent variables is gathered. In order to identify any influence of IFRS accounting on information asymmetry, four information asymmetry and market illiquidity measures are used: share turnover, bid-ask spreads, zero returns, and price impact of trades, the latter three as outlined by Daske et al. (2008), with minor modifications which are explained in the following.

The bid-ask spread measure is calculated as the natural logarithm of the average daily spread divided by the midpoint. It is calculated over an 11-month period starting four months before the end of the fiscal year and ending at month +7 relative to the financial year end.[82] This rather large period is chosen in order to account for both an information impact on markets before the official release of results and the fact that markets might need some time to process the information of financial statements. This approach also controls for the possibility that markets reward the transition before the actual adoption of the new accounting rules takes place. Some studies suggest that the investigation of spreads is too simple, since spreads consist of several components, such as inventory holding costs, order processing costs, and adverse selection costs (e.g., Platikanova 2007, p. 14). A division into single components is not always easy and the procedures often lack significance. Platikanova (2007, p. 32) finds that the adverse selection component of bid-ask spreads varies roughly around 25% - 35% of total spreads in her investigation. Therefore, taking just the total bid-ask spread as proxy and controlling for firm-specific effects seems to be sufficient in a study focusing only on Europe.[83] Furthermore, the focus of this study is to find a relation between the transition to IFRS and the development of bid-ask spreads. Therefore, it is not of primary interest which of the components of bid-ask spreads is affected. The basic expectation is that the implementation of IFRS in banks leads to an increase in transparency. These transparency gains are mirrored in decreasing bid-ask spreads, *ceteris paribus*.

The second measure is *Turnover* (e.g. Leuz and Verrecchia 2000; Leuz 2003). It denotes the natural logarithm of the daily mean turnover of shares in relation to total number of shares

[82] Daske et al. (2008) use a broader period for their impact study starting at month -5, i.e., five months before the fiscal year ends, and ending +7 months in the subsequent year.
[83] Some other studies use the bid-ask spreads as direct measure of information asymmetry and do not account for single components, as for example inventory holding costs, e.g., Daske et al. (2008).

over the investigated 11-month period around financial year ends. The rationale is that turnover, or trading volume, captures the investors' willingness to buy and sell firm shares, which should be inversely related to information asymmetry (Platikanova 2007, p. 20). Furthermore, the risk to trade with (better) informed traders is lower for stocks with very high trading volumes (Grammig, Schiereck and Theissen 2000).

The third measure is the number of zero returns. *Zero Returns* is calculated simply by counting the number of daily zero returns of stocks and dividing them by the number of all possible trading days during the 11-month period around fiscal year end. It measures the trading activity in a specific stock (e.g., Daske et al. 2008). The IFRS implementation is expected to have a positive influence on the trading activity for the same reasons already mentioned for turnover.

The last measure to identify the influence on information asymmetry and market liquidity is *Price Impact* of trades. This price sensitivity measure is described by Amihud (2002) and is implemented, for example, by Daske et al. (2008). It assesses the liquidity of a stock. It is defined as the absolute value of daily price change in percent divided by the daily trading volume in currency units (Daske et al. 2008, p. 1133). The approach is slightly changed in this study to become independent of the currency component. In a European setup, there are several currencies and exchange rate changes could have an adverse influence on the results. Therefore, price impact is calculated as the natural logarithm of the mean value of the absolute daily price change in percent divided by the trading volume in percent of total stocks outstanding and is measured over the 11-month period. In this measure, higher values represent higher price sensitivity and greater illiquidity of a stock. Therefore, the expectation is that the increase in disclosure leads to a decreasing price impact of trades.

All four information asymmetry and illiquidity measures (IAIM) are related via multivariate regression models to the IFRS measure, while controlling for market microstructure and bank-specific attributes. The continuous dependent and independent variables are all gathered from *Datastream* and are winsorized at the 1% and 99% quantile in order to control for extreme values and outliers (e.g., Ball, Kothari and Robin 2000; Daske et al. 2008). The number of observations varies between the single variables. Furthermore, only dependent variables with more than 50% of all possible observations are used.[84]

[84] An exception is the number of zero returns where this procedure would lead to a bias.

4.4.2.2 Information Asymmetry

To test H1, the idea is that we want to identify any significant influence of IFRS accounting on the IAIM while controlling for concurrent effects that also might contribute to an enhancement of IAIM. Basically, the approach employed by Leuz (2003) is used which is modified to meet our data requirements, i.e., we also include index membership and additional control variables. In order to study a possible influence of the IFRS application, the basic model to be tested on the four asymmetric information and illiquidity measures (IAIM) is:

$$IAIM_{it} = \beta_0 + \beta_1 ShareTurnover_{it} + \beta_2 MarketValue_{it} + \beta_3 FreeFloat_{it} + \beta_4 IFRS_{it} + \beta_5 StockpriceVariability_{it} + \beta_6 EU2003_{it} + \beta_7 Index_{it} + \sum \beta_j Controls_j + \varepsilon \quad (1)$$

with

Share Turnover$_{it}$	the natural logarithm of the monthly average turnover in shares at the end of month +7,
Market Value$_{it}$	the natural logarithm of the market value of equity of a specific bank's stock at the end of month +7,
Free Float$_{it}$	the number of stocks that are not closely held, as share of total stocks at the end of month +7;
IFRS$_{it}$	a dummy variable equal to one, if the bank reports in accordance with international accounting standards,
Stock Price Variability$_{it}$	the natural logarithm of the daily stock price variance over the 11-month period,
EU2003$_{it}$	dummy variables equal to one if a bank is located in a country that is a member of the European Union as of 2003,
Index$_{it}$	a dummy variable equal to one if the bank's stock is a constituent of the main stock market index ("blue chip index") of a country,
Controls$_j$	dummy variable controls for firm-fixed and period-fixed effects.

The data for the analysis is gathered via *Datastream*, except for *Index* and *EU2003* for which we manually tried to identify a bank's index membership at the end of 2008 or the membership of a bank's country in the European Union as of 2003, respectively. For *Share Turnover*, *Market Value*, and *Free Float*, we apply lagged variables to ensure that all available informa-

tion is completely reflected. The country identification is conducted via the ISIN codes. Furthermore, *IFRS* is identified using *Datastream*.[85] In case of missing data or ambiguity, we manually try to complete the dataset. Otherwise, we drop the observations to prevent misspecifications.

The natural logarithm of all IAIM is used, except for *Zero Returns*. In the regressions on *Turnover* and *Price Impact* as IAIM, the independent variable on share turnover is excluded from the regressions in order to prevent the possibility of collinearity between independent and dependent variables. The reason is that *Price Impact* also contains a turnover component.

As outlined in H1, the IFRS adoption is expected to reduce information asymmetry and increase market liquidity. Therefore, the expectations on bid-ask spread regressions are that *Share Turnover* and *Market Value* exhibit a negative sign since higher turnover and market values are commonly associated with decreasing bid-ask spreads. *Market Value* also controls for other disclosures of a bank that could have influence on the results.[86] The coefficient on *Free Float* is also expected to be negative since a higher share of free floating stocks means that changes in market values are based on a broader basis of market participants and lead to higher market efficiency. We expect the IFRS dummy variable to be negative, indicating a reduction in spreads and higher information efficiency. The coefficient on *Stock Price Variablility* is expected to exhibit a positive sign since a higher volatility is positively associated with uncertainty and leads to higher information asymmetry concerning the future development of stocks. The dummy variable *EU2003* is expected to be negative due to two reasons: Firstly, an EU membership of the countries reflects commitment to minimum standards of the institutional setup within the Eurozone. Secondly, the inclusion of the EU dummies accounts for concurrent effects of other influences on information asymmetry measures, e.g., sinking country risks and institutional background which might also be reflected in bid-ask spreads. It is sufficient to distinguish between EU members and non-members as country-specific factors become less important in increasingly integrated capital markets.[87] The expectation for the coefficient on *Index* is that it exhibits a negative sign, since a bank's membership in the main stock market index of a country ensures a higher market transparency for that specific stock.

[85] For the coding identification, we use a comparable approach to Hail and Leuz (2007, p. 49-52). For example, the IFRS dummy takes the value of one, if the data is coded "International Standards" or "IFRS". A similar approach is also used by Jeanjean and Stolowy (2008, p. 486-487), see also footnote 80.
[86] For this connection and a discussion, see Leuz (2003, p. 461).
[87] See Hail and Leuz (2006, p. 520), citing further literature and giving a more general discussion.

For the regression on *Turnover*, the expectation is that the coefficients on *Market Value* and *Free Float* are positive, since information supply of large banks induces higher turnover and a higher share of publicly available stocks also positively influences turnover. The coefficient on *Stock Price Variability* is expected to exhibit a positive sign, since greater variability in stock prices is positively associated with trading volume (e.g., Leuz 2003, p. 458). The coefficients on the dummy variables *IFRS*, *EU2003*, and *Index* are assumed to have a positive sign. The commitment to the application of IFRS, the adoption of the European rules, and the index membership should be positively related to turnover.

For both regressions on *Zero Returns* and *Price Impact* as IAIM, the expectation is that *Share Turnover* and *Market Value* are negatively related to the market illiquidity measures, since both coefficients reflect indirectly a market's attention with respect to a specific stock.[88] Large firms are more at the center of attention than smaller stocks and, hence, are more liquid even before the transition to IFRS. The coefficients on *Free Float*, *EU2003*, and *Index* are expected to exhibit negative signs, since all variables reflect a different perspective of the level of capital market integration. Therefore, the level of capital market integration besides the effect of preparing IFRS financial statements is measured. The coefficient on *IFRS* is assumed to be negative. The rationale is that the IFRS application increases the market liquidity for a bank's stock.

4.4.2.3 Equity Valuation

As hypothesized in H2, equity valuations by the market participants are expected to increase after transition to IFRS. The second set of regression models tries to identify the effect of IFRS on equity valuations and puts them into relation with the application of IFRS in European banks using two Market Valuation Measures (MVM).

The first measure is *Tobin's Q* which is commonly defined as the replacement cost of assets divided by their book values. Since replacement costs of assets are not directly observable from an external perspective, usually the market value of assets is used (e.g., Daske et al., 2008). *Tobin's Q* is calculated as the total assets less the book value of equity, plus the market value of equity, divided by the total assets.[89] This ratio shows the favorability of a bank company in relation to its single asset components. Basically, if the replacement costs are lower

[88] As mentioned above, in the regressions on *Zero Returns and Price Impact*, *Share Turnover* is excluded as an independent variable.

[89] Alternatively, it can also be calculated as market value of equity plus book value of debt, divided by total assets. For the relation to *Price-to-book Value*, see footnote 77.

than their corresponding book values, the liquidation value is higher than the expected future cash flows generated by the assets. Through the modification mentioned above, *Tobin's Q* puts a firm's prospects in relation to its book values. The higher the market's expectations are about future cash flows generated by the firm, the higher is *Tobin's Q* (e.g., Daske et al. 2008, p. 1138).

The second measure is *Price-to-book Value*. It is calculated as the market value of equity divided by the book value of equity. It measures the market's expectations about the bank's proceedings, i.e., the market participants' forecasts of discounted future cash flows in relation to the book value of equity. Higher values might be interpreted as higher growth expectations which might become clearer through increasing transparency.

As already mentioned in H2, the expectation for both measures is that the application of IFRS leads to a higher equity valuation since the firm's prospects are increasingly predictable and comparable and therefore more valuable to investors. In other words, the forecast of expected future cash flows is no longer adversely influenced by frictions and is more valuable due to useful information conveyed by IFRS financial statements.

Concretely, there are two specifications used in the analysis. The first regression on the MVM includes, in addition to the IFRS dummy, as in prior literature the following control variables: financial leverage, firm size, and stock price variability (e.g., Lang et al. 2004; Daske et al. 2008). We use the logarithm of the market value instead of the often used total assets to control for firm size. We are aware that this might lead to distortions. Therefore, in order to ascertain the validity and stability of results, *Index* is included instead of *MarketValue* to control for the size of a bank in an alternative model specification.

$$MVM_{it} = \beta_0 + \beta_1 MarketValue_{it} + \beta_2 Leverage_{it} + \beta_3 StockPriceVariability_{it} + \beta_4 IFRS_{it} + \sum \beta_j Controls_j + \varepsilon \quad (2)$$

with

$Leverage_{it}$ the relation of (total assets – book value of equity) to total assets at the end of the financial year.

All other variables are defined as above. The expectation is that the sign on the coefficient of *MarketValue* is positive, since a higher valuation of equity is positively related to higher price-to-book values and higher asset valuations. The exhibited sign on *Leverage* is assumed to be positive, since a highly leveraged bank is rather able to yield a higher return on equity, *ceteris paribus*. In the alternative model specification, the coefficient on *Index* is assumed to exhibit a positive sign, since the investors' attention is higher towards banks that are members of the national large cap index. Likewise, the stock price variability is higher for banks with *ex ante* higher growth expectations. Furthermore, the coefficient on *IFRS* is expected to be positive, there are higher growth expectations due to clearer information conveyed to the markets by IFRS accounting in banks.

4.4.2.4 Impact of Mandatory Adoption

In this section, the impact of the way of the IFRS adoption on banks is tested, as outlined in H3. The basic idea is to identify the relation between the voluntary or mandatory adoption of IFRS and the development of market efficiency, evaluated using information asymmetry and market liquidity measures. Additionally, the model controls for the fact that some banks are located in member states of the European Union which might have a concurrent influence on effects. In order to determine whether the mandatory transition also has any impact on the asymmetric information and market liquidity measures, the following analysis is carried out. With this specification we try to clarify whether voluntary adopters experience a different behavior of IAIM when the application becomes mandatory in a country. Banks that do not have to change to IFRS are also included since they do not prepare mandatorily consolidated accounts in accordance to the new standards. This prevents any selection bias in favor of IFRS adopters by including this control group.

As dependent variables, we use the IAIM already introduced from the above analysis: bid-ask spreads, turnover in shares, number of zero returns, and price impact of trades. Comparable approaches are well specified in research (e.g., Daske et al. 2008; Florou and Pope 2009). In order to distinguish between effects for mandatory and voluntary adopters, as well as to differentiate effects according to EU membership, the regression specification is as follows: The dummy variable *Voluntary* is introduced, if a bank uses IFRS before the application of international standards becomes obligatory in a specific country. It is equal to one for all financial statements according to IFRS for voluntary adopters. The dummy variable *Mandatory* is used if the financial statements have to be mandatorily prepared in accordance with IFRS, i.e., for each year when IFRS has to be used for consolidated accounts in a specific jurisdiction. *First*

Mandatory denotes all obligatory first-time applications of IFRS, i.e., the first fiscal year end with financial statements that have to be obligatorily prepared according to IFRS. As already introduced above, *EU2003* captures the effect for banks being located in a country that is an EU member as of 2003 which might also interfere with IFRS application and we also assume to have negative effects on bid-ask spreads, zero returns and price impact, and a positive effect on turnover. Moreover, we introduce an interaction term to account for incremental effects on the market efficiency measures. The coefficient on *Voluntary*Mandatory* describes the incremental effect on voluntary adopters when IFRS become mandatory in a country. In the interaction term setting, the coefficient on *Mandatory* captures the effect of all mandatory applicators, i.e., when *Voluntary* is zero. Likewise, the coefficient on *Voluntary* measures the effect of all voluntarily prepared financial statements before the application becomes mandatory.

In order to control for time-dependent influences and bank-specific effects, the regression also takes into account firm-fixed and period-fixed effects. These indicator variables capture common effects on dependent variables in a specific year or a specific bank that are not necessarily related to the transition in accounting systems (e.g., Daske et al. 2008, p. 1098). Additionally, control variables to account for specific effects unrelated to IFRS transition are also included that have already been introduced above, i.e., *Share Turnover*, *MarketValue*, *Free Float* and *Stockprice Variability*. The specification is as follows:

$$\begin{aligned} IAIM_{it} = \\ & \beta_0 + \beta_1 FirstMandatory_{it} + \beta_2 Voluntary_{it} + \beta_3 Mandatory_{it} + \beta_4 EU2003_{it} \\ & + \beta_5 Voluntary_{it} * Mandatory_{it} + \sum \beta_j Controls_j + \varepsilon \end{aligned} \qquad (3)$$

The information asymmetry and market illiquidity measures (IAIM) are used as dependent variables. In order to prevent collinearity problems, *Share Turnover* is excluded as an independent variable in the regression on *Turnover* and *Price Impact* as dependent variables, as already outlined above. *Controls* represents all control variables mentioned before as well as firm-fixed and period-fixed effects.

