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The Adoption of the IFRS in the European Union

A study of potential harmonization effects across European capital markets

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Abstract

This study investigates potential harmonization effects of capital market reactions in the EU with regards to the mandatory implementation of IFRS for listed firms. We compare data from two periods of different prevailing accounting regimes, from five EU member states of which the UK serves as a benchmark for changes in market reactions. Using value relevant measures to evaluate capital market reactions, we test for alterations in the response coefficients for book value per share and earnings per share, following the transition to the IFRS. The study shows a conjugation of market reactions towards the benchmark in the period of mandatory IFRS reporting. We find that the effects of national differences on market reactions no longer render a statistically significant difference between the reactions of the benchmark's and tested countries' markets, after the implementation of the IFRS.

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Key words: EU, Harmonization, IFRS, Value relevance

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1. Introduction

In the year 2002, the European Union (EU) proposed a common framework of accounting standards for all member countries. The intention was to unify Europe under the same banner, in terms of accounting standards. Three years later, in 2005, the International Financial Reporting Standards (IFRS) framework was implemented. The aim with the implementation of the IFRS was to achieve a greater level of comparability between the reported financial information of all membership countries (European Parliament and the Council of the European Union 2002). This was done since one of the original core objectives with establishing the European Union in the first place was to form a common marketplace where capital was efficiently allocated and could flow freely between member states. Seen historically, the quality and comparability of financial reports across Europe has differed greatly (Nobes 1992). Before the mandatory implementation of the IFRS, the European Commission (EC) had already begun the process of conjugating accounting standards in Europe through various directives. However, in the absence of specific instructions and as a consequence of constant changes to these directives, they were not sufficient in achieving a harmonizing effect on member states (United Nations 2007). The most recent phase of this process has been the implementation of mandatory IFRS reporting for all listed firms, regardless of country or stock exchange.

1.1 Background

How markets have reacted to financial information has always been of great importance to ensure an efficient flow of capital from relatively unproductive firms to more productive ones. From a macroeconomic perspective, this concerns society as a whole. Consequently, standard setters of accounting practices have always been striving to facilitate this flow. The standard setters of the EU are no exception to this, and by increasing the quality of accounting information and unifying standards, they aim to ease the flow of capital within the union (European Parliament and the Council of the European Union 2002).

In practice, the actual adoption of the IFRS faces several obstacles (Larson and Street 2004), and is a heavily debated and scrutinized issue. The economic impact of the IFRS adoption throughout Europe is still under investigation where large amount of research is currently being conducted (see e.g. Devalle et al. 2010; Callao et al. 2009). Previous studies conducted on the harmonization effects of IFRS have first and foremost been focusing on whether or not there is less dispersion between actual accounting practices and standards. Much attention has been paid to the research of accounting effects on both specific lines in the income

statement and single posts on the balance sheet, such as goodwill (see Artigas et al. 2014; Abrahamsson et al. 2009).

We aim to further investigate the subject of harmonization effects in the EU, and whether or not the EU's attempt to improve comparability between financial information between countries has lead Europe one step closer toward the goal of becoming an integrated market where capital flows freely and is allocated efficiently.

In order to study whether or not this has occurred, it is of great interest to study capital markets' reaction to the reported information in financial reports. A harmonization of accounting standards is certainly a strong indicator that comparability across capital markets in the EU will be more equal with identical standards. In the end, however, it is the market that allocates capital and for this reason, a harmonized market reaction is crucial to investigate in order to determine if we are one step closer to one single unified capital market.

1.2 Purpose

This study aims to provide an answer to the following question:

Has the mandatory implementation of the IFRS harmonized capital markets' reactions to reported financial information between different member states of the EU?

We approach this question by examining the value relevance of different reported numbers and their relationship to stock prices and the change in stock prices. To identify potential harmonization effects we compare the different countries capital markets' reactions to value relevant information during one period dominated by local Generally Accepted Accounting Principles (GAAP), and one period after the adoption of IFRS. The relationship between previous local GAAPs and the IFRS will also be of interest to this study, as we want to examine the effects of IFRS on countries whose local GAAPs both differed greatly in their proximity to IFRS, and countries with local GAAPs resembling the IFRS framework. We find inspiration in many previous studies (see Bae et al. 2008; Callao et al 2009) conducted on differences between local GAAPs and IFRS.

The logic of using value relevance as a measure to evaluate potential discrepancies between different capital markets' reactions to reported financial information is that the measure presents an empirical relationship between financial statements and capital markets. Empirical research in this field is often referred to as capital market-based accounting research, and more precisely, the value relevance research measures "the usefulness of

accounting information from the perspective of equity investors" (Beisland 2008, p. 5). Therefore, we proceed with using the value relevance measure as our testing procedure since we find it most suitable for this kind of study.

An important assumption to make, in order for the value relevance measure to be comparable between different capital markets, is that capital markets within countries are efficient in the sense that new information is quickly spread across the market and that the market incorporates this new information without much delay. Assuming capital markets are efficient in this way, this study can compare different markets to identify potential national barriers that prevent the EU's capital market from being efficient. Without the assumption of efficient markets, the measure of value relevance between countries will lose most of its significance.

1.3 Limitations

- The study only concerns IFRS effects in the European Union and excludes the effects on countries adopting IFRS outside the union.
- The study is limited to including firms listed on each observed countries' stock exchanges for a limited period of time, 2002-2007.
- We do not take into account potential post-announcement drift for the testing of the response coefficient of earnings, as we operate under the assumption of a semi-strong form market. This is discussed further in section 4.5.3.
- The study is solely aimed at exploring, rather than explaining, the phenomenon of harmonization and whether or not it has occurred in the EU marketplace.

1.4 Disposition

The upcoming section of this paper presents the theoretical framework, which sets the foundation of this study as well as provides an insight to previous research conducted in the field. The third section consists of a presentation of our hypotheses and how we aim to test them. The fourth section is an outline of our methodology, a description of the data collecting process as well as the sample itself, and how we choose to operationalize the variables we include in the analysis. This will provide readers with an insight to what the selected sample looks like. Following this, section five is a presentation of our results as well as a discussion about statistical and econometric issues that can affect the conducted analysis, and how we chose to deal with these issues. The subsequent section, section six, summarizes the entire essay

and concludes with an answer to the questions we have asked ourselves. Finally, we provide a discussion of our results and study and also suggest topics for further research.

2 Theoretical Framework and Previous Research

Different accounting standards and practices have arisen as a result of many different factors. The most significant driving factors for these differences have been variation in providers of finance, taxation, legal systems, the accountancy profession, and conceptual bases. Accidental events have occasionally also had an impact in the development of different accounting systems (Nobes 1992). Harmonization, in this study, is referred to as making two or more systems (of accounting) to look more like each other (Nobes 1992), and is the definition we proceed to use throughout our analysis.

Despite several advantages of harmonization, a few impactful obstacles to harmonization exist as well. Complete harmony is extremely difficult to achieve, as differences have arisen as the result of underlying economic factors. Since different users, with varying interests, have affected the development of standards in different regions, finding one standard that suits all those concerned equally well can prove nearly impossible. Mueller (1968) states that if "we accept that (1) economic and business environments are not the same in all countries, and (2) a close interrelationship exists between…(these) environments and accounting, it follows that a single set of generally accepted accounting principles cannot be useful and meaningful in all situations" (as cited in Nobes 1992, p. 73). Among the largest obstacles to harmonization, although disputable, is the deep-rootedness of the differences in standards and the difference in strength of professional bodies in EU.

2.1 Accounting Differences in History

Financial statements serve the purpose of revealing information about a company that is of interest to owners, potential investors and other stakeholders. What information a company discloses in these statements has long been subject to external pressure. For this reason, the contents of financial reports vary, especially in between countries where ownership structures and the diversity of financial statement users have differed historically. As a result, two major classifications of accounting standard traditions are common in Europe: the Anglo-Saxon tradition and the Intercontinental tradition.

The shareholder model, also known as the Anglo-Saxon tradition, has emerged from making business, rather independent from governmental influence or economic theory.

Users of financial statements have had large influence on standards development and problems have usually been addressed when they occur (Nobes 1992). Useful solutions proven to work have survived, in line with Darwinian principle (Alexander and Nobes 2010). In contrast, the stakeholder rmodel, recognized by adopting accounting within a macroeconomic framework with a close connection to national economic policies, is more prevailing in intercontinental countries. Hence the name: Intercontinental tradition. What is typical in the intercontinental tradition, is that financial accounting is equivalent to tax accounting and includes CSR accounting (Nobes 1992).