4.5 Results of the Empirical Investigation

4.5.1 Descriptive Statistics

Table XXI provides descriptive statistics for the dependent variables applied in this investigation. On average, for about one out of five trading days, there is no price information available for a stock in the dataset. However, the median is only about 12.2% indicating that there are some banks that are irregularly traded which seems to be caused by banks located in smaller countries. These values are within expectations and are comparable to prior studies between about 15% and 30%, on average (e.g., Hail and Leuz 2007, p. 40 or Daske et al. 2008, p. 1104). Bid-ask spreads are on average 0.98% which is somewhat lower if compared to previous studies which might however be explained by the fact that later periods are investigated and banks might be slightly more liquid than firms from other industries.[90] Daily share turnover amounts on average to 0.31% of a bank's total stocks outstanding which is comparable to the findings of Leuz (2003). However, the median value of daily share turnover amounts to 0.13% only. This shows that the distribution is slightly skewed indicating some firms are strongly traded whereas the majority of banks is below the average value. The average price impact of trades is 80.61. However, the median is far lower with only 10.98. This observation is in accordance with the low daily trading volumes and indicates that several stocks are highly price sensitive. However, these figures are not necessarily comparable to prior studies since the calculation is modified, as outlined above. The *Price-to-book Value* amounts on average to 1.73 which is in line with prior investigations. *Tobin's Q* is on average 1.06 which is close to the median value (1.04). Both values indicate that the market values are just a little above their respective book values of assets. Both values are lower than in prior studies, for example, Daske et al. (2008, p. 1104) with a mean (median) of 1.44 (1.12). However, the fact that only banks are covered in this investigation has to be kept in mind which might explain these differences, whereas Daske et al. (2008) study firms from various industries. The lower values might also be explained by the fact that bank-specific assets are often more closely related to their respective market values than assets of firms from other industries, making evaluations easier which might be reflected in a lower Tobin's Q.

[90] For example, Leuz (2003) finds mean bid-ask spreads between 1.72% and 2.26% whereas Hail and Leuz (2007) find yearly median spreads for IFRS adopters and non-IFRS adopters between 0.9% and 1.2% for 2004 and 2005.

Table XXI: Descriptive Statistics of Dependent Variables

This table presents descriptive statistics for the respective dependent variable under investigation. *Zero Returns* depicts the number of daily zero returns, in percent of total trading days over the observation period of 11-months. *Bid-ask Spreads* is the average spread during the observation period, i.e. from month -4 to +7 after the annual results date. *Turnover* denotes the daily mean turnover, as share of total number of shares outstanding, measured over the 11-month period. *Price Impact* is the price impact of trades, measured as the relation of daily price changes divided by the daily trading volume over the period under investigation. *Price-to-book Value* denotes the relation of market value of equity to the book value of equity. *Tobin's Q* is measured as total assets less book value of equity plus market value of equity divided by total assets (e.g., Daske *et al.*, 2008). To account for extreme values, all values, except *Zero Returns*, are truncated at the 1%- and 99%-quantile. Values are only used in the calculations if there are at least 50% of all daily observations available during the 11-month period. N denotes the number of observations for each variable.

Dependent Variables	N	Mean	Median	Std. Dev.	First Quartile	Third Quartile
Zero Returns	1127	19.93%	12.24%	0.210	6.33%	25.00%
Bid-ask Spreads	911	0.98%	0.55%	0.016	0.28%	0.98%
Turnover	1014	0.31%	0.13%	0.007	0.03%	0.38%
Price Impact	959	80.61	10.98	241.345	3.793	48.874
Price-to-Book Value	1011	1.73	1.60	0.77	1.16	2.16
Tobin's Q	880	1.06	1.04	0.09	1.01	1.08

Table XXII provides information about dependent and independent variables in the sample according to the accounting regime in force, i.e., local GAAP or IFRS. In Panel A, bid-ask spreads are significantly lower for the IFRS subsample for both means and medians. The same impression can be reported from *ZeroReturns* for which, on average, about a 25% lower trading inactivity can be reported. *Turnover* seems to be higher for banks using IFRS on average. For the median values an 80% higher trading level can be reported. Even though not being significant in differences, the mean of the price impact of trades is lower on average for the IFRS group indicating a decreased price sensitivity. However, it has to be borne in mind that all effects in this table simply report the comparison of the IFRS observations to the local GAAP observations and do not control for concurrent influences, such as time-dependent effects. For both equity valuation measures, *Price-to-book Value* and *Tobin's Q*, higher means and medians can be reported. Testing for differences confirms the perception of working with two different subsamples for both measures.

The comparison of the dependent IAIM yields lower information asymmetry proxies for *Bid-ask Spreads*, *Zero Returns*, *Price Impact*, a higher information asymmetry proxy for *Turnover*, and slightly higher equity valuation measures. In order to clarify whether the transition to IFRS or other effects such as the ongoing capital market integration, can be held responsible for the observed differences, we use the proxies introduced above in the analysis.

In Panel B, as independent control variables, we find a higher *Stock Turnover*, which is measured at the end of the period under investigation, i.e., month +7 after the fiscal year end. A large and significant difference between the subsamples can also be reported from the market values of the companies for which the average market value is nearly twice the value under local GAAP seven months after fiscal year end. However, as already outlined above, it has to be kept in mind that the market values are very often strongly influenced by time-dependent factors such as business cycles. The share of free floating stocks (*Free Float*) is marginally higher for IFRS (64.15% versus 63.43% in local GAAP) with regard to means. However, median values are 1.5% higher under local GAAP which seems to have no influence. *Shareprice Variability* is higher for the IFRS subsample and significant in differences for both means and medians. *Leverage* indicates slightly higher leveraged banks with regard to means under IFRS. However, this cannot be observed from the comparison of median values indicating a slight reduction in liability quotas.

Table XXII: Descriptive Statistics for Dependent and Independent Variables

This table presents descriptive statistics for the respective dependent variables in the investigation, separated according to accounting regimes in force and measured over the total period under investigation (2001-2008). *Bid-ask Spreads* is the average spread during the observation period, i.e. from month -4 to +7 after the annual results date. *Turnover* denotes the daily mean turnover, as share of total number of shares outstanding, measured over the 11-month period. *Zero Returns* depicts the number of daily zero returns, in percent of total trading days over the observation period of 11 months. *Price Impact* of trades is the relation of daily price changes divided by the daily trading volume over the period under investigation. *Price-to-Book Value* denotes the relation of market value of equity to the book value of equity. *Tobin's Q* is measured as total assets less book value of equity plus market value of equity divided by total assets (e.g., Daske et al. 2008). *Stock Turnover* is the monthly average turnover in shares at the end of month +7 after financial year end. *Absolute Market Value* is measured as market value of equity of a specific bank at the end of month +7. *Free Float* denotes the number of stocks that are not closely held, as share of stocks outstanding. *Stock Price Variance* is the daily volatility measured of a total return index over the 11-month period. *Leverage* denotes the quota of total liabilities to total assets in percent. To account for extreme values, all dependent variable values, except Zero Returns, are truncated at the 1% and 99%-quantile. The independent variable *Stock Turnover* is also truncated at the 1% and 99%-quantile. Values are only used in the calculations if there are at least 50% of all daily observations available during the 11-month period. Testing for differences in means and medians is done using an ordinary t-test (two-sided) and a Wilcoxon signed rank test, respectively. ***,**,* indicate significance according to a two-sided t-test on the 1%-, 5%-, 10%-level. +++,++,+ indicate significance according to a Wilcoxon signed rank test on the 1%-, 5%-, 10%-level.

Panel A: Dependent Variables

Dependent Variables		Local GAAP	N	IFRS	N	Difference
Bid-ask	Mean	1.07%	501	0.86%	410	-0.21% **
Spread	Median	0.63%		0.45%		-0.17% +++
Turnover	Mean	0.27%	525	0.35%	489	0.08% *
	Median	0.09%		0.17%		0.08% +++
Zero	Mean	22.89%	572	16.89%	555	-6.01% ***
Returns	Median	16.88%		8.44%		-8.44% +++
Price Impact	Mean	83.04	481	78.17	478	-4.86
	Median	12.08		10.02		-2.06
Price-to-	Mean	1.66	547	1.80	464	0.14 ***
Book Value	Median	1.54		1.68		0.14 +++
Tobin's Q	Mean	1.05	517	1.07	363	0.02 ***
	Median	1.03		1.05		0.01 +++

Panel B: Control Variables

Stock	Mean	0.23%	503	0.32%	391	0.09% **
Turnover	Median	0.06%		0.14%		0.07% +++
Absolute	Mean	6,187.19	550	11,066.70	430	4,879.51 ***
Market Value	Median	1,089.81		3,330.87		2,241.06 +++
Free	Mean	63.43%	510	64.15%	502	0.72%
float	Median	66.50%		65.00%		-1.50%
Stock Price	Mean	0.00035	570	0.00081	545	0.00046 ***
Variance	Median	0.00018		0.00039		0.00021 +++
Leverage	Mean	91.44%	564	92.77%	501	1.33% **
	Median	94.02%		93.74%		-0.28%

4.5.2 Information Asymmetry and Market Liquidity

In the following, the results of the two model specifications testing the information asymmetry proxies, i.e., bid-ask spreads and on stock turnover, and the illiquidity measures *Zero Returns* and *Price Impact* are presented. Overall, we find a quite high explanatory power in all model specifications in Table XXIII. However, this effect is not uncommon in models controlling for firm-fixed as well as period-fixed effects and is in line with prior investigations (e.g., Hail and Leuz 2007; Daske et al. 2008).[91]

Table XXIII shows the regression of *Bid-ask Spreads* (Model I). One basic finding is that all coefficients except the coefficient on *Market Valu*e exhibit the predicted signs. However, this coefficient estimate is not significant. The coefficient on *IFRS* is significant, indicating a negative influence on bid-ask spreads, even after controlling for period-fixed and firm-fixed effects and in presence of the concurrent control variables. However, the effect of IFRS is much lower in comparison to the effect of being located in an EU member state which seems to play a major role.

Inspecting the model specification on *Turnover* (Model II) leads to a different impression. The coefficient on the IFRS dummy does not suggest any significant impact on turnover. Contrary to expectations, the coefficient on *Free Float* is negative and lacks significance. Additionally, the coefficient on stock price variability is positive and highly significant. This observation is in line with the notion that greater stock price variability is related to higher turnover in stocks (e.g., Leuz 2003). The coefficient on the natural log of the market value is significantly negative which seems counterintuitive at first glance. This might be interpreted as lower trading volumes in growing market capitalization, *ceteris paribus*. Panel B suggests a strong correlation of *Index* and EU2003 which might explain the observation. Most banks having high trading volumes are larger banks that are members of the main stock market index. Hence, most of the size effect might by absorbed by both of those control variables. Therefore, we carry out some robustness checks. As outlined below, this leads to comparable results in relation to the effect of IFRS. The coefficient on the index membership dummy is highly significant and exhibits a positive sign which provides evidence that the attention of the stock market towards large banks is reflected in higher turnover, even after controlling for a bank's absolute market value.

[91] See Wooldridge (2003), p. 466. We rerun the regressions without firm-fixed effects leading to considerably lower explanatory power with an adjusted R^2 between 0.368 and 0.614, confirming this effect.

Table XXIII: Regression Analysis of Information Asymmetry Measures

Panel A presents the results of an ordinary least square (OLS) regression on different measures of information asymmetry. *Bid-ask Spreads* is the natural logarithm of the average bid-ask spread measured as difference between bid and ask prices divided by the midpoint, and measured over the 11-month period under investigation. *Turnover* denotes the natural logarithm of the daily mean turnover of shares in relation to total number of shares over the investigated 11-month period. *ZeroReturns* is calculated by counting the number of daily zero returns of stocks and dividing them by the number of all possible trading days during the 11-month period. *Price Impact* is the natural logarithm of the mean value of absolute daily price change in percent divided by the trading volume in percent of total stocks outstanding.
Share Turnover is the natural logarithm of the monthly average turnover in shares at the end of month +7. *Market Value* is the natural logarithm of the market value of a specific bank. *Free Float* denotes the number of stocks that are not closely held, as share of total stocks. *IFRS* is a dummy variable equal to one if the bank reports in accordance to international accounting standards. *Stock Price Variability* is the natural logarithm of the daily stock price variance over the 11-month period. EU2003 is a dummy variable. It is equal to one if a bank is located in a country that is a member of the European Union as of 2003. The values in parentheses denote the t-values of robust standard errors. N denotes the number of observations. We also control for firm specific and time fixed effects using dummies (not reported). Standard errors are adjusted for intra cluster correlation in banks. F-Statistics are reported according to standard OLS regressions for purpose of comparison. ***,**,* indicate significance according to a two sided t-test on the 1%-, 5%-, 10%-level.

Panel B displays the correlation matrix for independent and dependent variables in the regression analysis. The table displays the correlation table for the regressions on *Bid-Ask Spreads* , *Turnover* , *Zero Returns* , and *Price Impact* as dependent variable. * indicates signficance on the 5%-level.

Panel A: Multivariate Regression Analysis

		Model I Bid-ask Spreads		Model II Turnover		Model III Zero Returns		Model IV Price Impact
Constant		-1.62879 *** *(-3.24)*		-6.03375 *** *(-9.06)*		0.57103 *** *(4.49)*		4.32906 *** *(5.27)*
Share Turnover	(-)	-0.08759 *** *(-4.58)*			(-)	-0.01073 *** *(-2.72)*		
Market Value	(-)	0.00272 *(0.03)*	(+)	-0.34034 * *(-1.98)*	(-)	-0.01157 *(-0.88)*	(-)	0.18077 *(0.85)*
Free Float	(-)	-0.00408 *** *(-3.01)*	(+)	-0.00076 *(-0.30)*	(-)	-0.00003 *(-0.20)*	(-)	-0.00046 *(-0.17)*
IFRS	(-)	-0.19497 ** *(-2.02)*	(+)	0.22539 *(1.38)*	(-)	0.01208 *(0.85)*	(-)	-0.44033 ** *(-2.39)*
Stock Price Variability	(+)	0.15702 *** *(3.31)*	(+)	0.20732 *** *(3.47)*	(+)	-0.03612 *** *(-3.90)*	(+)	0.23210 *** *(3.76)*
EU2003	(-)	-1.73908 *** *(-5.89)*	(+)	1.23464 *** *(2.80)*	(-)	0.07183 ** *(2.23)*	(-)	-2.69042 *** *(-4.69)*
Index	(-)	-1.56489 *** *(-3.69)*	(+)	2.36545 *** *(3.56)*	(-)	-0.76726 *** *(-33.78)*	(-)	1.42306 *** *(3.01)*
Adj. R^2		0.788		0.866		0.834		0.861
F-Stat *Prob*		19.440 0.000		37.000 0.000		27.800 0.000		34.900 0.000
N Banks		119		136		135		133
N		647		815		781		781
Firm-fixed effects, Period-fixed effects		*included*		*included*		*included*		*included*

Table XXIII (contd.): Regression Analysis of Information Asymmetry Measures

Panel B: Correlation Tables

	Bid-Ask Spreads	Share Turnover	Market Value	Free Float	IFRS	S. P. Variability	EU2003	Index
Bid-Ask Spreads	1.000							
Share Turnover	-0.537 *	1.000						
Market Value	-0.641 *	0.487 *	1.000					
Free Float	-0.283 *	0.235 *	0.218 *	1.000				
IFRS	-0.232 *	0.105 *	0.278 *	0.029	1.000			
S. P. Variability	0.156 *	0.144 *	0.179 *	-0.093 *	0.281 *	1.000		
EU2003	-0.271 *	0.098 *	0.282 *	0.163 *	0.067	0.039	1.000	
Index	-0.490 *	0.576 *	0.729 *	0.210 *	0.186 *	0.250 *	0.218 *	1.000
	Zero Returns	Share Turnover	Market Value	Free Float	IFRS	S. P. Variability	EU2003	Index
Zero Returns	1.000							
Share Turnover	-0.462 *	1.000						
Market Value	-0.498 *	0.504 *	1.000					
Free Float	-0.151 *	0.228 *	0.175 *	1.000				
IFRS	-0.255 *	0.080 *	0.254 *	0.036	1.000			
S. P. Variability	-0.308 *	0.135 *	0.131 *	-0.058	0.262 *	1.000		
EU2003	-0.183 *	0.116 *	0.285 *	0.175 *	0.027	0.016	1.000	
Index	-0.393 *	0.568 *	0.705 *	0.202 *	0.171 *	0.224 *	0.197 *	1.000
	Turnover	Market Value	Free Float	IFRS	S. P. Variability	EU2003	Index	
Turnover	1.000							
Market Value	0.508 *	1.000						
Free Float	0.223 *	0.166 *	1.000					
IFRS	0.124 *	0.276 *	0.026	1.000				
S. P. Variability	0.169 *	0.134 *	-0.060	0.269 *	1.000			
EU2003	0.197 *	0.301 *	0.175 *	0.041	0.026	1.000		
Index	0.583 *	0.718 *	0.194 *	0.195 *	0.228 *	0.214 *	1.000	
	Price Impact	Market Value	Free Float	IFRS	S. P. Variability	EU2003	Index	
Price Impact	1.000							
Market Value	-0.505 *	1.000						
Free Float	-0.290 *	0.161 *	1.000					
IFRS	-0.077 *	0.259 *	0.035	1.000				
S. P. Variability	0.138 *	0.148 *	-0.056	0.275 *	1.000			
EU2003	-0.168 *	0.257 *	0.166 *	-0.002	0.021	1.000		
Index	-0.529 *	0.707 *	0.198 *	0.180 *	0.239 *	0.177 *	1.000	

Turning to the model on *Zero Returns* (Model III), the results indicate that the coefficient on IFRS has no significant impact. Therefore, as in the Model on *Turnover* (Model II) we cannot refute the hypothesis that IFRS has no effect on trading activity in general. The coefficient on stock price variability is negatively related to *Zero Returns*, which means that a larger stock price variance is associated with a sinking number in *Zero Returns*. The explanation might be that stocks that are traded less often show lower variances, *ceteris paribus*. Contrary to expectations the coefficient on *EU2003* is, counterintuitively, slightly positively related to *Zero Returns*. This would mean that banks in EU member countries exhibit a slightly higher number of *Zero Returns,* all else being equal. However, this might also be an interference with the coefficient estimate on the dummy variable controlling for index membership for which we

report a highly significant negative effect on *Zero Returns*. Both of the variables are positively correlated which might result in this observation.
The multivariate regression model of *Price Impact* of trades (Model IV) does yield a highly significant influence of IFRS. All coefficients except the coefficient on the variables controlling for market value and index membership exhibit the predicted signs.

Taken together, the results indicate a relation between IFRS accounting and information asymmetry and market liquidity measures, if measured by bid-ask spreads and the price impact in support of H1, even after controlling for possible concurrent effects, such as general market conditions or time-dependent effects. However, a systematical influence on the number of potential trading days without trading as well as a positive influence on turnover cannot be confirmed given the results above. Rather, general market conditions seem to have a superior influence. Therefore, there is mixed evidence of IFRS accounting having an impact on information asymmetry and market liquidity measures.

Robustness Checks
Since *Market Value* and *Index* are highly correlated, see Panel B of Table XXIII, we also run regressions excluding either *Market Value* or *Index*. This yields comparable results in relation to our coefficient estimates on IFRS which seem relatively stable for all tested specifications.

4.5.3 Equity Valuation

The results of the regression analyses on equity valuation measures are presented in Table XXIV, Panel A. Both regression specifications of *Tobin's Q* as a dependent variable yield no significant relation between asset valuation and IFRS accounting. The coefficients of the control variables on stock price variability, market value, and index membership exhibit the expected signs. The coefficient on *Index* suggests that index members have a significantly higher *Tobin's Q*, all else being equal. This might be caused by the fact that larger banks are more highly leveraged in comparison to smaller banks.

A different impression can be reported from the regression results on *Price-to-book Value*. For both specifications, the coefficient on IFRS exhibits a negative and significant sign, meaning that IFRS is negatively related for both alternative specifications, after controlling for market control variables and firm-specific and period fixed effects. This is contrary to our expectations and indicates that *Price-to-book Value* is lower for banks using IFRS, all else being equal. A reason might be that book value of equity is higher according to IFRS. The

result is in line with prior results for example from Daske et al. (2008, p. 1115) who find a positive impact on equity valuations only after controlling for anticipation of the mandatory application. They also point out that the observations may be adversely influenced as a consequence of accounting effects since higher book values of equity and assets under IFRS might decrease the equity valuation measures. An adverse influence caused by time-dependent effects such as business cycles, should be neutralized, at least partly, by controlling for period-fixed effects. The remaining coefficients of the control variables for market value and leverage exhibit the expected signs and are partly significant, indicating a relationship to equity valuation if measured by *Price-to-book Value*. The coefficient on *Stock Price Variability* is significantly negative related to *Price-to-book Value* in one specification which seems counterintuitive. However, this might be caused by the interference of the variable controlling for index membership.

To summarize this section, the positive impact of IFRS accounting on asset and equity valuation of the market cannot be supported, refuting H2. Pae, Thornton and Welker (2008) find that the mere anticipation of greater transparency associated with the IFRS introduction might increase the value of a firm with high agency costs. This might imply that the positive effect of IFRS introduction is anticipated by the market so that the actual transition might have no or even a negative impact on equity valuations.

Table XXIV: Regression Analysis of Asset and Equity Valuation Measures

Panel A presents the results of an ordinary least square (OLS) regression on different measures of information asymmetry. *Tobin's Q* is calculated as total assets less the book value of equity, plus market value of equity, divided by total assets. *Price-to-book Value* (*PTBV*) is calculated by the market value of equity divided by the book value. *Market Value* is the natural logarithm of the market value of equity at the end of month +7. *Leverage* denotes the relation of debt as share of total assets. *IFRS* is a dummy variable equal to one if the annual financial statement is prepared in accordance to IFRS. *Index* is a dummy variable equal to one if the bank is constituent of the main stock market index of a country. The values in parentheses denote the t-values of robust standard errors. N denotes the number of observations. We also control for firm-specific and period-fixed effects using dummies (not reported). Standard errors are adjusted for intra cluster correlation in banks. F-Statistics are reported according to standard OLS regressions for purpose of comparison. ***,**,* indicate significance according to a two sided t-test on the 1%-, 5%-, 10%-level.

Panel B displays the correlation matrix for independent and dependent variables in the regression analysis. The upper (lower) table displays the correlation table for the regressions on Tobin's Q (PTBV) as dependent variable. * indicates significance on the 5%-level.

Panel A: Multivariate Regression Analysis

		Tobin's Q		Tobins's Q		PTBV		PTBV
Constant		0.37769 **		1.18349 ***		-4.34610 ***		0.37958
		(2.29)		*(7.55)*		*(-4.98)*		*(1.41)*
Market Value	(+)	0.09269 ***			(+)	0.79124 ***		
		(9.77)				*(9.34)*		
Leverage	(+)	-0.02549	(+)	-0.11823	(+)	0.22639	(+)	1.22902 **
		(-0.19)		*(-0.69)*		*(0.38)*		*(2.29)*
Stock Price Variability	(+)	0.00581 **	(+)	0.00321	(+)	0.01245	(+)	-0.06739 **
		(2.48)		*(0.92)*		*(0.37)*		*(-2.08)*
IFRS	(+)	0.00108	(+)	-0.01131	(+)	-0.29656 ***	(+)	-0.43660 ***
		(0.12)		*(-0.92)*		*(-3.15)*		*(-3.49)*
Index			(+)	0.02619 **			(+)	0.21222
				(2.00)				*(0.43)*
Adj. R^2		0.815		0.697		0.734		0.617
F-Stat		27.340		14.900		17.390		12.020
Prob		0.000		0.000		0.000		0.000
N		870		870		880		1,005
N Banks		135		135		138		138
Firm-fixed effects, Period-fixed effects		*included*		*included*		*included*		*included*

Panel B: Correlation Tables

	PTBV	Market Value	Leverage	Stock P.Variability	IFRS	Index
PTBV	1.000					
Market Value	0.270 *	1.000				
Leverage	0.046	0.148 *	1.000			
Stock P.Variability	0.132 *	0.136 *	-0.118 *	1.000		
IFRS	0.221 *	0.319 *	0.058	0.243 *	1.000	
Index	0.187 *	0.744 *	0.158 *	0.220 *	0.221 *	1.000

	Tobin's Q	Market Value	Leverage	Stock P. Variability	IFRS	Index
Tobin's Q	1.000					
Market Value	0.121 *	1.000				
Leverage	-0.373 *	0.165 *	1.000			
Stock P.Variability	0.162 *	0.145 *	-0.122 *	1.000		
IFRS	0.125 *	0.328 *	0.010	0.247 *	1.000	
Index	0.082 *	0.749 *	0.176 *	0.219 *	0.217 *	1.000

4.5.4 Influence of Mandatory Transition on Banks Located in EU Member Countries

In Table XXV, the results of the multivariate regression on mandatory transition are presented. The coefficient on *First Mandatory* has a significant adverse effect for most specifications, indicating an unfavorable effect on information asymmetry and market liquidity measures. A reason might be the adjustment to the new accounting system for many market participants in terms of both intertemporal comparability and comparability between firms. As in the prior section, explanatory power is relatively high in all regressions. Only in the regression of *Price Impact*, the coefficient estimates on *Mandatory* become significant. The coefficients on *Voluntary* yield that voluntary adopters do not report a distinct influence on IAIM as well. Obviously, *EU2003* has a significant effect on all IAIM.

Model I in Table XXV, which captures the effect on bid-ask spreads, indicates that the mandatory first-time adoption has a positive impact. We find no evidence that mandatory adopters might experience a negative impact on spreads as well as no impact on spreads turning to voluntary applications prior to mandatory usage of IFRS and, again, later, when IFRS has to be mandatorily applied. The first mandatory results presented according to the new standards significantly increase spreads which is in line with expectations. Taken together, the evidence suggests that the first mandatory annual results conveyed temporary confusion to the markets.

The regression on turnover is displayed in Model II of Table XXV. *FirstMandatory* seems to have no significant effect at all. Likewise, the coefficients *Voluntary* and *Voluntary*Mandatory* seem to have no significant effect on turnover, contrary to *Mandatory* which seems to have a significant positive effect. This indicates that mandatory adopters seem to experience a significant incremental increase in *Turnover*. However, banks located in EU member countries as of 2003 experience a significant positive effect on *Turnover* which seems to be one dominating effect. This result is in line with the results from previous studies (e.g., Daske et al. 2008). An explanation is that the transparency and comparability of these markets is generally higher which implies that measured effects are strongly influenced by the general equalization of the institutional background in the EU.

Table XXV: Multivariate Regression Analysis of Information Asymmetry Measures with Control Variables

This table presents the results of an ordinary least square (OLS) regression on different measures of information asymmetry. *Bid-ask Spreads* is the natural logarithm of the average bid-ask spread measured as difference between bid and ask prices divided by the midpoint, and measured over the 11-month period under investigation. Turnover denotes the natural logarithm of the daily mean turnover of shares in relation to total number of shares over the investigated 11-month period. *ZeroReturns* is calculated by counting the number of daily zero returns of stocks and dividing them by the number of all possible trading days during the 11-month period. *Price Impact* is the natural logarithm of the mean value of absolute daily price change in percent divided by the trading volume in percent of total stocks outstanding. As independent variables are defined as follows: *First Mandatory* is a dummy variable equal to one if the financial statements are the first financial statements mandatorily prepared in accordance to IFRS. *Voluntary* is a dummy variable if a banks initially applies IFRS voluntarily, starting in the period of the first voluntary IFRS application. *Mandatory* is a dummy variable equal to one if a bank mandatorily applies IFRS for each year of mandatory application. The interaction term *Voluntary*Mandatory* captures the incremental effect for voluntary adopters after IFRS become mandatory in a country. *StockTurnover* is the natural logarithm of the monthly average turnover in shares at the end of month +7. *MarketValue* is the natural logarithm of the market value of a specific bank. *FreeFloat* denotes the number of stocks that are not closely held, as share of total stocks. *Stock Price Variability* is the natural logarithm of the daily stock price variance over the 11 month period. The regressions are also include firm-fixed and period-fixed effects which are not reported. The values in parantheses denote the t-values of robust White cross-section standard errors and account for correlation within clusters. F-Statistics are reported according to standard OLS regressions for purpose of comparison. ***,**,* indicate significance at the 1%-,5%- or 10%-level. *N Observations* (*N Banks*) denotes the number of observations (banks).

	Model I Bid-ask Spreads	Model II Turnover	Model III Zero Returns	Model IV Price Impact
Constant	-2.27042 ***	-4.75548 ***	0.63588 ***	4.42543 ***
	(-3.79)	*(-4.38)*	*(4.37)*	*(2.84)*
First Mandatory	0.24528 **	-0.54498	-0.02340	0.71947 *
	(2.05)	*(-1.65)*	*(-1.65)*	*(1.95)*
Voluntary	-0.17692	-0.14375	-0.01481	-0.12807
	(-0.95)	*(-0.28)*	*(-0.57)*	*(-0.21)*
Mandatory	-0.19961	0.92325 *	0.01159	-1.15623 **
	(-0.89)	*(1.73)*	*(0.43)*	*(-2.10)*
EU2003	-0.21352	0.82689 **	-0.68122 ***	-2.43346 ***
	(-0.37)	*(2.16)*	*(-17.53)*	*(-4.19)*
Voluntary*Mandatory	0.01645	-0.27410	0.01438	0.62574 **
	(0.12)	*(-1.36)*	*(0.93)*	*(2.19)*
Stock Turnover	-0.08308 ***		-0.01106 **	
	(-3.61)		*(-2.51)*	
Market Value	0.04761	-0.19363	-0.01779	0.12278
	(0.43)	*(-1.33)*	*(-1.17)*	*(0.57)*
Free Float	-0.00463 ***	-0.00093	-0.00001	0.00076
	(-3.06)	*(-0.34)*	*(-0.05)*	*(0.27)*
Stock Price Variabilty	0.11692 **	0.22464 ***	-0.03035 ***	0.19388 ***
	(2.15)	*(3.75)*	*(-2.90)*	*(2.83)*
Adj. R^2	0.784	0.887	0.813	0.877
F-Stat	18.81 ***	43.48 ***	23.94 ***	39.06 ***
Prob	0.00	0.00	0.00	0.00
N Banks	100	116	116	115
N Observations	559	701	688	687
Firm-fixed effects, Period-fixed effects	*included*	*included*	*included*	*included*

Zero Returns indicates that the first mandatory application seems to have no significant effect on the number of zero returns. Likewise, for the coefficient estimates on both *Voluntary* and *Mandatory* as well as *Voluntary*Mandatory* no significant effect can be reported. Analogously to prior observations, being located in an EU member country of 2003 is significantly negatively associated to the number of zero returns. In general, the observations on *Zero Returns* confirm the results from the prior sections suggesting no significant influence of IFRS on this measure.

Model IV presents the results for the price impact of trades. The result is consistent with the perception that the obligatory first-time IFRS adoption, i.e., the first mandatory annual results reported under IFRS, seems to introduce additional confusion in the market at first which is

reflected by a significantly positive effect on *Price Impact*. On the one hand, mandatory adopters experience a significant incremental decrease indicating a favorable effect on *Price Impact*. On the other hand, the overall effect is significantly weaker for voluntary adopters when IFRS become mandatory. The strongest negative and highly significant effect can – again as in most models on other IAIM – be reported from *EU2003* indicating a strong influence by the general market background.

To summarize, the analysis in this section leaves an ambiguous impression. The results indicate that the first-time mandatory adoption of IFRS introduced confusion into markets initially. In total, the effect of voluntary adoption suggests no sustained impact for each group of IFRS adopters, whereas mandatory adoption partly seems to have an impact on *Turnover* and *Price Impact*. One strong result is that the EU2003 membership of the countries which controls for the general institutional background and market situation seems to have a sustained effect on the IAIM. This result of the analysis could also be interpreted as the general institutional background and the relatively homogenous market of EU member countries as of 2003 enhancing information asymmetry and market liquidity of banks more than the homogenization of accounting systems.

As robustness check, we also rerun the regressions omitting the interaction term which is not reported. This confirms our main results with an impact of *Mandatory* on *Turnover* and *Price Impact*, and none of the coefficient estimates on *Voluntary* being significant, suggesting no significant impact for voluntary adopters.

4.6 Conclusion

We investigate a large sample of over 151 European banks over an 8 year period (2001-2008). To the best of our knowledge, this is the first investigation studying the effect of mandatory adoption of IFRS on a large sample of banks in Europe. The basic goal was to clarify whether the changeover to IFRS has a positive influence on information asymmetry and market liquidity measures which then could be interpreted as a market efficiency improvement. Furthermore, the study tries to give an answer to the question whether the IFRS transition influences the market valuation of European banks. Previous findings suggest that the results should be even more pronounced for banks since this group should experience larger transparency gains during transition. The last question to be answered is whether mandatory adopters of IFRS benefit more than voluntary adopters. The study is separated into three sections.

Firstly, the impact of IFRS accounting on information asymmetry and market efficiency measures is studied. The results yield a significant negative influence on bid-ask spreads and a significant reduction of price impact throughout the period under investigation. However, both of the other measures do not indicate significant lower information asymmetry or market illiquidity.