2.1.1 The Anglo-Saxon Tradition

Among other countries, the United Kingdom has had a tradition of a commercial legal system, rather independent of statue law, called common law. Common law, as opposed to codified law, provides answers to specific cases rather than formulating a general solution to future issues (Nobes 1992). Accounting within the context of common law is rather independent in itself. Although Companies Acts have existed in the United Kingdom since 1844, detailed accounting content, such as it is presented today, was non-existent before certain EU directives implemented in the 1980's (Alexander and Nobes 2010). Before the fourth EU directive in 1981, with detailed formats for balance sheets and profit and loss accounts, regulations were very vague (Nobes and Parker 2006). However, fairness in financial reports has long been a requirement (Nobes 1992). Despite this, the United Kingdom has developed a rather unique set of accounting practices. In contrast to many EU countries located on the continent, British companies have, historically, been known for a tendency to be share funded (Nobes 1992), with a relatively large spread of ownership. Consequently, family owned firms are not as abundant in Great Britain as in, for example, Germany. The result of the separation of ownership from management that occurred during the 19th century was the need for careful audit (Alexander and Nobes 2010).

Despite compulsory IFRS reporting in the United Kingdom since 2005, consolidated accounts under IFRS look similar to those before IFRS was implemented due to small differences between the national GAAP and IFRS. This is because the national standard setter in the UK, the Accounting Standards Board (ASB) early moved national standards towards IFRS (Nobes 1992). It comes as no surprise, because of the close relationship between UK GAAP and IFRS, "that the working language of the IASB is English, that it is based in London, and that most standards are closely in line with, or compromise between, US and UK standards" (Alexander and Nobes 2010, p. 86). IAS 1 comments upon presenting fairly,

something closely linked to UK previous requirement of true and fair view (TFV). In other words, many UK standards are directly based on IFRS and vice versa. A few of the most significant differences between UK local GAAP and IFRS are how to account for intangible assets, development costs, and actuarial gains and losses. Intangible assets can be amortized under UK GAAP but must have annual impairment tests under IFRS. Development costs must be capitalized under IFRS and actuarial gains and losses must be taken immediately to the statement of total recognized gains and losses (STRGL) under UK GAAP while they may be taken gradually to the income statement under IFRS. To further illustrate these differences, deferred tax can be discounted under UK GAAP but not under IFRS. In addition to this, the formats of cash flow statements differ significantly with nine and three headlines, respectively (Nobes and Parker 2006).

2.1.2 The Intercontinental Tradition

On the other side of the spectrum, one can find the Intercontinental accounting tradition. In countries adopting commercial, rather than common, law, this tradition is the dominant one. As opposed to the case with the United Kingdom, this model, or tradition, has developed throughout the years with a much closer connection between accounting, governmental bodies and tax authorities. Traditionally, companies in countries adopting this model are recognized by family, bank, and governmental ownership structures. A typical example is Germany where most stocks in large firms are owned by powerful families and banks. Spain, Greece, and Sweden also serve as examples for this aspect of accounting tradition (Nobes 1992). As opposed to the United Kingdom, where the common ownership structures was spread between a large amounts of shareholders, the primary users of financial information in countries adopting the Intercontinental European model have been governments and tax authorities. The owners, in this case often families, already have very insightful internal information of the firms they are running, and therefore tax authorities have been the ones requiring financial information and have thus also been making demands as to what these should include and disclose. "In countries of continental Europe where most companies are heavily influenced by 'insiders', there will be little pressure for published accounts for external audit" (Nobes 1992, p. 11). In countries adopting the continental European model, there is seldom any tax accounting problem as within the UK, because "tax rules *are* the accounting rules" (Nobes 1992, p. 12).

With Germany serving as one of the main proxies for the Intercontinental approach to accounting, there are several noticeable differences between German GAAP and IFRS. Fixed assets can be held at cost (or lower) under GAAP but at fair value under IFRS.

Goodwill is amortized under GAAP but capitalized and impaired under IFRS. In addition to this, the IFRS require capitalization of financial leases and use percentage of completion when accounting for contracts, as opposed to no capitalization, and completed contract accounting, respectively, as under local GAAP. Furthermore, GAAP recognizes available-for-sale marketable securities at lower of cost and market (LCM) while IFRS require them to be valued at fair value. Last in first out (LIFO) accounting for inventory is not allowed under IFRS and provisions must be discounted, whilst LIFO accounting is common in GAAP and provision are not discounted (Nobes and Parker 2006). Conclusively, there are larger discrepancies between the Intercontinental tradition and IFRS than there are between the Anglo-Saxon and IFRS.

To conclude, two large opposing accounting traditions have developed over time in Europe. The Anglo-Saxon model is based on a share-holder orientation, with separate tax rules and a dominating fairness view. In contrast, Intercontinental countries adopt a creditor's perspective and are extremely interlinked with taxation. Rather than a fairness view, legal aspects are emphasized and government rules are followed rather than professional standards and practices (Alexander and Nobes, 2010).

2.2 The International Financial Reporting Standards Framework

The International Accounting Standards Board (IASB) has developed the IFRS and works constantly to sustain and improve this set of globally recognizable and adoptable accounting standards. The purpose of the product, the IFRS framework, is to provide investors and other financial statement users with comparable information of publicly listed firms, regardless of their country of origin. The IFRS framework provides standards of financial reporting, specifying, for example, when to materialize an asset based on the degree of certainty of future cash flows, when to recognize expenses and revenues based on common recognition criteria, and the consistency of financial reports.

The IFRS framework for the preparation and presentation of financial reports, also called the Conceptual Framework for Financial Reporting 2010 (Henry et al. 2013), pins down the concepts and guidelines for IFRS reporting. At the core of this framework, users will find the objective of financial statements. This is the single most important aspect of IFRS - that financial reports fulfill their core objective, namely to provide "financial information that is useful to current and potential providers of resources in making decisions" (Henry et al. 2013, p. 106). There are two basal qualities that determine if financial information is, in fact, *useful*. The relevance criterion states that information that is relevant can affect users' decisions and

helps evaluation of past, present and future performance and events. The second criterion, faithful representation, addresses that information should be complete, neutral and free from error. For clarification purposes, the conceptual framework complements the two fundamental qualities with requirements to be met regarding comparability, verifiability, timeliness and understandability. Financial reports that display these qualities are considered useful for economic decisions (Henry et al. 2013).

When reporting in accordance with IFRS, a company is required to state compliance to all IFRS requirements explicitly in the notes to its financial statement report. Potential deviation from IFRS must be disclosed in detail. There are certain features that are fundamental to IFRS reporting which are specified in IAS 1. These features are Fair Presentation, Going Concern, Accrual Basis, Materiality and Aggregation, No Offsetting, Frequency of Reporting, Comparative Information and Consistency (Henry et al. 2013). In addition to this, there are specified requirements to the content and structure of financial statements: Classified statement of Financial Position, Minimum Information on the Face of the Financial Statements, and Minimum Information in the Notes and Comparative Information (Henry et al. 2013).

As it appears, the IFRS are very specific with clear regulations. Some of the major accounting areas where IFRS have had an important impact are the recognition of intangible assets, asset measurement, financial instruments, provisions, employee benefits, deferred tax and revenue recognition. Regarding the recognition of intangible assets, the IFRS (IAS 38) require that most internally generated intangibles be expensed unless meeting certain criteria, in which case they must be capitalized. This creates a discrepancy between research (expensed) and development (capitalized). In order for a project's expenditures to be categorized as development, and be capitalized, a company must show promise in having enough resources to complete the project and display how future benefits will arise as a result. The expenditure must be measureable. The day these criteria are met for a certain development project is the day it is capitalized and ends when the asset is ready for usage. A common way to measure assets has historically been at their cost. The IFRS continue to allow this but with certain exceptions, such as biological assets (IAS 41) and certain financial assets (IAS 39). Provisions, as defined by IAS 37, are liabilities with uncertain amount or timing, such as pensions. When such a provision is recognized, the valuation at fair value which is required is under the discretion of several assumptions. Assumptions like this, such as discount rates, must be disclosed. Most employee benefits are required to be valued at balanced sheet date at current market interest rates. IAS 12 specifies accounting rules for deferred tax and requires companies to account for these

differences at current tax rates. This is done by comparing all assets and liabilities in the balance sheet to their taxable values (Nobes and Parker 2006). Regarding the recognition of revenue, IAS 18 states that revenue from sales should be recognized only when "the entity has transferred to the buyer the significant risks and rewards of ownership [and control]" (Nobes and Parker 2006, p. 345). IAS 11 and 18 together determine the recognition revenue within contract accounting and specify that the stage-of-completion method be used (Nobes and Parker 2006). All of these requirements serve to reach the ideal which is to enable firms to present reliable and value-relevant financial reports that investors and analysts can rely on to draw the right conclusions about a company.