Secondly, the investigation on asset and equity valuation does not offer evidence for banks preparing their financial statements in accordance with international standards having significantly higher asset and equity valuations. The finding suggests a negative influence for some equity valuations which seems to be confusing. This result leaves two possibilities for interpretation which are open to further discussion. First, IFRS accounting might not provide markets with superior information in order to enhance bank evaluations. Second, banks might already be transparent to investors even before the transition to IFRS, not leading to additional significant transparency effects.

The third section concentrates on the effect of mandatory versus voluntary adoption. The results offer mixed evidence. Sustainably greater benefits on IAIM effects for voluntary adopters as in prior investigations (e.g., Daske et al. 2008) cannot be confirmed on the basis of the observations. Rather, we get a contrary impression with mandatory adopters partly benefiting from the IFRS adoption. However, according to our results being a voluntary adopter after IFRS become mandatory seems to have a slightly unfavorable effect on IAIM. Moreover, we

find that being located in the European Union alone improves information asymmetry and market liquidity which seems to have a leading effect on information asymmetry measures.

Taken together, the results indicate that IFRS might have an effect on information asymmetry and market liquidity measures when measured using bid-ask spreads and price impact. However, we find no sustainable evidence for enhanced market valuations of banks after transition to IFRS. Market efficiency partly increases after mandatory adoption of international standards which is in line with the results of Horton, Serafeim and Serafeim (2013). However, even though we accounted for firm-specific risks and a broad variety of other concurrent microeconomic influences, it cannot be ruled out that the observations are, at least in part, driven by the ongoing market integration in the European Union and an increase of the investor base rather than the change in accounting rules.

5 IFRS Application of European Banks and the Effects on Accounting Quality

5.1 Introduction

The controversial discussion around the introduction of IFRS in Europe led to a wide variety of opinions concerning the ability of IFRS accounting to generate superior information. Some arguments in favor of the new standards are that the change in accounting systems leads to more transparency, more market efficiency, and lower cost of equity capital for the firms. However, from a company perspective, the introduction of a new accounting system is only favorable if the benefits of the application, i.e., the arguments mentioned above, outweigh the costs of implementing and maintaining the new accounting system. Furthermore, e.g. in Germany, very often the old accounting systems also have to be kept since the IFRS accounting system does not necessarily release the companies from the obligation to prepare individual financial statements in accordance with local GAAP standards.

One central advantage that would legitimate IFRS accounting is if it considerably improves the accounting quality. There are several definitions of accounting quality. Accounting quality can be defined as the financial statement information reflecting more precisely the real underlying economic situation of that firm, i.e., its "true" firm value. Since the "true" firm value cannot be observed, the observable market values are used as a proxy. Accounting quality is therefore often referred to as "value relevance" of accounting measures.[92] Additionally, the superior stringency of IFRS is often claimed to convey clearer information to the market in a way that it is less prone to subjective influences on reported earnings of a firm's management. Therefore, the remaining discretionary degrees of freedom for earnings management can also be interpreted as a measure of accounting quality. These circumstances might enhance the investors' ability to make reasonable investment decisions, thereby, improving capital market efficiency.

Banks are often excluded in studies investigating the benefits of the IFRS transition since they embody a special industry. However, banks often contain more financial assets and liabilities which are publicly traded in comparison to firms of other industries. For example, the introduction of IAS 39, which plays a major role in the financial statements of banking institutions,

[92] For an extensive literature overview, see, e.g., Barth et al. (2001).

leads to changes in the valuation of many financial assets and liabilities. A body of literature finds that banks' fair value disclosures of asset and liability securities and loans have higher value relevance in contrast to their respective book values (e.g., Barth 1994; Barth, Beaver and Landsman 1996; Mozes 2002). Furthermore, Barth et al. (1996) also show that for US banks even differences between fair values and book values of bank loans are value relevant. In a comparable setting, Eccher, Ramesh and Thiagarajan (1996) observe that the obligatory requirements of SFAS 107 to publish fair value information about specific items, e.g., fair value disclosures of net loans, might have additional, albeit lower value relevance than securities. Nissim (2003) finds that banks might overstate reported fair values which are supposed to represent the intrinsic values of loans. Taken together, an implication of these results would be that accounting systems measuring a larger share of assets at fair value have higher value relevance than accounting systems that rely on valuation at cost. However, from the perspective of banking supervision, this might also have negative implications in terms of increasing regulatory capital volatility. This makes the investigation of changeover effects on banks particularly interesting since many European banks have been using rather conservative valuation measures, e.g., at (amortized) cost, prior to transition to IFRS. Therefore, the relation between the market value and the assets and liabilities might be stronger in banks after transition to IFRS which allows more fair value accounting for many banking-specific assets and liabilities.

The contribution to the existing literature is threefold. Firstly, literature suggests that the application of IFRS has ambiguous effects on value relevance and earnings management.[93] However, in our study the effect might become clearer since the institutional setup is held to be comparable using only data of banks in Europe. Secondly, another argument is that empirical research often concentrated on the voluntary adoption so far due to data availability. The mandatory adoption in 2005 in many European countries enables us to study the development over a larger period after the application of IFRS became mandatory. The investigation of voluntary and mandatory adopters in one large sample over a decade (1999-2008) might have other implications since the sample does not suffer from a self-selection bias caused by the investigation of voluntary adopters only. Thirdly, until today, the effects on banking institutions have been widely neglected in literature. To the best of our knowledge, this is the first investigation concentrating on value relevance of accounting measures and earnings management for European banks before and after mandatory transition to IFRS. The advantage of this

[93] For a discussion, see Barth, Landsman and Lang (2008, p. 472-473).

study is that we use a variety of accounting quality measures taking different perspectives and analyze a homogenous dataset in order to clarify whether the accounting information is really superior in terms of value relevance and earnings management.

Concretely, we study whether IFRS accounting is really more value relevant in that the accounting information, i.e., financial statement items, are better reflected in market values of equity. Furthermore, we analyze whether IFRS are more stringent in that they reduce discretionary degrees of freedom for a firm's management to manage earnings which might then be interpreted as higher accounting quality. We find no sustainable evidence suggesting a higher value relevance of earnings and book value of equity for banks applying IFRS. However, there is evidence that some financial assets such as specific investments and loans, might have higher value relevance under IFRS. The test for incorporation of economic income in accounting income does not provide evidence of a significantly faster reaction of earnings under IFRS. Furthermore, the incorporation of economic losses in accounting income seems not to be more pronounced for local GAAPs. The set of tests concerning earnings management yields no sustained evidence that earnings management is lower for IFRS. In general, these results suggest a rather weak impact on value relevance and earnings management of IFRS accounting standards.

The remainder is organized as follows: Section 5.2 provides related investigations and their results. Section 5.3 introduces the hypotheses and the methods used. Section 5.4 describes the dataset. Section 5.5 presents the results and a discussion. Finally, section 5.6 recapitulates the main results and offers a conclusion.

5.2 Related Literature

There are two streams of literature investigating the topics relevant to this paper. The first stream studies the relevance of accounting measures for market values. Most empirical investigations relate to the Ohlson (1995) model. Based on the valuation premise of a company's market value being the present value of expected dividends and a clean surplus property, Ohlson (1995) derives a relation between book value of equity, the present value of expected abnormal earnings and the market value of a company.[94] The quality of an accounting system might be defined by its value relevance; concretely, the combined explanatory power R^2 of book value of equity and earnings for the market value of a firm (e.g., Harris, Lang and Möller, 1994). Another idea is that a stronger slope coefficient, i.e., pricing weight between a firm's accounting amounts and its market value, might be interpreted as information value of an accounting item to be more relevant over another (Bartov, Goldberg and Kim 2005; Hung and Subramanyam 2007). Usually, empirical studies on this topic make use of association study approaches to investigate the valuation effects in the long term (Mölls and Strauß 2007, p. 958).

Collins, Maydew and Weiss (1997) study the long-term effects of value relevance for a period of 40 years (1953-1993) for firms listed on NYSE, AMEX, and NASDAQ and find that the combined value relevance of book value of equity and earnings increases over time if measured by explanatory power. Furthermore, they identify a shift of value relevance from earnings to book value of equity. Several studies concentrate on the value relevance of earnings and equity under different accounting systems (e.g., Ashbaugh and Olsson 2002; Bartov, Goldberg and Kim 2005; Hung and Subramanyam 2007). Ashbaugh and Olsson (2002) compare different accounting-based valuation systems for firms that are cross-listed in the United States and the United Kingdom. They conclude that the earnings capitalization model, i.e., earnings to explain market prices, is the best valuation model when reporting under IAS. Bartov, Goldberg and Kim (2005) compare German GAAP, U.S. GAAP, and IAS for a large sample of German firms. They show that the value relevance of German GAAP earnings is lower. However, this observation does not hold true for firms writing losses which could be interpreted as the specific information needs of creditors becoming more important in such situations. Furthermore, they find no significant difference between the value relevance of U.S. GAAP and IAS earnings which gives support to the hypothesis that U.S. GAAP is not

[94] For an extensive discussion, see for example Dumontier and Raffournier (2002, pp. 129-131) and Mölls and Strauß (2007, pp. 958-959)

superior in terms of value relevance for capital markets. Hung and Subramanyam (2007) investigate the value relevance of IFRS and German GAAP measures of book value of equity and earnings. They observe that the combined value relevance measured by explanatory power is slightly higher for German GAAP measures. Comparable to Collins, Maydew and Weiss (1997), they also determine a shift in relevance from earnings to book value of equity in the transition from German GAAP to IFRS. They deduce the reason is that IFRS income is more transitory whereas book value of equity is more important in the valuation under IFRS. However, it has to be kept in mind that Hung and Subramanyam (2007) compare the restated financial statements according to IFRS with the financial statements initially provided under German GAAP. This means that the financial statement information has already been conveyed to the capital market when the restated information is made public. Hence, the information content of the restated IFRS information is not necessarily new and comparable to the originally prepared information when comparing IFRS accounting measures and the original market values, which possibly might adversely influence the results.

Capkun et al. (2008) investigate the mandatory transition effects for a large European sample for the same set of firm years. Their results yield that IFRS earnings reconciliations add value relevant information for markets. Paananen and Lin (2009) find that the mandatory implementation of IFRS led to a decrease in value relevance in Germany. They identify standard changes and new standards around the mandatory adoption date as the most likely explanation, rather than new adopters being responsible for this reduction. Taken together, research provides mixed evidence of accounting measures according to international accounting standards exhibiting higher accounting quality by providing higher value relevance.

The second stream of literature focuses on earnings management. Earnings management is defined in literature as the management's modification of information about economic performance in order to mislead stakeholders or to influence contractual outcomes, i.e., to conceal the true firm performance or the private control benefits of the management (e.g., Healy and Wahlen 1999, p. 368; Leuz, Nanda and Wysocki 2003, p. 506). The basic perception is that more stringent accounting rules reduce the possibility of discretionary choices for management, thereby reducing earnings management. This leads to higher transparency for capital markets so that a company's situation becomes more evident to investors. Conversely, one could also argue that these discretionary degrees of freedom might also yield meaningful interpretations in that this modified information better reflects the true economic situation and

therefore increases comparability. Based on these conclusions, a wide range of empirical studies investigates earnings management (e.g., Burgstahler and Dichev 1997; Leuz, Nanda and Wysocki 2003; Glaum, Lichtblau and Lindemann 2004, Van Tendeloo and Vanstraelen 2005; Burgstahler, Hail and Leuz 2006; Paananen and Lin 2009). The baseline conclusion is that there is evidence for the presence of earnings management and that, beside the accounting system in use, firm characteristics such as firm size or leverage also play a role. Furthermore, intense earnings management is favored by, for example, small stock markets, high ownership concentration and weak legal enforcement (Leuz, Nanda and Wysocki 2003) as well as strong book-tax conformity (Burgstahler, Hail and Leuz 2006). In view of these facts, Meek and Thomas (2004, p. 32) remark that the mere change in accounting standards is unlikely to improve information value. Similarly, Van Tendeloo and Vanstraelen (2005) find that earnings management is not reduced for German firms voluntarily adopting IFRS prior to mandatory adoption. Three recent studies investigating earnings management concentrate on the IFRS adoption in Europe (Jeanjean and Stolowy 2008; Chen et al. 2009; Paanen and Lin 2009). They suggest that earnings management is still present after the IFRS introduction or that earnings management and loss avoidance has even increased in some cases. In general, the studies conclude that differences in institutional factors or changes in the standards might also be responsible for the observations. Gebhardt/Novotny-Farkas (2011) investigate the mandatory adoption of IFRS of European banks and the impact on loan loss provisioning as possibility for income smoothing. They find that this possibility is reduced after transition to IFRS and strongly depends on other institutional factors like the stringency of banking supervision.

Taken together, the results of the aforementioned studies suggest that very often the effects are not clearly attributable to specific qualities and are also influenced by a wide variety of institutional prerequisites or an increase in capital market integration. However, this study is one of the first to investigate potential benefits of the IFRS transition of European banks on a long-term basis after the new standards became mandatory using a relatively homogenous institutional setup comprising European banks only. Furthermore, we try to identify the influence of IFRS and separate effects by explicitly controlling for other competing influences in our analysis.

5.3 Hypotheses and Methodology

5.3.1 Hypotheses Development

5.3.1.1 Value Relevance, Earnings Management, and Accounting Quality

There are several approaches to measure an increase in accounting quality. This paper concentrates on two measures: value relevance and earnings management. Value relevance is given as the ability of financial statement information to capture and reflect information, regardless of the source, that is measured through the contemporaneous market price of a firm (Francis and Schipper 1999, p. 325).[95] The relation between value relevance and accounting quality is that a higher association of accounting items' amounts and the market value of a firm might be interpreted as a better and more reliable reflection of a firm's true economic condition and, therefore, as higher accounting quality (Barth, Beaver and Landsman 2001, cited in Barth, Landsman and Lang 2008, p. 477). Furthermore, higher accounting quality, i.e., tighter accounting standards, increases earnings quality which is measured by the variability of reported earnings and the reflection of earnings in market value changes reducing accounting earnings management (Ewert and Wagenhofer 2005, p. 1102).

5.3.1.2 Value Relevance of Equity and Earnings

As already outlined, an increase in value relevance can be mirrored by accounting information that better reflects the market value of a firm. This relation, however, rests on several assumptions: Firstly, publicly available information, which might also be included in financial statements, has to be used by investors to find the market price of a firm. In other words, the semi-strong form of the efficient market hypothesis is implicitly assumed (Fama 1970). Critics might argue that the market price reflects expectations about future cash flows and that accounting primarily reflects past events (e.g., Mölls and Strauß 2007, p. 956). However, through the increased application of market prices in the valuation of assets and liabilities under IFRS, expectations about future developments are implicitly included in financial statement information. This line of argumentation will be extended in the next section. Secondly, rational expectations of market participants are also assumed to hold true, i.e., investors do not make systematic errors in the valuation of a firm. Both assumptions are necessary to meet the requirement that the market value of a firm can be used as best proxy for the "true" underlying firm value (Mölls and Strauß 2007, p. 956). As outlined in the previous section, the model approach of Ohlson (1995) is used as theoretical underpinning of the em-

[95] There are alternative definitions of value relevance (e.g., Francis and Schipper 1999, p. 325-327). However, this definition is well-established in literature.

piricial studies on that topic. In order to operationalize the model, value relevance of accounting information is measured by the association of the book value of equity and earnings with market values (e.g., Hung and Subramanyam 2007). IFRS accounting with principle-based standards increases value relevance of book value of equity and earnings. If principle-based accounting such as IFRS, is of higher quality we should be able to observe higher value relevance:

H1: The value relevance of book value of equity and earnings is greater for banks using IFRS.

5.3.1.3 Value Relevance of Financial Statement Items

One change in accounting assumptions caused by the transition is the change from a rather conservative accounting model under local GAAP to a "true and fair view" under IFRS.[96] For example, one crucial change is the fact that after the adoption, many assets and liabilities can be evaluated at fair value (Pellens, Jannett and Schmidt 2009, p. 415). If there are differences between fair values of single assets, i.e., market values in case of assets valued mark-to-market, and their corresponding book values sourcing in historical cost, predictions about expected future cash flows cannot be carried out using book values (Mozes 2002). This applies, for example, to the valuation of loans or to the valuation of securities to some extent. Therefore, if IFRS financial statement items do exhibit higher value relevance, the association to a bank's market values should be stronger because a higher share of financial assets make use of these valuation premises.

H2: The value relevance of a single financial statement item is higher for banks using IFRS.

5.3.1.4 Earnings Management

The probability of earnings management increases with more accounting discretion available to a firm's management, *ceteris paribus*. In other words, accounting quality might be higher for accounting systems, i.e., stringent accounting rules and standards, limiting discretionary choices for a bank's management (Ewert and Wagenhofer 2005, p. 1102). For the purpose of this study, we define earnings management as the possibility for the bank's management to influence the results within the legally binding limits of the accounting rules in force. High

[96] See for the principle of „true and fair view" the EU-endorsed IFRS Framework, section 46.

frequencies of small profits might be interpreted as management's loss avoidance (e.g., Burgstahler and Dichev 1997). This finding suggests that after transition to an accounting system of higher quality, the number of small losses increases and the number of small profits decreases, since less discretion in accounting rules reduces the management's possibility to avoid small losses. Furthermore, less discretion also implies that realized profits and losses in economic income are incorporated faster into accounting income, and that economic losses are more strongly related to accounting losses in general.[97]

For example in German GAAP, banks were able to create hidden reserves during good periods and resolve these reserves in bad times. This possibility of considerable discretion for management in reported earnings is explicitly excluded under IFRS since this would contradict the true and fair view principle in IFRS.[98] Therefore, the corresponding hypothesis is:

H3: Earnings management is lower for banks using IFRS.

5.3.2 Methodology

5.3.2.1 Value Relevance of Equity and Earnings

H1 is tested using several measures of accounting quality. The first test to analyze this relation is based on the approach outlined by Ohlson (1995) and implemented, for example, by Collins, Maydew and Weiss (1997), and Hung and Subramanyam (2007). We also use the annual net income as proxy for (future) earnings.

$$MVE_{it} = \beta_0 + \beta_1 BVE_{it} + \beta_2 NI_{it} + \sum \beta_j Controls_j + \varepsilon \qquad (1)$$

with

MVE_{it}	market value of equity, measured six months after financial year end,
BVE_{it}	book value of equity, measured at the financial year end,
NI_{it}	net income, measured at the financial year end,
$Controls_j$	dummy variables, accounting for firm-fixed effects, and period-fixed effects.

[97] An exception might be, for example, the valuation at lower of cost or market in Germany.
[98] See IASB Framework as of 2001, section 37.

The basic idea is to measure the value relevance by explanatory power of book value equity and earnings for the market value of a company and is estimated for both subsamples, i.e., local GAAP and IFRS, separately. However, direct tests for significance are not feasible in this case.[99] Therefore, we concentrate on the coefficient estimates. If they are significant for one accounting item, one might claim that there is a strong association between the accounting measure and market value, which might in turn be interpreted as an accounting item having value relevance.

A second regression is also included in order to unambiguously test whether the accounting information under IFRS has higher value relevance if compared to local GAAP. Therefore, the following modified regression for the total sample is estimated, including interaction terms on IFRS net profit and book value of equity. We concentrate on the significance of interaction terms in order to detect superior value relevance of the IFRS accounting system. A significant interaction term, i.e., a significant differential effect, might be economically interpreted as a stronger relation between the accounting item and the market value (Bartov, Goldberg and Kim 2005, p. 105).

$$MVE_{it} = \beta_0 + \beta_1 BVE_{it} + \beta_2 NI_{it} + \beta_3 IFRS_{it} + \beta_4 BVE_{it} * IFRS_{it} + \beta_5 NI_{it} * IFRS_{it} + \sum \beta_j Controls_j + \varepsilon \quad (2)$$

with

IFRS dummy variable equal to one if the financial statements are prepared in accordance with international accounting standards, and zero otherwise.

All other variables are defined as in model (1). A positive and significant coefficient estimate of β_4 or β_5 indicates that the association of book value of equity or net profit is significantly stronger under IFRS accounting rules than under local GAAP rules, indicating higher value relevance.

[99] Testing the significance in differences of R^2 for two independent samples does not make sense if different samples, i.e., non-identical dependent variables, are used (e.g., Bartov, Goldberg and Kim 2005, p. 105). This would be the case when comparing IFRS and local GAAP samples.

5.3.2.2 Value Relevance of Single Financial Statement Items

In order to test H2, the following modified model tries to capture the effect of specific financial statement items that might have an influence on the market value of a bank. These regressions analyze whether the respective IFRS equivalents are of higher value relevance. The following model is applied to the total sample:

$$MVE_{it} = \beta_0 + \beta_1 Item_{it} + \beta_2 IFRS_{it} + \beta_3 Item_{it} * IFRS_{it} + \sum \beta_j Controls_j + \varepsilon \qquad (3)$$

with

MVE_{it}		market value of equity, measured six months after financial year end *t*,
$Item_{it}$		the respective financial statement item of bank *i* at time *t*, i.e.,
	TA_{it}	total assets at the end of period *t*,
	INV_{it}	total investments less other investments, as of financial year end *t*,
	$NTLOANS_{it}$	loans, net of depreciation and amortization,
	$NTDEBT_{it}$	net debt of a bank at the end of period *t*,
	CF_{it}	net cash flow from operating activities in period *t*,
	REV_{it}	revenues in period *t*,
	BVE_{it}	book value of equity, measured at the end of period *t*,
$IFRS_{it}$		dummy variable equal to one, if the financial statement is prepared in accordance with IFRS in period *t*, and zero otherwise,
$Controls_j$		dummy variables, accounting for firm-fixed effects and period-fixed effects.

As in model (2), the advantage of the procedure is that the information effect of IFRS on a specific item is directly observable (β_3), meaning a change to the slope coefficient when IFRS is applied. *Item* represents the respective financial statement item under investigation for which the expectation will be outlined in the following. *INV* represents the investments in securities made by a bank.[100] These positions are often valued at lower of cost or market value under local GAAP accounting regimes. After transition, some of the items are valued at fair

[100] Investments (*INV*) is defined using the definitions from *Datastream*: 'Total Investments' (WC02255), less 'Other Investments' (WC02250). It comprises all different kinds of securities from public or private issuers held by a bank. See also footnote 67.

value.[101] If *Investments* under consideration of fair values have higher value relevance, as suggested by Barth et al. (1996), the coefficient on the interaction term (β_3) should exhibit a significant positive sign.

NTLOANS is the total amount of loans to customers, less deduction reserves for loan losses.[102] In Germany, for example, the value of a loan is the face value outstanding, less allowances for loan losses. Under IFRS, the loans classified as loans and receivables are usually measured at amortized cost by discounting future cash flows by the effective interest rate.[103] Therefore, the expectation is no significant coefficient on the interaction term since the valuation processes are not significantly different.

NTDEBT is the total debt of the bank, less cash holdings and due from banks.[104] Under IFRS, debt not categorized at fair value has to be valued at amortized cost[105] which might be different to the treatment according to many national GAAPs. By reason of the positive effect of the evaluation for some classes of debt using fair values, the expectation is a positive coefficient on the interaction term. The rationale is that IFRS use more fair values and convey superior information concerning the riskiness of debt as a consequence which offers superior information value for readers of financial statement information.

We also employ *CF* (operating cash flow) and *REV* (revenues) which are supposed to be less influenced by differences in accounting. *CF* represents all cash flows from operating activities whereas *REV* is defined as all revenue from interest revenue, commission and trading fees as well as other operating income.[106] Therefore, we do not expect any significant difference in measurements and value relevance of these items. However, we expect a strong relation between operating cash flows, revenues, and the market value of a bank.[107]

[101] This effect is amplified by the realization concept, i.e., profits are only recognized if they were realized under many local GAAPs (Ernst and Young 2005, p. 1). For a general overview of accounting conservatism, see Demaria and Dufour (2007).
[102] For the definition, see also *Datastream* 'Net Loans' (WC02276). In addition to loans, it also includes, e.g., lease financing.
[103] See IAS 39.46.
[104] For the definition of 'Net Debt', see also *Datastream* definition DWND.
[105] See IAS 39.43.
[106] See also *Datastream* definitions 'Revenues' (WC01001) and 'Net Cash Flow from Operating Activities' (WC04860).
[107] For a discussion of the value relevance of cash flows and other performance measures, see Mölls and Strauß (2007, p. 966-970).

5.3.2.3 Earnings Management

In this section, the development of earnings management is tested as outlined in H3. There are several approaches in literature to detect earnings management. One stream of literature predominantly concentrates on accruals (e.g., Dechow, Sloan and Sweeney 1995; Leuz, Nanda and Wysocki 2003, Burgstahler, Hail and Leuz 2006) whereas another investigates timeliness of earnings (e.g., Ball, Kothari and Robin 2000; Hung and Subramanyam 2007). Another stream applies predefined thresholds on the ratio of profit and losses in order to determine the influence of earnings smoothing (e.g., Burgstahler and Dichev 1997; Jeanjean and Stolowy 2008) or compares additionally the propensity to avoid losses (e.g., Glaum et al. 2004).

In this paper, the last two approaches are chosen in order to draw a comprehensive picture of earnings management in relation to the transition to IFRS. Firstly, the negative impact of stock market returns and their reflection in accounting earnings is measured. Secondly, we measure the frequency of small losses in relation to small profits in the full year financial statements. Based on this comparison, the third approach uses a centered asymmetry measure which allows direct comparisons across different earnings distributions, as outlined by Glaum et al. (2004).

Timeliness of Earnings

One aspect often discussed in the context of earnings management is timeliness of earnings. The question is whether the accounting measures reflect economic events instantaneously. Income timeliness is defined as the ability of net income to incorporate contemporary economic events in a timely manner (e.g., Ball, Kothari and Robin 2000; Hung and Subramanyam 2007). Therefore, higher timeliness of earnings can be interpreted as lower earnings management. In order to measure the impact of negative events on net income, the following model is estimated which is a modified version of the model outlined by Hung and Subramanyam (2007, p. 646):

$$NI_{it} = \beta_0 + \beta_1 RET_{it} + \beta_2 NEG_{it} + \beta_3 RET_{it} * NEG_{it} + \sum \beta_j Controls_j + \varepsilon \qquad (4)$$

with

NI_{it} net income of firm *i* at the end of fiscal year *t*, scaled by prior year's three month lagged market value,

RET_{it}	the total stock return over a 12-month holding period, starting three months after prior fiscal year end and ending three months after fiscal year *t*,[108]
NEG_{it}	a dummy variable equal to one if the return *RET* is negative, and zero otherwise,
$Controls_j$	dummy variables, accounting for firm-fixed effects and period-fixed effects.

Income timeliness is measured separately for both accounting regimes and evaluated by the explanatory power of the respective model. β_3 denotes the incremental effect of negative news on accounting income. This can be interpreted as asymmetric income conservatism since it measures the incremental effect of unfavorable news relative to good news (Hung and Subramanyam, 2007, p. 646).

Small Loss and Small Profit Relation

The second approach for detecting earnings management is to compare the earnings relations under different accounting systems (e.g., Burgstahler and Dichev 1997; Leuz, Nanda and Wysocki 2003). The basic idea is that, around certain thresholds, earnings might not be as evenly distributed as would be expected if the outcomes were not actively altered by earnings management. It also includes the reluctance to report small losses (e.g., Leuz, Nanda and Wysocki 2003, p. 511). As outlined above, earnings management is identified by comparing the ratio of small profits to small losses before and after transition to IFRS (e.g., Jeanjean and Stolowy 2008). In accounting systems leaving a firm's management smaller discretionary degrees of freedom, the ratio is expected to be lower. The rationale is that small losses cannot be hidden in more stringent accounting systems and accounting rules. This approach is able to detect for which accounting regime a firm's management is better able to use discretion to reach certain thresholds or earnings targets.

To compare the small profit and small loss relation, annual net income scaled by total assets is used. It is defined as small net losses in the interval [-0.01;0[and small net profits in the range [0;0.01].[109] As a robustness check, the profits and losses in the intervals [-0.005;0[and [0;0.005], and [-0.0025;0[and [0;0.0025] are also compared, respectively. Fur-

[108] We lag the variables in order to account for a delay in the publication of annual results. Alternatively, we also run a robustness check using a time lag of six months yielding qualitatively unchanged results.
[109] Leuz, Nanda and Wysocki (2003, p. 511) use the same approach.

thermore, we also scale net income by revenues and use the intervals [-0.1;0.1], [-0.05;0.05] and [-0.025;0.025], respectively.[110] Net income, total assets and revenues are defined as in the prior sections and measured at year end, respectively. According to H3, higher values for local GAAP earnings relations are expected which might then be interpreted as higher earnings management under local GAAP.

Loss Avoidance

The third measure for detecting earnings management is an approach outlined in extension by Glaum, Lichtblau and Lindemann (2004). The idea of this approach is that the simple comparison of earnings relations is not unproblematic in several respects: Usually, all companies in public markets have to be profitable in the long run and have to report positive earnings. However, in unfavorable times small profits or small losses have to be reported which reduces the number of potential observations. In this case, from a marginal perspective, in the absence of any earnings management, the implicit assumption concerning the distribution of very small profits and very small losses around the zero-threshold is that the relation is expected to be 1.[111] Thus, the centered asymmetry measure is more able to detect earnings management since it makes fewer assumptions concerning the underlying distribution. The advantage of the procedure of Glaum; Lichtblau and Lindemann (2004) is that it allows a direct comparison of the outcomes for both subsamples using IFRS and local GAAP. The procedure is defined as follows:

$$A = \frac{n_p - n_n}{n_{pn}} \tag{5}$$

with

n_p	observations of small positive earnings
n_n	observations of small negative earnings
n_{pn}	$n_p + n_n$

The distribution can be interpreted as a binomially distributed random variable if observations are independent. The relation is then standardized to *A* which can assume values in the inter-

[110] Glaum, Lichtblau and Lindemann (2004), pp. 50-51, propose this approach, since scaling by net sales is less likely affected by specific GAAP characteristics than scaling by total assets.

[111] Closely related is the difficulty to identify the interval width *ex ante* (Glaum, Lichtblau and Lindemann 2004, p. 52). In addition, they point out that the ratio of small losses to small profits is not defined if the frequency of the observations directly left of the threshold is zero.

val [-1;+1]. In the absence of any earnings management *A* assumes 0. The estimated standard deviation of *A* can then be computed.[112] To keep things simple, we test the intervals already introduced in the direct comparison of the small loss and small profit distributions from above. We then separately compute the distribution of *A* for the subsamples of local GAAP and IFRS earnings. The difference between both distributions $A_{Diff} = A_{LGAAP} - A_{IFRS}$ and the standard deviation of A_{Diff} are calculated in order to detect significant differences between both distributions.

[112] For an extensive description of the entire procedure, and details on the computation, see Glaum, Lichtblau and Lindemann (2004), p. 74.

5.4 Dataset

In this study, the market portfolio *Datastream Banks Europe* is used. The index comprises observations of 173 European publicly traded banks over a period of 10 fiscal years from 1999 to 2008, if available.[113] In this study, the sample is restricted to banks from countries of the European Union and Switzerland, comprising 151 banks in total. The identification of the transition year is carried out via the coding of the accounting systems available in *Datastream*.[114] Additionally, for banks without data available we try to identify missing transition dates manually. In the sample, there are 118 banks changing to IFRS during that period. 19 banks have not yet changed to IFRS.[115] These 19 banks are left in the dataset as benchmark samples. The inclusion also reduces concerns about intertemporal non-stationarity of the metrics (Barth et al. 2008, p. 481), since they also account for time-dependent changes for banks that do not adopt IFRS. The remaining 14 banks for which the exact transition date cannot be unambiguously identified or that exhibit inconsistencies are excluded from the regressions. Financial statement information as well as market value information for those banks over the whole period is gathered from *Datastream*, if available.[116] To account for extreme values, for each variable used in the analysis, the two extreme percentiles of all data values are excluded (e.g., Ball et al. 2000, p. 9).

Table XXVI presents the distribution of the maximum observations under local GAAP or IFRS, according to their country of origin. However, due to data availability working samples in the analysis can be smaller. The third column presents the number of observations for which the identification of the accounting system was not unambiguously identifiable. The last column depicts the number of banks from each country in the starting sample.

[113] The constituents as of June 2009 are used.
[114] A similar procedure is used by Jeanjean and Stolowy (2008, p. 486-488).
[115] For example, this is the case for banks that do not have to prepare consolidated financial statements. Another reason is, e.g., that Swiss banks do not have to publish their consolidated accounts in accordance with international standards like U.S. GAAP or IFRS. Conversely, these banks are allowed to apply international standards, if they outline the main differences to the local accounting rules (PriceWaterhouseCoopers, 2008, p. 118-120).
[116] However, due to data availability, the effective number of banks in the regressions is somewhat lower.

Table XXVI: Descriptive Statistics on Maximum Observations per Country

This table provides descriptive statistics for the entire sample from 1999 to 2008. It consists of a maximum of 832 (538) observations pre (post) IFRS adoption. It displays the absolute number of observations in the sample for each country. The last column reports the number of banks from each country in the sample.