2.3 Value Relevance as a Measure

The term "value relevance" can be defined in several different ways. Francis and Schipper (1999) identify and discuss four different interpretations of value relevance. Consistent with their fourth definition, we define value relevance as financial information's ability to conclude information that stipulates the value of a firm. Consequently, value relevance can be defined as the size of the statistical relationship between a firm's reported financials and its market value and stock return.

The empirical research conducted on value relevance is based on traditional valuation methods. Financial theory dictates that the theoretical value of a firm's equity is the present value of all future dividends or future cash flows:

$$E = \sum_{t=1}^{\infty} \frac{Dividend_t}{(1+r)^t}$$

There are several theoretical formulas illustrating the relationship between the market value of equity based on future dividends or free cash flows. Feltham and Ohlson (1995) present a very intriguing approach. Given certain very plausible assumptions, they explain that the value of equity is the value of net assets today, in addition to the present value of all future free cash flows to the firm:

$$E = Net\ Assets + \sum_{t=1}^{\infty} \frac{FCF_t}{(1+r)^t}$$

The authors show that the classical dividend discount model or discounted cash flow model can be expressed solely as a function of accounting variables, given the assumption that the clean surplus relation (expressed below) holds:

$$\frac{\Delta Owners\ Equity}{E_t} = \frac{E_{t+1} - E_t}{E_t} = \frac{Net\ Income_t}{E_t} - \frac{Dividend_t}{E_t} + \frac{Equity\ issue_t}{E_t}$$

Based on these conclusions, the residual income valuation (RIV) model can be derived as:

$$V_0 = BV_0 + \sum_{t=1}^{T} \frac{RI_t}{(1+r)^t} + \frac{TV}{(1+r)^T}$$

The RIV-model illustrates how the value of a firm's equity today (V_0) is the same as the current book value of equity (BV_0) plus future discounted residual incomes (RI) and a discounted terminal value (TV). Residual income is defined as the difference between accounted net income and the cost of equity. As a standard, a market based cost of equity is used in these calculations. The RIV-model always yields the same result as the dividend discount model assuming the clean surplus relation holds.

In accordance to Francis' and Schipper's (1999) definition of value relevance, for financial information to be value relevant, it is of great importance that the reported numbers reflect current market values. If there is a lack of relation between reported values and market values, reported financials can hardly be seen as value relevant, and if this is the case, it can be concluded that financial reports fail to serve their purpose. For example, as mentioned, the IFRS emphasize fair value accounting to a great extent.

2.4 Model Specifications

The idea of studies on value relevance is to examine the relation between the market value of equity and reported numbers, defined as:

$$MV(E) = f(accounting\ information)$$

To study the relation, we conduct a regression analysis on the market value and specified explanatory variables, where the statistical significance of each explanatory variable is examined in order to determine the value relevance of each factor, respectively. Based on what was presented above, the RIV-model concludes that stock prices can be predicted using a function of book value of equity today and future surpluses. In a price regression analysis, the relation between market value of equity and book value of equity is of interest. One explanatory variable in such a test would typically be reported earnings. Consequently, the regression analysis is conducted between market value of equity as the dependent variable and book value of equity and reported earnings as independent variables:

$$P = \alpha_0 + \alpha_1 \cdot BVPS + \alpha_2 \cdot EPS + \varepsilon$$

Again, assuming the clean surplus relation holds, the change in book value of equity, i.e. return, is equal to the net income assuming no dividend is paid out to shareholders. Much of the research conducted on value relevance has been concentrated on how change in owners' equity

is related to value creation measured by reported numbers. The change in owners' equity, rather than the value, can be studied through a similar regression where the dependent variable is the change in price, i.e. stock return. The reported earnings acts as the independent variable:

$$Return = \beta_0 + \beta_1 \cdot EPS + \varepsilon$$

The variable EPS, reported earnings per share, is often downscaled using various factors, most commonly the market value of equity. The estimated coefficient β_1 is often referred to as the *"Earnings Response Coefficient"* (ERC) or "the magnitude of the relation between stock return and earnings" (Kothari 2001, p. 123).

Many times research focuses on abnormal, or excess, returns, rather than actual stock returns. Excess return is calculated by subtracting expected return from actual return. Expected return can be estimated with a variety of methods where two of the most common are the Capital Asset Pricing Model (CAPM) and the Fama-French three factor model (Fama and French, 1992). Excess return is often tested in a regression against unexpected earnings (UE) as the independent variable. UE is the difference between the expected reported earnings and actual reported earnings. A common approach is to base expected earnings on analyst forecasts (see Linderholm 2001; Freeman and Tse 1992; Easton and Zmijewski 1989). The regression, based on returns, can thus be re-written to:

$$AR = \beta_0 + \beta_1 \cdot UE + \varepsilon$$

AR equals abnormal return, the return in excess over a certain benchmark. UE stands for unexpected earnings, which equals reported earnings above, or below, the expectations of the market.

2.5 Previous Research on Value Relevance

IFRS have a much stronger emphasis on how to account for intangible assets and fair value accounting than many European countries have had under their different local GAAPs. The effect on value relevance from an increased accounting of intangible assets and fair value accounting that EU member states, adopting the new framework, will experience has been the subject of many previous studies.

2.5.1 Recognition of Intangibles

In their study, Lev and Zarowin (1999) find that the value relevance of financial reports has decreased over time. A large part of the decay is a consequence of increased investments in and accounting for intangible assets, something that current standards handle poorly. Large

investments in balance sheet items such as R&D are allowed to be expensed immediately, but the benefits and revenue are not accounted for until a later period. A mismatch between expenses and revenues arises as a result. The authors conclude that the decrease in value relevance is, to a great extent, caused by the failure of current accounting standards to account for intangible assets and place a credible value on them, due to the mismatch in costs and revenues.

This conclusion is supported by other studies as well, such as Collins et al. (1997), who find that the value relevance of reported earnings in the income statement had decreased, only to pave the path for increased value relevance for posts in the balance sheet. The combined result of decreased value relevance in earnings, but increased value relevance in balance sheet items, yielded a net increase in the overall value relevance of financial reports. According to the authors, a large portion of the shifted value relevance was due to increased frequency and magnitude of non-recurring items in the income statement and more intense intangible assets on the balance sheet. Francis and Schipper (1999) consider the possibility that decreased value relevance can be caused by the relative increase in importance of dominant high tech firms. They criticize current accounting systems for being very unable to adapt to these types of firms and argue that current accounting regulations are simply out of date and obsolete in this industry. Their study shows an increase in the value relevance of balance sheet items and a decrease in items from the income statement between 1952 and 1994.

Further research on capitalization of R&D also indicates strong compliance to previous findings. Lev and Sougiannis (1996) examine the effect of expensing R&D from a large sample of American listed firms and find that the value relevance of balance sheet items is improved with the capitalization of R&D. Aboody and Lev (1998) study the value relevance from capitalizing “software” and whether or not this capitalization are value relevant for investors. They find that yearly capitalizations of development expenses are positively and significantly associated with stock return and the accumulated capitalization of “software” on the balance sheet is associated with stock price.

The positive connection between value relevance and balance sheet items also seems to hold for the accounting of goodwill, where for example Jennings et al. (1996) and Henning et al. (2000) examine how the value relevance is affected by the accounting of goodwill. Both studies find an increase in value relevance.

Several empirical studies thus show that the increased accounting of intangible assets in the balance sheet leads to an increased value relevance of book values but the same strong evidence cannot be presented for reported earnings.

2.5.2 Fair Value Accounting

Earlier studies present evidence that fair value accounting increases the value relevance of the balance sheet, even though there are some contrarious studies. The study conducted by Barth, et al. (1996) examines fair value accounting for banks and concludes that estimates based on fair values of financial instruments, such as loans and securities, yield a significantly higher explanatory value for a bank's stock price than estimates based on the value of transactional costs. Khurana and Kim (2003) present evidence that the relation between stock market value and "fair value" is stronger than the relationship between market values and values based on historical transactional costs. This is true for actively traded securities but not for loans and deposits, as they contain errors in measurement as a result of infrequent trading.