Country	Observations under Local GAAP		Observations under IFRS		Data N/A		Number of Banks
	Total	in %	Total	in %	Total	in %	Total
Austria	21	1.39%	29	1.92%	20	1.32%	7
Belgium	28	1.85%	12	0.79%	10	0.66%	5
Bulgaria	0	0.00%	0	0.00%	10	0.66%	1
Cyprus	4	0.26%	16	1.06%	20	1.32%	4
Czech Republic	0	0.00%	10	0.66%	0	0.00%	1
Denmark	48	3.18%	22	1.46%	0	0.00%	7
Finland	6	0.40%	4	0.26%	0	0.00%	1
France	70	4.64%	40	2.65%	0	0.00%	11
Germany	20	1.32%	30	1.99%	10	0.66%	6
Greece	54	3.58%	36	2.38%	10	0.66%	10
Hungary	0	0.00%	10	0.66%	0	0.00%	1
Ireland	13	0.86%	7	0.46%	0	0.00%	2
Italy	116	7.68%	74	4.90%	20	1.32%	21
Luxembourg	6	0.40%	4	0.26%	10	0.66%	2
Malta	8	0.53%	32	2.12%	0	0.00%	4
Netherlands	6	0.40%	4	0.26%	0	0.00%	1
Poland	87	5.76%	53	3.51%	0	0.00%	14
Portugal	30	1.99%	20	1.32%	0	0.00%	5
Romania	10	0.66%	20	1.32%	0	0.00%	3
Slovenia	13	0.86%	17	1.13%	0	0.00%	3
Spain	66	4.37%	44	2.91%	0	0.00%	11
Sweden	24	1.59%	16	1.06%	10	0.66%	5
Switzerland	172	11.39%	18	1.19%	20	1.32%	21
United Kingdom	30	1.99%	20	1.32%	0	0.00%	5
Total	832	55.10%	538	35.63%	140	9.27%	151

5.5 Results

5.5.1 Descriptive Statistics on Variables

Table XXVII provides descriptive statistics for the variables in this investigation. The market value of equity for firms reporting under IFRS is nearly twice the value of local GAAP firms which is not an uncommon observation in time series data. Therefore, in the regression analysis, we use period- and firm-fixed effects in order to control for such effects. As in prior studies, IFRS net profit is higher than local GAAP profits (e.g., Hung and Subramanyam, 2007). However, with respect to all non-scaled figures in the descriptive statistics, we have to keep in mind that much of the effect might be attributable to a time-dependent effect, since IFRS are foremost applied in the second half of the sample. Therefore, the balance sheet items are also scaled by total assets to make comparisons feasible in the table.

Book value of equity as share of total assets is, on average, lower for the IFRS subsample when it comes to means. However, the differences in medians provide a different impression. In consideration of the higher book value of equity according to IFRS, we could have expected a significant difference in the equity ratio. However, total assets are even higher for the IFRS subsample. As expected, the average share of investments, containing financial assets at cost and fair value, are significantly higher in means (medians) for the IFRS subsample with 26.6% (21.9%) than for the local GAAP subsample with 17.7% (13.5%). This observation is in line with the results in Chapter 2 finding higher shares of financial assets valued at fair value under IFRS. Concentrating on liabilities, net debt is significantly lower in the local GAAP subsample for both means and medians. Return on equity is significantly higher for IFRS financial statements.

Table XXVII: Descriptive Statistics on Observations

This table provides descriptive statistics for the entire sample from 1999 to 2008. The first two columns present the market values and balance sheet structure for Local GAAP and IFRS full year results. The third column provides the differences and tests for significance in differences for means and medians. ***,**,* indicate significance to the 1%-,5%-,10%-level of a t-test (two-sided), whereas +++,++,+ indicates significance in differences testing for differences in medians using a Wilcoxon signed rank test.

Panel A: Descriptive Statistics on Market Value and Balance Sheet Structure

		Local GAAP		IFRS		Difference	
			N		N	Total	
Market Value of Equity (MVE)	Mean	5,740.2	737	8,880.3	504	3,140.1	***
	Median	*1,019.5*		*2,548.6*		*1,529.1*	+++
Book Value of Equity (*BVE*)	Mean	3,215.5	723	6,294.2	441	3,078.7	***
	Median	*744.7*		*1,902.7*		*1,158.0*	+++
Total Assets (*TA*)	Mean	76,014.3	724	160,427.6	440	84,413.3	***
	Median	*11,834.9*		*29,189.6*		*17,354.8*	+++
Net Income (*NI*)	Mean	437.8	730	830.2	434	392.4	***
	Median	*75.7*		*219.3*		*143.6*	+++

Panel B: Balance Sheet Structure Ratios

		Local GAAP		IFRS		Difference	
			N		N	Total	
Book Value of Equity in % of *TA*	Mean	7.3%	719	6.7%	432	-0.6%	
	Median	*5.6%*		*6.0%*		*0.3%*	
Net Debt (*NTDEBT*) in % of *TA*	Mean	29.6%	711	32.3%	430	2.7%	***
	Median	*29.6%*		*33.7%*		*4.1%*	+++
Net Loans (*NTLOANS*) in % of *TA*	Mean	81.7%	692	80.1%	332	-1.6%	
	Median	*81.3%*		*81.5%*		*0.2%*	
Investments (*INV*) in % of *TA*	Mean	17.7%	424	26.6%	294	8.9%	***
	Median	13.5%		21.9%		*8.4%*	+++
RoE	Mean	10.7%	720	12.9%	444	2.2%	***
	Median	*10.3%*		*13.0%*		*2.7%*	+++

Value Relevance of Equity and Earnings

The question to be answered in this section is whether IFRS book value of equity and net profit have higher value relevance, as outlined in H1. Table XXVIII, Panel A, presents the results of the multivariate regression analysis of a bank's market value on book value of equity and net income, as in model (1) and (2).

Table XXVIII: Value Relevance of Book Value of Equity and Earnings

Panel A presents the coefficient estimates of a least square regression with robust standard errors on market value of equity for LGAAP and IFRS financial statement information. MVE is total market value measured six months after financial year end. BVE and NI are the book value of equity, and net income, respectively, at the financial year end.
Panel B presents the coefficient estimates for a least square regression on market value of equity for the total sample. IFRS is equal to one, if the bank reports their financial statements in accordance to international accounting standards, and zero otherwise. N denotes the number of observations in the respective subsample. ***,**,* indicate significance at the 1%-, 5%-, and 10%-level respectively, of a two-sided t-test. Only White-heteroscedasticity robust errors are reported. In the regression we control for intra-cluster correlation of bank-specific effects. F-Statistics probabilities are reported according to standard OLS regressions for purpose of comparison. The regressions include control dummy variables to control for time-specific and cross-sectional effects.

Panel A: Value Relevance of Equity and Earnings

$$MVE_{it} = \beta_0 + \beta_1 BVE_{it} + \beta_2 NI_{it} + \sum \beta_j Controls_j + \varepsilon$$

	Intercept	BVE	NI	Adj. R^2	F-Stat. Prob.	Period-fixed, Firm-fixed effects	N	Banks
LGAAP	4685.583 ***	0.555 **	2.227 **	0.97	0.00	*included*	697	111
	(13.70)	*(2.27)*	*(2.26)*					
IFRS	5335.818 **	-0.673 ***	4.529 ***	0.94	0.00	*included*	420	104
	(2.27)	*(-3.38)*	*(7.56)*					

Panel B: Relative Value Relevance of Equity and Earnings

$$MVE_{it} = \beta_0 + \beta_1 BVE_{it} + \beta_2 NI_{it} + \beta_3 IFRS_{it} + \beta_4 BVE_{it} * IFRS_{it} + \beta_5 NI_{it} * IFRS_{it} + \sum \beta_j Controls_j + \varepsilon$$

	Intercept	BVE	NI	IFRS	BVE*IFRS	NI*IFRS	Adj. R^2	F-Stat. Prob.	Period-fixed, Firm-fixed effects	N	Banks
	5646.839 ***	0.170	5.086 ***	227.847	-0.013	-0.556	0.94	0.00	*included*	1117	124
	(11.29)	*(0.59)*	*(3.15)*	*(0.62)*	*(-0.05)*	*(-0.31)*					

Surprisingly, the coefficient on book value of equity is negatively related to market value of the bank and significant in the IFRS subsample. This observation corresponds with the perception of a lower equity ratio being related to a higher market value. It could be argued that these observations are solely caused by the observations of 2008 leading to large losses for banks which should, however, at least partly be controlled for by the year dummies. Even though losing significance, omitting these observations leads to the same sign of the coefficient estimate on book value of equity. The coefficient on net income in the IFRS model is nearly twice the value for the local GAAP subsample, indicating a stronger relationship of net income and market value of equity. Hung and Subramanyam (2007) report a stronger relation of net income and market value for local GAAP for a sample of German industry firms. They interpret this result as local GAAP having a stronger pricing weight on net income whereas IFRS have a stronger pricing weight on book value of equity. The observations from this sample, however, are in contrast to their results, since there is a stronger relation between IFRS net profit and market value of a bank and the coefficient on book value of equity is negative for the IFRS subsample. However, a basic difference is that Hung and Subramanyam (2007) compare the restated annual accounts for one and the same year which might probably lead to distortions.[117] In both regressions, there is a high R^2 which might be an indicator for collinearity. Analyzing multicollinearity using variance inflation factors (VIFs) confirms the presence of collinearity in the regression setting. However, this fact seems to be unproblematic since the t-scores are still significant and, hence, do not lead to wrong conclusions due to increased variances of coefficient estimates.[118] Additionally, a high explanatory power is absolutely not an uncommon phenomenon in a regression controlling for period as well as cross-section fixed effects.[119] The comparison of R^2 yields slightly higher explanatory power of the local GAAP model which is in line with prior results (Hung and Subramanyam 2007). Testing for significance in difference between R^2s is not feasible in this case, since the dependent variables are not identical.[120] Therefore, in order to clarify whether IFRS book value of equity and net income is value relevant, we also apply a regression as outlined in model (2) for the total sample including the IFRS dummy variable, in Panel B of Table XXVIII. The coefficient on the IFRS dummy variable as well as the interaction terms on book value and earnings are

[117] Their results are only comparable to a limited degree, since the IFRS information is not publicly available when the original HGB statements are published. Hence, IFRS information cannot be incorporated in the market price simultaneously.
[118] See Studenmund (2001), p. 259.
[119] See Wooldridge (2003), p. 466. For example, Hung and Subramanyam (2007) yield adjusted R^2 of over 0.84, Collins, Maydew and Weiss (1997) report R^2 peaking over 0.70, and Francis and Schipper (1999) up to 0.78 in comparable setups. Some of the studies investigating comparable relations do only account for country specific, industry specific or period-fixed effects and *do not* account for firm-fixed effects, albeit using panel datasets.
[120] See Bartov et al. (2005), p. 105. See also Hung and Subramanyam (2007), p. 646.

not significant, providing no evidence for a significantly different value relevance either for IFRS book value of equity or IFRS net income. Furthermore, these observations do not suggest that the market value is systematically higher for IFRS banks, *ceteris paribus*, after controlling for bank-specific and time-dependent effects. Taken together, the regression results on value relevance do not indicate superior valuation properties of IFRS equity and earnings and provide no indication in support of H1.

5.5.2 Value Relevance of Financial Statement Items

In order to test the value relevance of individual accounts as outlined in H2, the individual relation between single items and the value of a firm is identified. In this approach, the market value is regressed on balance sheet items via a multivariate regression model by which the individual relation between single items and the value of a firm is identified. Table XXIX presents the regression of market value on the single items, as described by model (3). As in the prior section, R^2 are also on a very high level indicating collinearity. On the one hand, as already mentioned, the R^2 is not an uncommon phenomenon in the presence of period-fixed and cross-section fixed effects.[121] On the other hand, this observation indicates that much of the effects might be caused by other firm-specific qualities or time-dependent effects.

In the regression on *Investments* only the interaction term *Investments*IFRS* is positive and highly significant. This implies that IFRS have significantly higher value relevance for the balance sheet items referring to investments whereas local GAAP have not. This might be caused by the fact that IFRS accounting rules enable fair value accounting for many assets contained in investments, which might be the main difference to some of the local GAAP accounting systems. This might lead to higher values in these balance sheet items which are better reflected in market values. Turning to *Net Loans*, the coefficient estimate and the interaction term is highly significant and positive as well, also indicating a higher value relevance of IFRS of the loans on the books. As outlined above, under local GAAP face values are often used whereas under IFRS most of the loans are valued using the effective interest method, probably leading to a change in value relevance.

As in the previous regression analysis, the *Book Value of Equity* seems to be highly value relevant. However, the application of IFRS does not significantly change the value relevance

[121] We test a regression setting without controlling for these firm-fixed and period-fixed effects which results in relatively low VIFs and compare those to the standard regression VIFs including these effects. The result is that the presence of the control variables increases significantly the collinearity for the variables under investigation even though the average VIF remains at a low level.

of this measure. For *Net Debt*, there is no evidence of it being value relevant at all for both local GAAP and IFRS. Unsurprisingly, the regression on *Operating Cash Flow* does not yield significant value relevance which is within expectations. Furthermore, a different impression can be reported from the coefficient on *Revenue*. It is highly significant, indicating a strong value relevance of this measure. However, IFRS does not have a significantly different impact on the market value of a bank. To summarize this section, the results suggest that IFRS balance sheet items on the asset side, i.e., investments and net loans might increase value relevance, partly providing evidence in support of H2.

Table XXIX: Value Relevance of Single Financial Statement Items

This table presents the coefficient estimates of panel least square regressions on market value of equity for single financial statement items. IFRS is a dummy variable equal to one, if the information is from financial statements prepared in accordance to international accounting standards. t-values are in parentheses. N denotes the number of observations in the respective subsample. ***,**,* indicate significance at the 1%, 5%, and 10% interval, respectively, of a two-sided t-test. In the regression we control for intra-cluster correlation of bank-specific effects. Only White-heteroscedasticity robust errors are reported. F-Statistics probabilities are reported according to standard OLS regressions for purpose of

$$MVE = \beta_0 + \beta_1 Item + \beta_2 IFRS + \beta_3 Item * IFRS + \sum \beta_j Controls + \varepsilon$$

Item	Intercept	Item	IFRS	Item*IFRS	Firm-fixed; Period-fixed effects	Adj R^2	F-Stat. Prob.	N	Banks
Total Assets (*TA*)	7257.486 ***	0.014	1495.216	0.002	*included*	0.92	0.00	1125	124
	(12.55)	*(0.80)*	*(1.28)*	*(0.28)*					
Investments (*INV*)	9024.653 ***	0.006	364.795	0.021 ***	*included*	0.95	0.00	696	114
	(8.09)	*(1.30)*	*(0.50)*	*(3.73)*					
Net Loans (*NTLOANS*)	7500.723 ***	0.043 ***	409.257	0.016 *	*included*	0.94	0.00	998	122
	(13.57)	*(5.01)*	*(0.56)*	*(1.98)*					
Net Debt (*NTDEBT*)	7932.571 ***	0.020	586.809	0.026	*included*	0.92	0.00	1120	124
	(14.24)	*(0.79)*	*(0.81)*	*(1.49)*					
Book Value of Equity (*BVE*)	6631.886 ***	0.664 ***	1090.861	-0.072	*included*	0.92	0.00	1130	124
	(14.36)	*(2.66)*	*(1.21)*	*(-0.46)*					
Operating Cash Flow (*CF*)	6782.840 ***	0.143	-1208.126	0.369	*included*	0.93	0.00	675	121
	(4.78)	*(0.66)*	*(-1.02)*	*(1.50)*					
Revenue (*REV*)	7444.782 ***	0.304 **	482.805	0.090	*included*	0.93	0.00	1009	123
	(10.01)	*(2.28)*	*(0.76)*	*(1.11)*					

5.5.3 Earnings Management

5.5.3.1 Timeliness of Earnings

Panel A of Table XXX presents the regression results of model (4) on timeliness of earnings. As outlined in H3, the expectation is to find lower earnings management for observations after the transition to IFRS. The coefficient on RET_{it} is positive and highly significant for both specifications. However, concentrating on the coefficient capturing the incremental effect of negative earnings, one finding is that the coefficient is insignificant for both specifications. Comparable observations can be reported from the coefficient estimates of the interaction term for both the local GAAP subsample and the IFRS group. However, there is no evidence indicating that negative news is incorporated into accounting earnings in a more timely way under either accounting regime, in comparison to positive earnings, for which literature suggests a stronger conditional conservatism for local GAAP (Hung and Subramanyam 2007).[122] This is in line with the expectation of local GAAP accounting to be more closely related to the principle of prudence than IFRS. The adjusted R^2 is a little higher for the IFRS regression, indicating a better specification of the model and, hence, higher income timeliness of IFRS. On the one hand, this observation suggests that, overall, economic events seem to be reflected faster in IFRS earnings, which would be in line with the results of Hung and Subramanyam (2007), and might offer evidence in favor of H3. However, for the reasons mentioned above, we have to be cautious when comparing the explanatory power of both models. On the other hand, we find no evidence that economic losses are reflected faster in accounting earnings under one accounting regime.