2.5.3 Transitory Earnings

While evidence suggests positive value relevance regarding fair value accounting, the results for value relevance of periodical, non-realized gains and losses are mixed. Barth (1994) finds that non-realized gains and losses do not have any explanatory value on stock returns while Ahmed and Takeda (1995) and Park et al. (1999) conclude the opposite. Hann et al. (2007) examine fair value accounting of pension liabilities and find that fair value accounting impairs the value relevance of the income statement. This conclusion is supported by Stunda and Typpo (2004) who study the effect of reporting real estate at fair values in comparison to reporting according to historical costs. Similar to Hann et al. (2007), they deduce that as reported earnings become more transitory, the lose value relevance.

2.6 Previous Research: EU Adoption of International Financial Reporting Standards

The mandatory implementation of IFRS for listed firms in the EU has caused commotion and attracted a lot of interest in accounting research, and many studies have been conducted on the consequences of adopting IFRS. Many studies focus on how value relevance of reported financials and comparability between countries has been affected. Bartov et al. (2005), study relative value relevance. Given the differences in reporting under German or American local GAAPs and under IAS, they find that financials under IAS have a greater value relevance than those under local GAAPs. However, their results hold true for observations on gains, which

implies that accounting regime does not have an impact on the quality of reported information in the case of firms reporting losses.

Schiebel (2007) studies the value relevance of IFRS and German reporting standards. The sample consists of 24 German firms listed on the Frankfurt stock exchange during 2000-2004, where 12 of the firms adopt German GAAP exclusively. The remaining 12 report under IFRS. The author conducts a linear regression analysis on the market value of equity and concludes that German GAAP is significantly more value relevant than IFRS, regarding the balance sheet.

Horton and Serafeim (2010) examine market reactions and the value relevance for information contained in the mandatory transitional documents adjustment of English firms at the transition to IFRS. The sample is made up of 85 companies from FTSE 350 index in the year 2005. Horton and Serafeim (2010) use an event-study methodology and a market model. They find that the informational content of the adjustments from English GAAP to IFRS are value relevant in the aspect of reported earnings but not book value of equity.

Callao et al. (2007) analyze the effect of IFRS on the comparability and value relevance of Spanish financial reports. They conduct an empirical analysis of the usage of IFRS by firms listed on the Spanish exchange IBEX-35. They examine, on one part, the impact of IFRS on accounting variables and financial and economical key ratios, and on the other part the difference between historical costs and market values. The study shows that local comparability is negatively affected when both IFRS and local GAAPs are adopted simultaneously in the same country. The authors also find that there has been no improvement in the relevance of financial reports to local stock market players since the difference between book value and IFRS is greater when IFRS are applied. However, the study only examines the short term effect of IFRS and thus, no medium to long term conclusions about the effect of IFRS can be drawn.

Hung and Subramanyam (2007) conduct research on the effect of adopting IFRS on financials reported by firms in European countries using an intercontinental accounting tradition. Their study is based on a sample of German firms during 1998 to 2002. They find that total assets and book value of equity, and equally, the alterability in book value of equity and earnings is significantly higher under IFRS than under German GAAP.

Callao et al. (2009) study the impact of IFRS on European countries and evaluate on whether or not the national accounting differences that occurred after the mandatory adoption of IFRS was the result of previous accounting traditions. A sample of 242 firms from eleven countries is used in a cluster analysis where different countries are placed in different clusters depending on the standard deviation of their accounting standards. The clusters prove

to be heterogeneous in terms of affiliation to accounting traditions. Thus, they conclude that harmonization attempts from the EU have brought countries with different accounting traditions closer.

3 Test Logic

As we can see, prior research suggests that the value relevance of financial reports clearly is affected by the IFRS and other changes to accounting principles.

Our study aims to examine the effect from the implementation of the IFRS on the value relevance of financial reports from companies listed in the EU. More precisely, emphasis is placed on potential harmonization effects of market reactions. This is done by examining whether or not the value relevance of financial reports sparks similar reactions for firms reporting from different geographic regions within the EU. Before the mandatory adoption of the IFRS, firms reported under the local GAAP of their country, thus, applying different accounting principles in their financial reports. The local GAAPs of the European countries also differ in the extent of similarities to the IFRS, where some countries had large discrepancies between their local GAAP and IFRS and some countries had rather similar local GAAP to the IFRS.

To examine whether a harmonization effect has occurred in the EU, with regards to capital markets' reactions to disclosed financial information, our study investigates if and how the implementation of the IFRS in the EU has affected the value relevance of financial reports from firms based in different European countries.

The potential harmonization effect is tested through examining the relationship between financial reports and the stock price, and respectively, the stock return related to the disclosure of financial information. The test examines the potential differences in market reactions in both periods. During the second period we examine if a harmonization effect has occurred as a result of the transition to IFRS. Based on prior research, we expect the value relevance of disclosed financial information to be different between the two different regulatory environments. What is of interest here, however, is if the effect on the value relevance has led to a conjugation of capital market reactions between the different countries.

The effect on the value relevance, and the capital markets' reactions, is tested through the use of statistical models or, more precisely, an estimated linear regression between the dependent variable and relevant disclosed information as explanatory variables. Since we want to examine the effects on stock price, as well as the effect on stock return, we

choose to define two regression models. The first regression model is based on the stock price as the dependent variable and the second regression model is based on the stock return as the dependent variable.

We choose this two regression-approach since the two variables, although closely related, cannot be explained by the same relevant explanatory variables. Following the arguments proposed by Barth et al. (2001), and many others, for the difference in testing for these variables, we estimate a regression model that examines the relation between the stock price of a firm and reported book values as the explanatory variable. A second regression model examines the relationship between the stock return and reported earnings (Beisland 2008; Kothari 2001).

First, we aim to study whether or not the difference between the different local GAAPs and the IFRS framework (defined by a country interaction variable) provides a significant relationship for the disparity between the different countries, capital markets reactions to disclosed financial information. The test approach is formulated in the sub-hypothesis A. We test the null hypothesis that differences between the various countries' capital market reactions to disclosed financial information is not significantly related to the difference between local GAAP and the IFRS framework. The null hypothesis is tested against a two-sided alternative hypothesis:

$H_{A,\,0}$: The differences between the countries local GAAPs do not have a significant effect on the difference in capital markets reactions to disclosed information observed among the various countries.

$H_{A,\,1:}$ The differences between the countries local GAAPs have a significant effect on the difference in capital markets reactions to disclosed information observed among the various countries.

The second part of our study aims to investigate whether or not a harmonization effect of the reactions to disclosed information has occurred. To determine if a harmonization effect has occurred, the significance level of the estimated coefficients for the difference factor, defined by a country interaction variable, ought to have decreased between the two different periods. This rationale follows that the mandatory IFRS framework should result in financial information, independent of geographic origin, containing the same value relevant information and having the same perceived quality, thus, yielding the same capital market responses.

The same test procedure as in the test for sub hypothesis A is conducted for our second sub-hypothesis (B). The difference of the second sub hypothesis being that the distance factor is examined for the second period of mandatory IFRS reporting. We test the null hypothesis that differences between the various countries' capital markets reactions to disclosed information is not significantly related to the distance between local GAAP and the IFRS framework, during the second period of mandatory IFRS reporting. The null hypothesis is tested against a two-sided alternative hypothesis:

$H_{B,0}$: The differences between the countries local GAAPs, during the period of mandatory IFRS reporting, do not have a significant effect on the difference in capital markets reactions to disclosed information observed among the various countries.
$H_{B,1}$: The differences between the countries local GAAPs, during the period of mandatory IFRS reporting, have a significant effect on the difference in capital markets reactions to disclosed information observed among the various countries.

For the second period, to prove that a harmonization effect has occurred, the test should fail to reject the null hypothesis at a statistically significant level. This would imply that the mandatory IFRS reporting has rendered the effects of the differences between the local GAAPs on the capital markets' reactions to be statistically inseparable from zero. This would prove that a harmonization effect across the capital markets has occurred as the country-difference factor affecting the value relevance, and capital markets reactions to disclosed financial information, in the first period has decreased in significance and no longer being able to explain differences in the capital markets' reactions during the second period, due to the mandatory adoption of the IFRS.

4 Methodology

4.1 Data and Selection Criteria

4.1.1 Data and Sample Description

Bae et al. (2008) study different local GAAPs relation to the IFRS. The country whose GAAP had most resemblance to the IFRS was the UK with a rank of 1. Greece's local GAAP was concluded to be dissimilar to such a great extent that it was numbered 17. Since we aim to include a scope of different GAAPs as wide as possible in our study, these two countries, along with 3 others in between (Sweden, Spain, and Finland), are included in the study. We have collected market and accounting data for all firms listed on the stock exchanges for these

countries between the time span of 2002 to 2007. Market and accounting data are collected at the end of the fiscal year for each separate firm and year. The sample of each country consists of three years of observations (2002-2004) with local GAAPs as the prevailing accounting regime and three years (2005-2007) with IFRS as the prevailing accounting regime. Firms adopting IFRS before 2005 have been excluded from the sample, as well as firms reporting under other standards than local GAAP (U.S GAAP, for example). A limited amount of EC guidelines have, however, been allowed to be incorporated into local GAAP reporting. Our way to deal with exceptions, such as firms not reporting consolidated accounts, which are able to postpone the IFRS transition until 2007, is to exclude these from the sample. In other words, firms not reporting under the IFRS framework during and after 2005, for whatever reason, have been eliminated.

In addition to this, firms with missing data observations have been removed from the analyzed sample, as well as firms belonging to certain specific industries, mainly banks and other financial institutions, as annual reports in these sectors have different formats and results are not tied to operations (Linderholm 2001). As a result of the removal of certain observations due to specific industry classification, the observed sample decreased from a total of 4233 observations (of which 2131 belonged to the local GAAP regime and 2102 to the IFRS) to a total of 3308 observations (of which 1576 in local GAAP observations and 1732 in IFRS observations).[1] To avoid outliers having unreasonably large influence on the empirical results, the sample is winsorised on the upper and lower percentile of certain variables. These variables differ depending on the regression. PRICE and BVPS are winsorised in the price regression and RET and EARN in the return regression. This method to deal with outliers does, naturally, not affect the number of observations in our sample.

To enable all variables to be used in the same regression, it is necessary to translate all reported numbers to the same currency. For this purpose, we decided to use the Euro as the common ground. Finland, Spain, and Greece already report accounting numbers in Euro, unless the companies observed reported under different standards, such as US GAAP in where USD was the reported currency, in which case they are already excluded from the sample. PRICE, EARN, BVPS and SIZE variables for Sweden and the UK are, as a result, all converted to Euro. Since all collected data for these, and all other variables, are fiscal year-end

[1] The UK sample consists of 1233 of which 583 pre IFRS and 650 post. The sample of Swedish observations consists of 784 observations of which 385 pre IFRS and 399 post. Greek observations total 519 of which 239 are pre IFRS and 280 post. Finnish observations total 407 of which 189 pre IFRS and 218 post. Spanish observations total 341 of which 165 are pre IFRS and 176 post.

observations, the exchange rate from local currency (GPB £ and SEK, respectively) to Euro is collected at the exact same date and converted.

Table 1 – Sample Overview

	Sample Selection		
			Data Sample
	IFRS and Local GAAP data available in 2002-2007		4233
-	Adjustments for banks and financial institutions		949
=	Selected base sample		3284
	in which		
	Local GAAP observations		1561
	IFRS observations		1723

4.2 Statistical Tests

Both our sub hypotheses are tested by performing two OLS regressions, one for stock price and one for change in stock price, i.e. stock return. The regressions are estimated over the entire time horizon where observations reported under the IFRS regime are indicated by an interaction with a dummy variable, IFRS. In addition to this, the regressions also contain an indicator variable for each country except for the United Kingdom, which serves as a benchmark in our regression model. The United Kingdom is used as a benchmark because previous studies have shown that there is very little discrepancy between the IFRS and UK GAAP (Bae et al. 2008). Consequently, the transition from UK GAAP to IFRS should be the least eventful transition.

4.2.1 Price Regression

The Price Regression Model is estimated as follows:

$$Price = \propto_0 + \propto_1 \cdot BVPS + \propto_{i,c} \cdot COUNTRY_c + \propto_{j,c} \cdot COUNTRY_c \cdot BVPS + \propto_2 \cdot IFRS + \propto_3 \cdot BVPS \cdot IFRS + \propto_{k,c} \cdot COUNTRY_c \cdot IFRS + \propto_{l,c} \cdot COUNTRY_c \cdot BVPS \cdot IFRS + \varepsilon$$

Price represents the stock price for a given firm at time t, BVPS the book value of equity per share, and IFRS and COUNTRY are the indicator variables mentioned above, signaling reporting period and country (beyond our benchmark the UK), respectively. ε is the error term of the regression and α is the estimated regression coefficient for each included variable.

From the Price Regression Model, we can determine the stock price's response coefficient to reported book value per share (Book Response Coefficient) over time: $\frac{\partial Price}{\partial BVPS}$

$$BRC = \alpha_1 + \alpha_{j,c} \cdot COUNTRY_c + \alpha_3 \cdot IFRS + \alpha_{l,c} \cdot COUNTRY_c \cdot IFRS$$

The coefficient for change, BRC, corresponds to the main coefficient α_1 which is the estimated coefficient of observed book values under the time period of local GAAP, in addition to $\alpha_{j,c}$

and $\alpha_{l,c}$ which are moderated based on the IFRS and COUNTRY dummy variables. Thus, the indicators IFRS and COUNTRY have a significant impact on the BRC if the estimated coefficients $\alpha_{i,c}$, and $\alpha_{l,c}$ are significantly different from zero.

However, assuming the BRC is not dependent on several other factors could be regarded as rather naive. To control for this, we employ several control variables (CONT) presented in detail in the upcoming subsection (4.3). The BRC model can thus be illustrated as:

$$BRC = \alpha_1 + \alpha_{j,c} \cdot COUNTRY_c + \alpha_3 \cdot IFRS + \alpha_{l,c} \cdot COUNTRY_c \cdot IFRS + \alpha_4 \cdot CONT$$

The full price regression is then extended to:

$$Price = \propto_0 + \propto_1 \cdot BVPS + \propto_{i,c} \cdot COUNTRY_c + \propto_{j,c} \cdot COUNTRY_c \cdot BVPS + \propto_2 \cdot IFRS + \propto_3 \cdot BVPS \cdot IFRS + \propto_{k,c} \cdot COUNTRY_c \cdot IFRS + \propto_{l,c} \cdot COUNTRY_c \cdot BVPS \cdot IFRS + \alpha_4 \cdot CONT + \alpha_5 \cdot BVPS \cdot CONT + \varepsilon$$

Further interaction terms between the IFRS, COUNTRY and CONT variables could be included in this regression, but are excluded to prevent issues with multicollinearity.

4.2.2 Return Regression

The value relevance of reported earnings can be tested in a similar fashion, where the second regression model, for return, is specified as:

$$RET = \beta_0 + \beta_1 \cdot EARN + \beta_{i,c} \cdot COUNTRY_c + \beta_{j,c} \cdot COUNTRY_c \cdot EARN + \beta_2 \cdot IFRS + \beta_3 \cdot EARN \cdot IFRS + \beta_{k,c} \cdot COUNTRY_c \cdot IFRS + \beta_{l,c} \cdot COUNTRY_c \cdot EARN \cdot IFRS + \varepsilon$$

RET represents the excess return for a given firm at time t, EARN represents the earnings per share, and IFRS and COUNTRY are the same indicator variables used in the price regression. ε is the error term of the regression and β is the estimated regression coefficient for each included variable.

Similar to the price regression, we can determine the return's response coefficient to reported earnings per share (Earnings Response Coefficient) over time: $\frac{\partial RET}{\partial EARN}$

$$ERC = \beta_1 + \beta_{j,c} \cdot COUNTRY_c + \beta_3 \cdot IFRS + \beta_{l,c} \cdot COUNTRY_c \cdot IFRS$$

The same logic is applied to the return regression as in the price regression. The coefficient for change ERC corresponds to the main coefficient β_1 which is the coefficient of reported earnings under the time period of local GAAP, in addition to $\beta_{j,c}$ and $\beta_{l,c}$ which are moderated based on IFRS and COUNTRY. Thus, the indicators IFRS and COUNTRY have a significant impact on the ERC if the coefficients $\beta_{i,c}$ and $\beta_{l,c}$ are significantly different from zero.

Prior research has provided evidence that several firm specific factors affect the value relevance measured by the ERC. It is of utter importance to control for factors of this kind before any statistical conclusion can be drawn regarding the impact of accounting standards on the ERC. The ERC equation, including control variables, can be written as:

$$ERC = \beta_1 + \beta_{j,c} \cdot COUNTRY_c + \beta_3 \cdot IFRS + \beta_{l,c} \cdot COUNTRY_c \cdot IFRS + \beta_4 \cdot CONT$$

The control variables employed is further discussed in the upcoming subsection (4.3).