[122] As robustness check, the regression with lagged market values of +3 months is also tested, yielding qualitatively the same results.

Table XXX: Earnings Management Measures

Panel A presents the results on the regression model on net profit. RET denotes the return of a specific stock, measured as change in percent over a period starting three months after prior financial year end, and ending three months after the financial year end. NEG is a dummy variable equal to one, if the stock return measured over a 12 month period is negative, and zero otherwise. t-values are in parentheses. N denotes the number of observations in the respective subsample. ***,**,* indicate significance at the 1%, 5%, and 10% interval respectively of a two-sided t-test. In the regression we control for intra-cluster correlation of bank-specific effects. Only White-heteroscedasticity robust errors are reported. F-Statistics probabilities are reported according to standard OLS regressions for purpose of comparison.
Panel B presents the relations of small profit to small losses for local GAAP and IFRS subsamples and different intervals, scaled by total assets, or revenues, respectively. The last column 'Odds' denotes the ratio of small losses to small profits, as in Jeanjean and Stolowy (2008).
Panel C presents the small loss avoidance using the centered asymmetry measure outlined by Glaum et al. (2004), for the small profits to small loss relations, scaled by total assets, or revenues, respectively. The last line indicates the difference between the subsamples of local GAAP and IFRS relations. As in Glaum et al. (2004), we consider the centered asymmetry measures to be significant at the 5% (1%)-level if the centered measure differs more than 1.96 (2.58) standard deviations from zero. +++,++ indicate significance on the 1%-,5%-level, respectively.

Panel A: Timeliness of Earnings $NI = \beta_0 + \beta_1 RET + \beta_2 NEG + \beta_3 RET * NEG + \sum \beta_j Controls_j + \varepsilon$

	Intercept	RET	NEG	RET*NEG	Firm-fixed, Period-fixed effects	Adj. R^2	F-Stat. Prob.	N	Banks
LGAAP	0.046	0.029 ***	-0.003	0.054	*included*	0.28	0.00	691	110
	(1.31)	*(12.91)*	*(-0.31)*	*(0.81)*					
IFRS	-0.220	0.052 ***	0.007	-0.002	*included*	0.44	0.00	409	103
	(-0.68)	*(3.31)*	*(0.52)*	*(-0.06)*					

Panel B: Small Loss Avoidance - Ratio of Small Profits and Small Losses

Net Income to Total Assets [-0.01;0.01]	Small Profits	Small Losses	Odds	**Net Income to Revenues** [-0.1;0.1]	Small Profits	Small Losses	Odds
LGAAP	564	14	40.29	LGAAP	361	13	27.77
IFRS	286	6	47.67	IFRS	133	4	33.25
[-0.005;0.005]	Small Profits	Small Losses	Odds	[-0.05;0.05]	Small Profits	Small Losses	Odds
LGAAP	259	9	28.78	LGAAP	110	10	11.00
IFRS	104	5	20.80	IFRS	32	4	8.00
[-0.0025;0.0025]	Small Profits	Small Losses	Odds	[-0.025;0.025]	Small Profits	Small Losses	Odds
LGAAP	51	7	7.29	LGAAP	35	5	7.00
IFRS	35	3	11.67	IFRS	9	3	3.00

Panel C: Small Loss Avoidance - Centered Asymmetry Measures

Earnings to Total Assets		[0.01;-0.01]	[0.005;-0.005]	[0.0025;-0.0025]	**Earnings to Revenues**		[-0.1;0.1]	[-0.05;0.05]	[-0.025;0.025]
LGAAP	A	0.9516 +++	0.9328 +++	0.7586 +++	LGAAP	A	0.9305 +++	0.8333 +++	0.7500 +++
	STD A	*0.0128*	*0.0220*	*0.0856*		*STD A*	*0.0189*	*0.0505*	*0.1046*
IFRS	A	0.9589 +++	0.9083 +++	0.8421 +++	IFRS	A	0.9416 +++	0.7778 +++	0.5000
	STD A	*0.0166*	*0.0401*	*0.0875*		*STD A*	*0.0288*	*0.1048*	*0.2500*
Difference	Diff A	-0.0073	0.0246	-0.0835	Difference	Diff A	-0.0111	0.0556	0.2500
(LGAAP- IFRS)	Delta A	*0.0214*	*0.0478*	*0.1360*	(LGAAP- IFRS)	Delta A	*0.0355*	*0.1301*	*0.3541*

5.5.3.2 Small Loss vs. Small Profit Relation

The odds ratio reflects the relation of small earnings to small losses in a given interval. In the absence of earnings management, earnings are expected to be evenly distributed in very small intervals around the zero thresholds. Therefore, lower odds reflect typically a lower propensity to manage earnings in financial statements. Concentrating on Panel B of Table XXX, one initial finding is that the odds are much higher than the results from previous studies. One reason could be that the sample size might play a crucial role. Another reason might be the fact that banks are more able to manage earnings than firms from other industries. The investigation of earnings scaled by total assets in the interval [-0.005;0.005] suggests lower odds for IFRS small earnings to small losses. However, both of the other intervals yield a higher

odds ratio under IFRS. As the odds ratios do not decrease in the transition to IFRS the results on the ratio of earnings to total assets yield that earnings management does not seem to be smaller.

Turning to the ratio of earnings scaled by revenues yields another impression. For the larger interval, the odds are higher for the IFRS subsample whereas for both of the narrower intervals the odds ratio is higher for the local GAAP subsample. This observation does not necessarily indicate that IFRS earnings are less managed, which might have been interpreted as IFRS reducing management discretion. The results rather suggest that the interval width plays a crucial role in the results (e.g., Glaum, Lichtblau and Lindemann 2004). Taken together, the comparison of the odds ratio does not provide a clear cut picture that earnings management has declined due to the transition to IFRS.

5.5.3.3 Loss Avoidance

The last approach measures the degree of loss avoidance for the subsamples, as outlined by Glaum et al. (2004). Panel C of Table XXX presents the results of the comparison of several measures of *A* as in model (5). For all subsamples, the distributions are highly skewed towards positive earnings and are significant. The robustness check of earnings scaled by revenues yields a similar impression. Testing for significance in differences rejects the hypothesis of a two-group separation for all variants. Therefore, the results do not suggest significantly lower earnings management for the IFRS subsample and confirm our impression from the previous sections. Thus, since the alternative hypothesis of no change in earnings management cannot be refuted, we find no sustainable evidence that IFRS annual financial statements have lower earnings management and hence no support for H3.

5.5.4 Robustness Checks

5.5.4.1 Return Model on Earnings

This robustness check tries to answer the question whether a consideration of IFRS profits alone is more value relevant for changes in market value than profits from local GAAP regimes. In order to clarify whether the relation is significantly stronger in comparison to local GAAP earnings, the following cross-sectional model is estimated, basically following Bartov, Goldberg and Kim (2005).[123]

[123] Bartov et al. (2005) scale net income by market value at year end whereas we scale net income by market value six months prior to year end in order to reduce the possibility of collinearity.

$$RET_{it} = \beta_0 + \beta_1 NI_{it} + \beta_2 IFRS_{it} + \beta_3 NI_{it} * IFRS_{it} + \sum \beta_j Controls_j + \varepsilon \quad (6)$$

with

RET_{it}	12-month buy and hold stock return, starting six months after prior fiscal year end and ending six months after fiscal year end,
NI_{it}	net income as published in the financial statements at the respective year end *t*, scaled by lagged market value of equity measured six months before financial year end,
$IFRS_{it}$	dummy variable equal to one if the bank prepares the financial statements in period *t* according to IFRS, and zero otherwise.

The interaction term on β_3 denotes the differential effect of financial statements in IFRS changing value relevance in comparison to local GAAP rules. A significant and positive coefficient β_3 indicates that the value relevance of IFRS is beyond that of local GAAP financial statement information.[124] If the coefficient on β_3 is insignificant, the null hypothesis that both accounting regimes are equally value relevant for the explanation of stock returns via earnings cannot be refuted.

Table XXXI reports the results for the regression of stock returns on net profit from equation (6). Interestingly, none of the coefficient estimates is significant. The conclusion from this regression is that there is no evidence that IFRS earnings alone have significantly higher value relevance for changes in market value, hence offering no evidence in support of H1.

Table XXXI: Return Model on Earnings

This panel presents the results on a least square regression on stock price returns. RET denotes the return of a specific stock, measured as change in percent over a period starting six months after prior financial year end and ending six months after financial year end. Net Income (NI) is scaled by market value of equity lagged six months after prior financial year end. t-values are in parentheses. N denotes the number of observations in the respective subsample. ***,**,* indicate significance at the 1%-, 5%-, and 10%-level of a two-sided t-test, respectively. Only White-heteroscedasticity robust errors are reported. The regressions include control dummy variables to control for time specific and cross-sectional effects. Furthermore, in the regression we control for intra-cluster correlation of bank-specific effects. F-Statistics probabilities are reported according to standard OLS regressions for purpose of comparison.

$RET_{it} = \beta_0 + \beta_1 NI_{it} + \beta_2 IFRS_{it} + \beta_3 NI_{it} * IFRS_{it} + \sum \beta_j Controls_j + \varepsilon$

Intercept	NI	IFRS	NI*IFRS	Period-fixed, Firm-fixed effects	Adj. R^2	F-Stat. Prob.	N	Banks
0.446 **	1.960	0.092	-0.733	*included*	0.26	0.00	779	122
(2.59)	*(0.85)*	*(0.87)*	*(-0.49)*					

[124] For this interpretation, see Bartov, Goldberg and Kim (2005), p. 105.

5.5.4.2 Bank Specific Items and Value Relevance

In order to test the stability of our results, we run a robustness check on model (1) of value relevance of book value of equity and earnings on market value of equity using a time lag of three instead of six months. This leads generally to comparable and strong results, confirming our findings. Model (2) using interaction terms yields a significant coefficient on IFRS, meaning that market value of equity is generally higher. However, book value of equity and earnings are generally not better reflected in market values.

As a robustness check on value relevance of specific financial statement items in model (3), we run regressions of market value on changes in financial statement items using the natural logarithm for market value, which are not reported. In general, this test yields slightly lower value relevance for many financial statement items under IFRS since several interaction terms become negative.

Alternatively, we also split the sample into local GAAP and IFRS subsamples and run the regression on single financial statement items. This generally yields no contrary results except for the regression of market value on cash flows. In this case, we find a positive and significant coefficient estimate of *Operating Cash Flow* for the IFRS subsample whereas for local GAAP, only an insignificant coefficient estimate can be reported. This might be interpreted as evidence for operating cash flows being included in valuation models for firms using IFRS whereas there is no evidence for this fact for firms using local GAAP.

As a further robustness check, we also investigate whether changes in market value are attributable to changes in single financial statement items. The results show that additional value relevance of changes in IFRS financial statement items for changes in market values cannot be confirmed.

Earnings Management

We also run a robustness check on earnings management. It captures time-dependent influences in the timeliness of earnings regression, as in model (5). Therefore, instead of using time lags in the dependent variables of three months, we rerun the regressions with a lag of six months. This variation provides qualitatively the same, albeit somewhat weaker results.

5.6 Concluding Remarks

We investigate a large sample of European banks over a decade. One central objective is to clarify whether IFRS accounting measures are of higher quality by providing higher value relevance and lower earnings management. Based on these considerations, we impose three hypotheses: Firstly, we hypothesize higher value relevance of earnings and book value of equity under IFRS. Secondly, there is higher value relevance for IFRS financial statement items. Thirdly, there is lower earnings management in IFRS financial statements due to fewer discretionary degrees of freedom for a bank's management.

Firstly, we find no evidence suggesting higher value relevance for IFRS book value of equity and earnings for market value of equity, refuting H1. Secondly, for bank specific items, there is some evidence of higher value relevance for investments and net loans. This first observation might be explained by a higher share of financial assets in net investments and net loans that are evaluated at fair value. However, for the remainder of the financial statement items tested we find no significantly higher value relevance. Thirdly, with respect to earnings management we fail to find evidence of a faster incorporation of economic events in accounting earnings under IFRS, even though the model seems to fit better under IFRS. Furthermore, there is no indication of lower earnings management in banks after transition to IFRS which seems to be in line with prior research (e.g., Jeanjean and Stolowy 2008; Paananen and Lin 2009).

To summarize, the impact of transition to IFRS for European banks appears to have limited impact on the value relevance of accounting measures, and hardly any impact on earnings management. Therefore, there is no convincing evidence of IFRS information being of sustainably higher quality in terms of higher value relevance and lower earnings management. Rather, this result suggests that IFRS accounting quality is not necessarily superior to local GAAP accounting quality if measured by value relevance. In consideration of the high cost of implementing and appliance of the new accounting rules, which have often to be used in addition to the local GAAP rules, one might be tempted to ask whether the application of IFRS is really beneficial for market participants.

6 Conclusion

The basic question was whether IFRS are really superior in that they produce better information when compared to national GAAPs. We suspect that an analysis of banks in the European Union is a more promising approach than investigating just single countries. One reason is that many valuation and presentation premises are changed with the transition to IFRS. Another reason is that we are in a mostly stable and comparable institutional setup in Europe which allows more general inferences than just investigating specific markets or trying to obtain clear results from worldwide samples with many concurrent influences.

Turning to the analysis, the first indication of the balance sheet and equity analysis of banks yields that there are changes in the structure of line items and the presentation of equity in the course of the transition to IFRS. Besides the changes being solely attributable to reclassifications, another reason might be that the changes in valuation methods also influence, at least in part, the new picture after transition. The logical follow-on question that has to be asked is whether these presentation changes have any implications for capital market participants. Therefore, in this study, we concentrate on the market perspective, i.e., we try to answer the question asked above for capital market participants to determine whether they benefit by the new information based on IFRS. There are several dimensions to measure the impact of any benefits from the transition to IFRS outlined in literature. We decide to apply three measures in order to create a comprehensive picture of the IFRS impact on capital markets.

Investigating abnormal market reactions to the publication of earnings announcements under different accounting regimes, we find that information value seems to increase over time. However, after taking into account concurrent influences, we cannot rule out that general capital market integration in the European Union over time could also be responsible for the observations of higher information value of earnings announcements.

From a different perspective, we also study market efficiency and market liquidity and try to clarify the influence of IFRS on these measures before and after mandatory transition. There seems to be a positive impact for two of our market efficiency and liquidity measures, i.e. bid-ask spreads and price impact, even after controlling for potential concurring effects. However, the investigation of equity valuation after transition does not yield any superiority of presenting information according to IFRS. Albeit there seems to be a favorable effect on some of our meas-

ures for mandatory adopters, the investigation of mandatory and voluntary adopters further confirms the reasonable suspicion that rather the general capital market integration in the European Union than the transition to common reporting standards is accountable for different levels of market efficiency and liquidity.

Therefore, the last section tries to directly relate accounting measures to the market valuation of banks and earnings management. We are only able to report weak evidence of a higher value relevance of some IFRS balance sheet items which might be attributable to changes in valuation methods. However, lower earnings management cannot be confirmed after the transition.

To summarize, given the rather ambiguous results from above using a dataset with relatively stable institutional prerequisites, i.e., an investigation of banks in Europe, we cannot rule out that there are concurrent effects influencing our results to a greater or lesser degree, even though we expected the results to be especially strong using our investigation setup. However, our findings seem to be in line with prior research having difficulties detecting pure cause and effect relationships in a rather dynamic environment. Based on our results however, the pure effect of the IFRS application appears to be rather limited for European banks which casts doubt on its favorability in light of cost-benefit considerations.

References

Aisbitt, S. (2006), Assessing the Effect of the Transition to IFRS on Equity: The Case of the FTSE 100, *Accounting in Europe* 3, 117-133.

Amihud, Y. (2002), Illiquidity and stock returns: cross-section and time-series effects, *Journal of Financial Markets* 5, 31-56.

Armstrong, C. S./Barth, M. E./Jagolinzer, A./Riedl, E. J. (2010), Market Reaction to the Adoption of IFRS in Europe, *Accounting Review* 85, 31-61.

Ashbaugh, H./Olsson, P. (2002), An Exploratory Study of the Valuation Properties of Cross-Listed Firms' IAS and U.S. GAAP Earnings and Book Values, *Accounting Review* 77, 107-126.

Ashbaugh, H./Pincus, M. (2001), Domestic Accounting Standards, International Accounting Standards, and the Predictability of Earnings, *Journal of Accounting Research* 39, 417-434.

Auer, K. V. (1996), Capital market reactions to earnings announcements: empirical evidence on the difference in the information content of IAS-based earnings and EC-Directives-based earnings, *European Accounting Review* 5, Issue 4, 587-623.