The full return regression is then extended to:

$$\begin{aligned} Return = {} & \beta_0 + \beta_1 \cdot EARN + \beta_{i,c} \cdot COUNTRY_c + \beta_{j,c} \cdot COUNTRY_c \cdot EARN + \beta_2 \cdot IFRS \\ & + \beta_3 \cdot EARN \cdot IFRS + \beta_{k,c} \cdot COUNTRY_c \cdot IFRS + \beta_{l,c} \cdot COUNTRY_c \\ & \cdot EARN \cdot IFRS + \beta_4 \cdot CONT + \beta_5 \cdot EARN \cdot CONT + \varepsilon \end{aligned}$$

4.2.3 Hypotheses and Test Procedure

For the price regression, sub hypothesis one, $H_{A,P}$, is tested through the formulation of the hypothesis as:

$$H_{A,P,0}: \alpha_1 = 0 \ \& \ \alpha_{j,c} = 0$$

$$H_{A,P,1}: \alpha_1 \neq 0 \ \& \ \alpha_{j,c} \neq 0$$

Where $H_{A,P,0}$ suggests that the BRC, during the first period, is not moderated by the difference in local GAAPs, as indicated by the estimated coefficient for the interaction effect between COUNTRY and BVPS. Despite strong documented evidence on the effects on the estimated coefficients for the BRC and ERC from the implementation of the IFRS, we cannot with absolute certainty rule out the possibility of the estimated coefficients to move in either one of the directions. Thus, the null hypothesis will be tested against a double-sided alternative hypothesis. The first sub hypothesis is tested against the hypothesis that the BRC is affected by different local GAAPs, as indicated by the interaction with the COUNTRY indicator variable and BVPS. The first sub hypothesis aims to prove that there is a significant difference in the BRC between different capital markets due to country related differences in accounting practices.

The same logic is applied to the return regression and the ERC, where the sub hypothesis $H_{A,R}$ can be tested through formulating the hypothesis as:

$$H_{A,R,0}: \beta_1 = 0 \ \& \ \beta_{j,c} = 0$$

$$H_{A,R,1}: \beta_1 \neq 0 \ \& \ \beta_{j,c} \neq 0$$

Our second sub hypothesis, H_B, is formulated as below in the price regression:

$$H_{B,P,0}: \alpha_3 = 0 \ \& \ \alpha_{l,c} = 0$$

$$H_{B,P,1}: \alpha_3 \neq 0 \ \& \ \alpha_{l,c} \neq 0$$

Where $H_{B,P,0}$ suggests that the BRC, during the period of mandatory IFRS reporting, is not moderated by the difference in local GAAPs, as indicated by the estimated coefficient for the interaction effect between COUNTRY and BVPS. The sub hypothesis is tested against the hypothesis that the BRC is affected by difference in local GAAPs during the period of mandatory IFRS reporting despite not any longer reporting under local GAAPs. A wiser choice of words would, in this case, be country related effects instead of local GAAPs, as the firms no longer report under different local GAAPs. This is indicated by the interaction with the country indicator variable, the BVPS variable, and the indicator variable for the IFRS period. The second sub hypothesis aims to prove whether or not there still exists a significant difference in the BRC between different capital markets due to country related effects, despite reporting under the same accounting standards.

Similarly, the hypothesis for the return regression, $H_{B,R}$, is formulated:

$$H_{B,R,0}: \beta_3 = 0 \ \& \ \beta_{l,c} = 0$$

$$H_{B,R,1}: \beta_3 \neq 0 \ \& \ \beta_{l,c} \neq 0$$

The same logic applies to the return regression and the ERC as the discussion revolving the effects on the BRC discussed in the formulation of the second sub hypothesis for the price regression above.

As mentioned in the test logic (section 3), a harmonization effect cannot be identified if we are able to reject both null hypotheses A and B, indicating that the country related interactions still are significant moderators to differences in BRC and ERC between capital markets in the EU. For a harmonization effect to be detected, rejection of the null hypothesis of sub hypothesis A is required, and a failure to reject the null hypothesis of sub hypothesis B. This would indicate that the COUNTRY interaction lost its moderating effect in the second period, as we cannot reject the null hypothesis of those estimated coefficients to be significantly different from zero.

The sub hypotheses will be tested through conducting a partial F-test on a sub set of regression coefficients. We do this to examine the combined effect of several variables in the regression model (COUNTRY and IFRS). The test is carried out by comparing the error sum of squares from the unrestricted model, the one containing all variables, to the error sum of squares from a restricted model where we have omitted the variables we wish to test. If the

computed F statistic is larger than the critical value of F, the null hypothesis being tested is rejected (Newbold et al. 2013). In other words, each null hypothesis can be rejected if:

$$F = \frac{SSE_{restricted} - SSE_{unrestricted}/R}{s_e^2} > F_{critical}(n - K - R - 1)$$

Where SSE is the error sum of squares of the regression model, R is the number of omitted variables in the restricted model, i.e. the variables we are interested in studying the combined effect of s_e^2 is the estimated variance of the error in the unrestricted model. n is the number of observations and K is the number of variables used the in the unrestricted model. The computed F follows an F distribution with R degrees of freedom in the numerator and $n - R - K - 1$ degrees of freedom in the denominator.

4.3 Operationalization of Variables

4.3.1 Operationalization of Dependent Variables

We have collected our data using Datastream exclusively. As mentioned, we use two different regressions (price and return), which both include a set of control variables that are assumed to affect the price or return, respectively.

$$Price = \propto_0 + \propto_1 \cdot BVPS + \propto_2 \cdot IFRS_C + \propto_3 \cdot IFRS_M + \propto_4 \cdot IFRS_F + \alpha_5 \cdot CONT + \propto_6 \cdot BVPS \cdot IFRS_C + \propto_7 \cdot BVPS \cdot IFRS_M + \propto_8 \cdot BVPS \cdot IFRS_F + \alpha_9 \cdot BVPS \cdot CONT + \varepsilon$$

In the price regression, the left-hand side of the equation consists of stock price, measured as a given firm's stock price at the end of fiscal year t.

$$RET = \beta_0 + \beta_1 \cdot EARN + \beta_2 \cdot IFRS_C + \beta_3 \cdot IFRS_M + \beta_4 \cdot IFRS_F + \beta_6 \cdot EARN \cdot IFRS_C + \beta_7 \cdot EARN \cdot IFRS_M + \beta_8 \cdot EARN \cdot IFRS_F + \beta_9 \cdot EARN \cdot CONT + \varepsilon$$

The left hand side of the return regression (RET) consists of excess return and is operationalized as the difference of the firm's year-end stock price to last year's stock price, divided with last year's stock price. Excess in this definition is return in excess of the approximated risk free rate. The risk free rate is calculated as the 10-year government bond rate for each year in each country, respectively. The estimated risk free rate in Greece each year is the mean of the corresponding 10-year Government bonds for the other four countries included in this study. Consequently, the assumed risk free rate differs in each country observed, but is the same regardless of company or industry within the country. By including various risk proxies as control variables in our return regression (see later discussion in this section), the return variable, RET, becomes a measure of the stock's abnormal return. This is since controlling for

variables related to risk in our regression model makes the residual, our dependent variable, equal to abnormal return, which cannot be explained by the other included risk factors.

4.3.2 Operationalization of Independent Variables

Price:

The book value per share (BVPS) variable is used as an explanatory variable and measured as a firm's book value of equity per share, also at the end of each given fiscal year.

Return:

In the return regression, the earnings variable (EARN) is used as an explanatory variable and calculated as fiscal year t's earnings per share (EPS) deflated by the previous year's stock price (t-1).

Independent Variables Entering Both Regressions:

The IFRS variable is a dummy variable signaling whether or not the observation is reported under local GAAP (dummy = 0) or IFRS (dummy = 1). Similarly, the COUNTRY indicator variable signals to which local GAAP an observation originates from, regardless of period. The variable names in our regression models (presented in section 5) follow a format of having the independent variable first, followed by the interaction effect from each of the indicators. For example, in the price regression during the first period, the interaction between BVPS and COUNTRY is named BVPS_SWE (for Sweden). To further illustrate, in the return regression during the second period, the interaction between EARN, COUNTRY and IFRS is named EARNIFRS_SWE (for Sweden).

4.3.3 Operationalization of Control Variables

Price:

The earnings variable (EARN) is defined as fiscal year t's earnings per share (EPS) deflated by the previous year's (t-1) stock price. As opposed to the use of this variable in the return regression, EARN acts only as a control variable, and not as an explanatory variable in the price regression. However, the calculation remains the same. BTM and MOM are both excluded from the price regression. BTM is represented by BVPS in the price regression and MOM is excluded because if included, the BVPS will explain change in price, rather than the actual price.

Two additional dummy variables play into the equation: a loss dummy (LOSS) indicating whether or not earnings in fiscal year t was positive (indicated as the value 0 for the LOSS dummy) or negative (indicated as the value 1), and a dummy variable (INTAN) indicating if the firm of each observation belongs to an industry with generally high intangible

asset intensity (indicated as the value 1 for intangible asset intense firms). According to Hayn (1995), the response coefficient of negative earnings is considerably lower than the equivalent for positive earnings; hence the LOSS variable is included in the equation to act as a moderator variable. The INTAN control variable enables us to make sure that the difference in the BVPS response coefficient is not the result of a difference in intangible asset intensity between firms reporting under local GAAP and IFRS. Moreover, a lack of intangible asset capitalization can have a major impact on the value relevance of financial reports (Lev and Zarowin 1999). When expenditures on intangibles are not treated as investment expenditures they cannot be matched with future revenues streaming from the intangible source and become less informative. In addition to the above, the equations also include control variables for both systematic and firm-specific risk. The beta (BETA) of a firm is a proxy risk factor controlling for systematic risk, used as in the Capital Asset Pricing Model (CAPM). A size (SIZE) variable is also used as a proxy risk factor, and is calculated as the logarithm of a firm's market value of equity in fiscal period t-1.

Return:

The variables LOSS, INTAN, BETA and SIZE are used in the return regression just as in the price regression and calculated in the same way. A book-to-market ratio (BTM) is also used as a control variable for risk. SIZE and BTM are deemed to be relevant risk factors on the cross-section of companies according to Fama and French (1992). In case returns display serial correlation, the final risk proxy, momentum (MOM), is used to adjust for this. (Carhart 1997). Momentum is a lagged version of the dependent variable and is defined as the excess return in the previous fiscal period t-1.

Control Variables Entering Both Regressions:

In addition to this, a vector of dummy variables for each industry (IND) is used in both regressions. This signifies that fixed industry effects are controlled for; there is one constant term for each industry. These coefficients are, however not reported.

4.4 Sample Descriptives

4.4.1 Descriptives

Tables 2.1, 2.2, 3.1, and 3.2 below list distributional statistics for the dependent and independent variables entering into the price and return regression. Data is displayed for the IFRS and local GAAPs subsamples. Notice that the subsamples are almost equal in size with the sub sample of GAAP consisting of 1561 observations and IFRS of 1723.

The data for the subsample of local GAAPs and IFRS in the price regression show that the average stock price under GAAP was significantly lower than under IFRS. Local GAAP mean stock price was 6.55 € and the IFRS equivalent was 10.48 €. The subsample of local GAAP has an average book value of equity per share of 3.62, which is lower than the average for the IFRS subsample of 4.34. This is by no mean a surprise since we would expect that book value of equity per share to be higher for the IFRS sample due to more recognition and measurement at fair value.

In terms of the return regression, we can notice that we are looking at a period of relatively normal stock returns. The average for the first period is 13% and 18% for the second period. The earnings yield displays similar characteristics, showing a mean of 3% in the first period and 6% in the second. The earnings distribution appears to be skewed left, slightly more for the local GAAPs sample, which can be interpreted as a tendency of more loss reporting in the local GAAPs sample, i.e. the period of 2002-2004.

Table 2.1 – Price Regression Descriptives: Local GAAP

Variable	n	Mean	S.D.	Min	.25	Mdn	.75	Max
PRICEW	1561	6.55	10.46	0.25	1.82	3.62	7.21	86.35
BVPSW	1561	3.62	5.48	-0.15	0.88	1.90	3.90	39.97

Table 2.2 – Price Regression Descriptives: IFRS

Variable	n	Mean	S.D.	Min	.25	Mdn	.75	Max
PRICEW	1723	10.48	13.23	0.25	2.96	6.47	12.81	86.35
BVPSW	1723	4.34	6.09	-0.15	1.14	2.42	4.79	39.97

Table 3.1 – Return Regression Descriptives: Local GAAP

Variable	n	Mean	S.D.	Min	.25	Mdn	.75	Max
RETW	1561	0.13	0.63	-0.87	-0.22	0.05	0.34	2.74
EARNW	1561	0.03	0.14	-0.52	0.01	0.06	0.09	0.35

Table 3.2 – Return Regression Descriptives: IFRS

Variable	n	Mean	S.D.	Min	.25	Mdn	.75	Max
RETW	1723	0.18	0.46	-0.87	-0.11	0.11	0.39	2.74
EARNW	1723	0.06	0.09	-0.52	0.04	0.07	0.09	0.35

4.4.2 Simple Correlation

Table 4 and 5 below display the correlation coefficients between the variables applied in the price regression and the return regression, respectively. A star (*) in the tables implies that the correlation is significant at the 95% level. Correlations are presented both for the IFRS and the local GAAP samples, where the local GAAP sample is below the diagonal.

Table 4 reveals that stock price is highly correlated, at the 95% significance level, to the book value of equity per share in both subsamples of the price regression model. In general, the majority of the used variables, in the price regression, have a significant correlation with stock prices, although the pre-IFRS period yields slightly more significant correlations.

Table 4 – Price Regression Correlation

	Price	BVPS	EARN	LOSS	INT	BETA	SIZE	
Price	1,0000	0,8405*	0,0621*	-0,1296*	-0,1146*	-0,0555*	0,2334*	
BVPS	0,7861*	1,0000	0,1002*	-0,0814*	-0,1469*	0,0383	0,2033*	
EARN	0,0095	0,6202	1,0000	-0,6248*	-0,2208*	0,041	0,0008	
LOSS	-0,0658*	-0,0592*	-0,5664*	1,0000	0,2098*	-0,0589*	-0,0333	IFRS
INT	-0,0419	-0,0962*	-0,1222*	0,2071*	1,0000	-0,0213	-0,0584*	
BETA	-0,0436	0,0044	-0,0135	0,0382	-0,0127	1,0000	0,105*	
SIZE	0,1644*	0,137*	0,0925*	-0,1189*	-0,0919*	0,112*	1,0000	

Local GAAP

In terms of the return regression, table 5 exhibits a significant correlation between earnings per share and stock price. As could be expected, both loss and beta values within our data set display significant correlations to stock price in both subsamples.

Table 5 – Return Regression Correlation

	RET	EARN	LOSS	INT	BETA	SIZE	BTM	MOM	
RET	1,0000	0,3185*	-0,1359*	-0,0472	0,0501*	0,0441	0,0015	0,0635*	
EARN	0,2153*	1,0000	-0,6885*	-0,2299*	0,0445	0,0009	0,0506*	0,149*	
LOSS	-0,1741*	-0,7507*	1,0000	-0,2098*	-0,0589*	-0,0333	0,0532*	-0,1634*	
INT	-0,0007	-0,1706*	0,2071*	1,0000	-0,0213	-0,0584*	-0,072*	-0,0037	IFRS
BETA	0,0628*	-0,025	0,0382	-0,0127	1,0000	0,105*	-0,0691*	0,1199*	
SIZE	0,0486	0,1267*	-0,1189*	-0,0919*	0,112*	1,0000	-0,0317	0,1001*	
BTM	0,0255	-0,0017	0,0417	-0,0573*	0,0196	-0,1856*	1,0000	-0,1301*	
MOM	0,0416	0,0136	-0,0311	-0,0141	-0,0075	-0,0612*	-0,0179	1,0000	

Local GAAP

4.5 Econometric Discussion

4.5.1 The Term "Book Response Coefficient"

The usage of the term book value response coefficient (BRC) can tend to be quite controversial as there are many who claim that stock prices are not related to, and therefore do not respond to, book values of equity. The general view is the idea that stock prices respond to value creation, which is traditionally measured by earnings, not book value (see Ghosh et al. 2005). The term "book value association coefficient" (Beisland and Knivsflå 2009, p. 253) might be more valid than "book response coefficient". This term is, however, not a common denotation in literature treating the subject (Beisland and Knivsflå 2009). Consequently, we continue to employ the BRC term as we hope to have clarified exactly what the term infers.

4.5.2 Using a Linear Model

The analysis is conducted through a linear regression model, a very standard model to use in this field of research (Linderholm 2001). However, there are studies claiming a non-linear relation between return and earnings (Linderholm 2001, p. 30). First and foremost, extreme outliers in unexpected earnings do not affect return the same way as "regular" unexpected earnings do. ERC is thus lower for extreme measures of unexpected earnings. The reason for this is because extreme earnings are commonly not considered to be sustainable in the long term and are often ignored in analyst forecasts and valuations. Secondly, evidence suggests that the ERC is lower for reported losses than it is for gains (Lipe et al. 1998). Basu (1997) and Collins et al. (1997) provide evidence for higher ERCs for gains than for losses. In other words, investors' reactions are softer when presented with losses. According to Lipe et al. (1998), and Hayn (1995), one explanatory factor, as to why investors react less to losses, is that they only have a limited liability in case of a financial crisis and simply do not care equally. Furthermore, conservatism in accounting causes losses to be recognized earlier than gains in the income statement. This causes issues regarding both timeliness and consistency of reported earnings (Beisland 2008, p. 29) and consequently, recognition and ERC is positively biased for gains at the expense of losses. Together, these two factors imply that a linear regression is not necessarily the most applicable model in this case and could indicate that ultimately, our results are not as reliable as currently considered.