Auer, K. V. (1998), Der Einfluss des Wechsels vom Rechnungslegungsstandard auf die Risikoparameter von schweizerischen Aktien, *Zeitschrift fuer betriebswirtschaftliche Forschung* 50, 129-155.

Bae, K./Tan, H./Welker, M. (2008), International GAAP Differences: The Impact on Foreign Analysts, *Accounting Review* 83, 593-628.

Ball, R./Brown, P. (1968), An Empirical Evaluation of Accounting Income Numbers, *Journal of Accounting Research* 6, 159-178.

Ball, R./Kothari, S. P./Robin, A. (2000), The effect of international institutional factors on properties of accounting earnings, *Journal of Accounting and Economics* 29, 1-51.

Ball, R./Robin, A./Wu, J. S. (2003), Incentives versus standards: properties of accounting in come in four East Asian countries, *Journal of Accounting and Economics* 36, 235-270.

Barth, M. E. (1994), Fair Value Accounting: Evidence from Investment Securities and the Market Valuation of Banks, *Accounting Review* 69, 1-25.

Barth, M. E./Beaver, W. H./Landsman, W. R. (1996), Value-relevance of Banks' Fair Value Disclosures under SFAS No. 107, *Accounting Review* 71, 513-537.

Barth, M. E./Beaver, W. H./Landsman, W. R. (2001), The relevance of the value relevance literature for accounting standard setting: another view, *Journal of Accounting and Economics* 31, 77-104.

Barth, M. E./Landsman, W. R./Lang, M. H. (2008), International Accounting Standards and Accounting Quality, *Journal of Accounting Research* 46, Issue 3, 467-498.

Bartov, E./Goldberg, S. R./Kim, M. (2005), Comparative Value Relevance Among German, U.S., and International Accounting Standards: A German Stock Market Perspective, *Journal of Accounting, Auditing and Finance* 20, 95-119.

Beaver, W. H. (1968), The Information Content of Annual Earnings Announcements, *Journal of Accounting Research* 6, Supplement, 67-92.

Beny, L. N. (2005), Do Insider Trading Laws Matter? Some Preliminary Comparative Evidence, *American Law and Economics Review* 7, 144-183.

Bonse, A. (2004), Informationsgehalt von Konzernabschlüssen nach HGB, IAS und US-GAAP, Lang, Frankfurt am Main.

Brixner, J. (2011), Kapitalmarktauswirkungen der IFRS-Umstellung europäischer Banken, *Betriebswirtschaftliche Forschung und Praxis* 63, 18-36.

Brown, S. J./Warner, J. B. (1985), Using Daily Stock Returns: The Case of Event Studies, *Journal of Financial Economics* 14, 3-31.

Burgstahler, D./Dichev, I. (1997), Earnings management to avoid earnings decreases and losses, *Journal of Accounting and Economics* 24, 99-126.

Burgstahler, D. C./Hail, L./Leuz, C. (2006), The Importance of Reporting Incentives: Earnings Management in European Private and Public Firms, *Accounting Review* 81, 983-1016.

Cairns, D. (2006), The Use of Fair Value in IFRS, *Accounting in Europe* 3, 5-22.

Capkun, V./Cazavan-Jeny, A./Jeanjean, T./Weiss, L. A. (2008), Earnings Management and Value Relevance during the Mandatory Transition from Local GAAP to IFRS in Europe, *Working Paper*, HEC School of Management, ESSEC Business School, HEC Paris, Tufts University.

Committee of European Banking Supervisors (CEBS) (2004), Guidelines on Prudential Filters for Regulatory Capital, 21 December 2004.

Committee of European Banking Supervisors (CEBS) (2006), The impact of IAS/IFRS on banks' regulatory capital and main balance sheet items, Press Release, 14 February 2006.

Committee of European Banking Supervisors (CEBS) (2006a), First part of CEBS technical advice to the European Commission on own funds - Survey of the implementation of the current rules on own funds across Member States, 23 June 2006.

Committee of European Banking Supervisors (CEBS) (2007), Analytical Report on prudential filters for regulatory capital, 5 October 2007.

Chen, H./Tang, Q./Jiang, Y./Lin, Z. (2009), International Financial Reporting Standards and Accounting Quality: Evidence from the European Union, *Working Paper*, Shanghai University of Finance and Economics, University of Western Sydney, Hong Kong Baptist University.

Chipalkatti, N. (2005), Do Investors Reward Bank Disclosure Transparency? Evidence from India, *Journal of International Accounting Research* 4, 25-52.

Christensen, H. B./Hail, L./Leuz, C. (2013), Mandatory IFRS Reporting and Changes in Enforcement, *Working Paper*, University of Chicago, University of Pennsylvania.

Christensen, H. B./Lee, E./Walker, M. (2007), Cross-sectional variation in the economic consequences of international accounting harmonization: The case of mandatory IFRS adoption in the UK, *International Journal of Accounting* 42, Issue 4, 341-379.

Collins, D. W./Maydew, E. L./Weiss, I. S. (1997), Changes in the value-relevance of earnings and book values over the past forty years, *Journal of Accounting and Economics* 24, 39-67.

Corrado, C. J. (1989), A nonparametric test for abnormal security-price performance in event studies, *Journal of Financial Economics* 23, 385-395.

Corrado, C. J./Zivney, T. L. (1992), The Specification and Power of the Sign Test in Event Study Hypothesis Tests Using Daily Stock Returns, *Journal of Financial and Quantitative Analysis* 27, 465-478.

Cuijpers, R./Buijink, W. (2005), Voluntary Adoption of Non-local GAAP in the European Union: A Study of Determinants and Consequences, *European Accounting Review* 14, 487-524.

d'Arcy, A. (2001), Accounting classification and the international harmonisation debate – an empirical investigation, *Accounting, Organizations and Society* 26, 327-349.

Daske, H. (2006), Economic Benefits of Adopting IFRS or US-GAAP – Have the Expected Cost of Equity Capital Really Decreased?, *Journal of Business Finance and Accounting* 33, 329-373.

Daske, H./Hail, L./Leuz, C./Verdi, R. (2008), Mandatory IFRS Reporting around the World: Early Evidence on the Economic Consequences, *Journal of Accounting Research* 46, 1085-1142.

Dechow, P. M./Sloan, R. G./Sweeney, A. P. (1995), Detecting Earnings Management, *Accounting Review* 70, 193-225.

DeFond, M./Hung, M./Trezevant, R. (2007), Investor Protection and the information content of annual earnings announcements: International evidence, *Journal of Accounting and Economics* 43, 37-67.

Delvaille, P./Ebbers, G./Saccon, C. (2005), International Financial Reporting Convergence: Evidence from Three Continental European Countries, *Accounting in Europe* 2, 137-164.

Demaria, S./Dufour, D. (2007), First time adoption of IFRS, Fair value option, Conservatism: Evidences from French listed companies, *Working Paper*, University of Nice Sophia Antipolis.

Diamond, D. W./Verrecchia, R. E. (1991), Disclosure, Liquidity, and the Cost of Capital, *Journal of Finance* 46, Issue 4, 1325-1359.

Ding, Y./Hope, O./Jeanjean, T./Stolowy, H. (2007), Differences between domestic accounting standards and IAS: Measurement, determinants and implications, *Journal of Account ing and Public Policy* 26, 1-38.

Doupnik, T. S./Salter, S. B. (1993), An empirical test of a judgemental international classification of financial reporting practices, *Journal of International Business Studies* 24, Issue 1, 41-60.

Dumontier, P./Raffournier, B. (1998), Why Firms Comply Voluntarily with IAS: an empirical Analysis with Swiss Data, *Journal of International Financial Management and Accounting* 9, 216-245.

Dumontier, P./Raffournier, B. (2002), Accounting and capital markets: a survey of the European evidence, *European Accounting Review* 11, 119-151.

Eccher, E. A./Ramesh, K./Thiagarajan, S. R. (1996), Fair value disclosures by bank companies, *Journal of Accounting and Economics* 22, 79-117.

Ernst and Young (2005), How fair is fair value?, IFRS Stakeholder Series, May 2005.

Ernstberger, J./Vogler, O. (2008), Analyzing the German accounting triad – "Accounting Premium" for IAS/IFRS and U.S. GAAP vis-à-vis German GAAP?, *International Journal of Accounting* 43, 339-386.

Ewert, R./Wagenhofer, A. (2005), Economic Effects of Tightening Accounting Standards to Restrict Earnings Management, *Accounting Review* 80, 1101-1124.

Fama, E. F.(1970), Efficient Capital Markets: A Review of Theory and Empirical Work, *Journal of Finance* 25, 383-417.

Flannery, M. J./Kwan, S. H./Nimalendran, M. (2004), Market evidence on the opaqueness of banking firms' assets, *Journal of Financial Economics* 71, 419-460.

Florou, A./Pope, P. F. (2009), Mandatory IFRS Adoption and Investor Asset Allocation Decisions, *INTACCT Working Paper Series*.

Francis, J./Schipper, K. (1999), Have Financial Statements Lost Their Value Relevance?, *Journal of Accounting Research* 37, 319-352.

Gebhardt, G./Novotny-Farkas, Z. (2011), Mandatory IFRS Adoption and Accounting Quality of European Banks, *Journal of Business Finance and Accounting* 38, 289-333.

Glaum, M./Lichtblau, K./Lindemann, J. (2004), The Extent of Earnings Management in the U.S. and Germany, *Journal of International Accounting Research* 3, 45-77.

Grammig, J./Schierek, D./Theissen, E. (2000), Informationsbasierter Aktienhandel über IBIS, *Zeitschrift fuer betriebswirtschaftliche Forschung*, 52, 619-642.

Hail, L./Leuz, C. (2006), International Differences in the Cost of Equtiy Capital: Do Legal Institutions and Regulations Matter?, *Journal of Accounting Research* 44, 485-531.

Hail, L./Leuz, C. (2007), Report to AFM on Capital Market Effects of Mandatory IFRS Reporting in the EU: Empirical Evidence, October 2007.

Harris, T. S./Lang, M./Möller, H. P. (1994), The Value Relevance of German Accounting Measures: An Empirical Analysis, *Journal of Accounting Research* 32, 187-209.

Healy, P. M./Wahlen, J. M. (1999), A Review of the Earnings Management Literature and Its Implications for Standard Setting, *Accounting Horizons* 13, 365-383.

Hoogendoorn, M. (2006), International Accounting Regulation and IFRS Implementation in Europe and Beyond – Experiences with First-time Adoption in Europe, *Accounting in Europe* 3, 23-26.

Horton, J./Serafeim, G./Serafeim, I. (2013), Does mandatory IFRS Adoption Improve the Information Environment?, *Contemporary Accounting Research* 30, 388-423.

Hung, M./Subramanyam, K. R. (2007), Financial statements effects of adopting international accounting standards: the case of Germany, *Review of Accounting Studies* 4, Issue 12, 623-657.

Jeanjean, T./Stolowy, H. (2008), Do accounting standards matter? An exploratory analysis of earnings management before and after IFRS adoption, *Journal of Accounting and Public Policy* 27, 480-494.

Joos, P./Lang, M. (1994), The Effects of Accounting Diversity: Evidence from the European Union, *Journal of Accounting Research* 32, 141-168.

Karamanou, I./Nishiotis, G. (2005), The Valuation Effects of Firm Voluntary Adoption of International Accounting Standards, *Working Paper*, University of Cyprus.

Kim, O./Verrecchia, R. E. (2001), The Relation among Disclosure, Returns, and Trading Volume Information, *Accounting Review* 76, 633-654.

Kohler, U./Kreuter, F. (2006), Datenanalyse mit Stata, Oldenbourg, 2nd edition, Munich.

Landsman, W. R./Maydew, E. L. (2002), Has the Information Content of Quarterly Earnings Announcements Declined in the Past Three Decades?, *Journal of Accounting Research* 40, 797-808.

Landsman, W. R./Maydew, E. L./Thornock, J. R. (2012), The information content of annual earnings announcements and mandatory adoption of IFRS, *Journal of Accounting and Economics* 53, 34-54.

Lang, M. H./Lins, K. V./Miller, D. P. (2003), ADRs, Analysts, and Accuracy: Does Cross Listing in the United States Improve a Firm's Information Environment and Increase Market Value?, *Journal of Accounting Research* 41, 317-345.

Lang, M. H./Lins, K. V./Miller, D. P. (2004), Concentrated Control, Analyst Following, and Valuation: Do Analysts Matter Most When Investors Are Protected Least?, *Journal of Accounting Research* 42, 589-623.

La Porta, R./Lopez-De-Silanes, F./Shleifer, A./Vishny, R. W. (1998), Law and Finance, *Journal of Political Economy* 106, No.6, 1113-1155.

Leuz, C. (2003), IAS Versus U.S. GAAP: Information Asymmetry-Based Evidence from Germany's New Market, *Journal of Accounting Research* 41, No. 3, 445-472.

Leuz, C./Nanda, D./Wysocki, P. D. (2003), Earnings management and investor protection: an international comparison, *Journal of Financial Economics* 69, 505-527.

Leuz, C./Verrecchia, R. E. (2000), The Economic Consequences of Increased Disclosure, *Journal of Accounting Research* 38, Supplement, 91-124.

MacKinlay, A. C. (1997), Event Studies in Economics and Finance, *Journal of Economic Literature* 35, 13-39.

Meek, G. K./Thomas, W. B. (2004), A Review of Markets-Based International Accounting Research, *Journal of International Accounting Research* 3, No. 1, 21-41.

Mölls, S. H./Strauß, M. (2007), Bewertungsrelevanz der Rechnungslegung – Stand und Implikationen der empirischen Forschung für Aktionäre und Regulierer, *Zeitschrift für Betriebswirtschaft* 77, 955-995.

Morgan, D. P. (2002), Rating Banks: Risk and Uncertainty in an Opaque Industry, *American Economic Review* 92, 874-888.

Morgan, D. P./Stiroh, K. J. (2001), Market Discipline of Banks: The Asset Test, *Journal of Financial Services Research* 20, 195-208.

Mozes, H. A. (2002), The Value Relevance of Financial Institutions' Fair Value Disclosures: A Study in the Difficulty of Linking Unrealized Gains and Losses to Equity Values, *ABACUS* 38, 1-15.

Nissim, D. (2003), Reliability of Banks' Fair Value Disclosure for Loans, *Review of Quantitative Finance and Accounting* 20, 355-384.

Nobes, C. W. (1983), A judgemental international classification of financial reporting practices, *Journal of Business Finance and Accounting* 10, No.1, 1-19.

Nobes, C. (2006), The survival of international differences under IFRS: towards a research agenda, *Accounting and Business Research* 36, No. 3, 233-245.

Organisation for Economic Co-operation and Development (OECD) (2005), Bank Profitability: Financial Statements of Banks, 1994-2003, 2004 Edition.

Ohlson, J. A. (1995), Earnings, Book Values, and Dividends in Equity Valuation, *Contemporary Accounting Research* 11, 661-687.

Ormrod, P./Taylor, P. (2004), The impact of the Change to International Accounting Standards on Debt Covenants, *Accounting in Europe* 1, 71-94.

Paananen, M./Lin, H. (2009), The Development of Accounting Quality of IAS and IFRS over Time: The Case of Germany, *Journal of International Accounting Research* 8, 31-55.

Pae, J./Thornton, D. B./Welker, M. (2008), Agency Cost Reduction Associated with EU Financial Reporting Reform, *Journal of International Accounting Research* 7, 51-76.

Pellens, B./Jannett, S./Schmidt, A. (2009), Bilanzierungsstandards im Kontext der Finanzmarktkrise, *Perspektiven der Wirtschaftspolitik* 10, 413-435.

Platikanova, P. (2007), Market liquidity effects of the IFRS introduction in Europe, *Working Paper*, University of Pompeu Fabra.

Poshakwale, S./Courtis, J. K. (2005); Disclosure Level and Cost of Equity Capital: Evidence from the Banking Industry, *Managerial and Decision Economics* 26, 431-444.

PriceWaterhouseCoopers (2008), IFRS für Banken, Moderne Wirtschaft, 4th ed., Frankfurt.

Schildbach, T. (2009), Fair value-Statik und Information des Kapitalmarktes, *Betriebswirtschaftliche Forschung und Praxis*, 61. Jg., 581-599.

Soderstrom, N. S./Sun, K. J. (2007), IFRS Adoption and Accounting Quality: A Review, *Euro pean Accounting Review* 16, No. 4, 675-702.

Studenmund, A. H (2001), Using Econometrics: A Practical Guide, Addison Wesley Longman, 4th Edition, Boston.

Van Tendeloo, B./Vanstraelen, A. (2005), Earnings Management under German GAAP versus IFRS, *European Accounting Review* 14, 155-180.

Wooldrigde, J. (2003), Introductory Econometrics: A Modern Approach, Thomson South-Western, 2nd Edition, Mason (Ohio).