4.5.3 Operationalization of Market Expectations

How we choose to specify unexpected earnings is another source for potential econometric issues as excess return can have a significant impact on the regression results. If expected earnings are underestimated, it explicitly means that the surprise, or excess part, is larger than in reality implying that the estimated ERC is lower than what it should be. Similarly, if expectations are overestimated, the estimated ERC will be lower than it should. The result would be useless estimations of ERC that are not applicable. In order to find a correct ERC, it is of great importance that the variable for market expectations is correctly operationalized. This study follows the approach used by Kothari & Zimmerman (1995). Linderholm (2001) suggests using different operationalization approaches as a robustness test, but similar to her case, such an approach is not feasible within the framework of this particular study. An alternative approach that should be considered in further research or replications of this study would be to base market expectations on I/B/E/S (Institutional Brokers' Estimate System) data. I/B/E/S contains analyst estimates for over 40 years back and may provide very accurate

estimations on market expectations on earnings. It could be argued that I/B/E/S is, per definition, the markets expectations. Contrary to what has been suggested however, Erlandsson and Pantzar (1999) argue that different approaches in operationalizing market expectations have very little impact on the results.

4.5.4 Adjusting for Market Inefficiency

All data is, as mentioned, collected at fiscal year-end points in time. We have considered accounting for the possibility of slow stock market adjustment to disclosed accounting information, a violation against our assumption of an efficient semi-strong form market. However, this inefficiency-adjustment procedure, as proposed by Aboody et al. (2002), to account for a slow stock market adjustment has not been conducted. This is because Gjerde et al. (2008) fail to find any significant difference in results attributable to this procedure. Consequently, we proceed without employing it. This implies that we operate under the assumption of a semi-strong form market, meaning that stock prices reflect all available information and adjust accordingly immediately resulting in the absence of post-announcement drift.

5 Results

5.1 Multicollinearity, Heteroscedasticity and Autocorrelation

Before we test our hypotheses using the methodology stated in section 3, we test our sample for eventual violations against the underlying assumptions of an OLS regression. We conduct tests for the presence of heteroscedasticity and autocorrelation in our datasets, and multicollinearity between our variables.

5.1.1 Test for Multicollinearity

The potential problem of multicollinearity that may occur when running our regression models is due to the extensive use of interaction effects in our regression models. The problem arises if some explanatory variables are highly correlated. This creates a problem when evaluating the statistical significance of the regression coefficient of a test variable which is highly collinear with another variable. However, colliniearity or multicollinearity between control variables is no issue for the statistical inference of the emphasized test variable, which is in our case the interaction between the independent variables (BVPS and EARN) with the IFRS and COUNTRY indicators. One specific issue arising from the LOSS control variable, that is not

easy to bypass, is that LOSS cannot be observed directly; instead it is based on accounting information. Implying that the LOSS variable to some extent will become collinear with the independent variables.

The results from our multicollinearity test are presented in tables 6-7 in the appendix. The condition numbers presented are a measure of the multicollinearity in our dataset. Adopting a conservative approach, a condition number above 20 indicates troublesome multicollinearity, and above 30 implies severe multicollinearity (see Belsley et al. 1980).

The condition number in our price regression models is approximately 24,11, which indicates troublesome multicollinearity. A further analysis of the variance-decomposition proportions suggests that the test variable BVPS is collinear with variable BVPSSIZE. As the VIF is 19.78 for BVPS and 28.02 for BVPSSIZE, the collinearity is considered a problem. Dropping the control variable BVPSIZE and re-running the test for multicollinearity produces a condition number of 13.24 and a VIF of 4.87 for BVPS (see tables 6.3 and 6.4 in Appendix), which is below the often emphasized cut-off value of 10 (Hair et al. 2006). This indicates no further problem of multicollinearity between our independent variables in the price regression model.

The condition number in our return regression models equals 23.69, which also indicates troublesome multicollinearity. Similar to the price regression, analysis of the variance-decomposition proportions indicate that the test variable EARN is collinear with variable EARNSIZE. Since the VIF is 26.60 for EARN and 26.18 for EARNSIZE, the collinearity is considered a problem. Dropping the control variable EARNSIZE and re-running the test for multicollinearity gives a condition number of 14.94 and a VIF of 9.68 for EARN (see panel tables 7.3 and 7.4 in Appendix), which is also below the often emphasized cut-off value of 10 (Hair et al. 2006). This indicates no further problem of multicollinearity between our independent variables in the return regression model.

5.1.2 Test for Heteroscedasticity

We test the assumption of homoscedasticity among our standard errors before employing our OLS regression by using the Breusch-Pagan test. The Breusch-Pagan test detects significant heteroscedasticity in both the price regression model and the return regression (See tables 8 and 9 in the appendix). We further illustrate the presence of heteroscedasticity by plotting the residuals in a scatter plot (figures 1 and 2 in the appendix). From the plotted graphs presented, the prescence of heteroscedasticity becomes evident.

5.1.3 Test for Autocorrelation

The Arellano-Bond test detects significant autocorrelation and the results are presented in table 10 in the appendix.

5.1.4 Conclusion

Table 11 below concludes our adjustments for multicollinearity and heteroscedasticity. For our main tests we proceed with the variables not dropped by our multicollinearity test and employ heteroscedastic robust standard deviations, for our samples with present heteroscedasticity, in our calculations of the t-and p-values. We proceed with the described procedure without employing standard deviations robust for autocorrelation in addition to heteroscedasticity. The stastical software of choice, STATA, lacks a command combining all adjustments we consider necessary, i.e. adjustments for firm-fixed effects, standard deviations robust for heteroscedasticity, and standard deviations robust for autocorrelation. Consequently, we exclude adjustments for autocorrelation and choose to focus on the tests we consider more important, which are controlling for fixed-firm effects and employing heteroscedastic robust standard deviations in our OLS regressions. The presence of autocorrelation does not affect our estimated coefficient, instead, autocorrelation implies that the error terms of our regression are underestimated implying that the t-scores may be overestimated. This would, in our case, result in inflated significance levels.

Table 11 – Summary of Employed Adjustments

Problem	**Price Regression**	**Return Regression**
Multicollinearity	Dropping BVPSSIZE	Dropping EARNSIZE
Presence of heteroscedasticity	Employing heterscedastic robust standard residuals	Employing heterscedastic robust standard residuals
Presence of autocorrelation	No adjustments made	No adjustments made

5.2 Regression Results

Table 12 below presents the estimated coefficients for our price regression model and the return regression model, including control variables and all interaction effects. As mentioned above, BVPSSIZE and EARNSIZE have been omitted due to issues with multicollinearity in the price and return regression, respectively. We employ heteroscedastic robust standard deviation in our calculations of the p-values. The vector of control variables for industry is not presented, as they are not of interest.

Table 12 – Price

Regression

VARIABLES	PRICE	t-stat
PRICE		
BVPS	1.861***	15.01
SWE_D	-1.214***	-2.613
FIN_D	1.236**	2.446
ES_D	-0.598	-1.235
GR_D	-1.434***	-2.997
IFRS	1.768***	6.823
LOSS	-1.001**	-2.369
INT	0.217	0.326
BETA	-0.309	-1.131
SIZE	0.282***	5.826
BVPSSWE	0.000872	0.00466
BVPSFIN	-1.008***	-5.518
BVPSES	-0.407***	-2.827
BVPSGR	-0.482***	-3.011
BVPSIFRS	0.173	1.172
BVPSLOSS	-0.0459	-0.351
BVPSINT	0.306**	2.367
BVPSBETA	-0.0915	-1.331
BVPSIFRS_SWE	0.0588	0.308
BVPSIFRS_FIN	0.449**	2.316
BVPSIFRS_GR	-0.167	-0.836
BVPSIFRS_ES	0.441***	2.661
Constant	-3.809***	-6.176
Observations	3,284	
R-squared	0.780	

*** p<0.01, ** p<0.05, * p<0.1

Table 13 – Return

Return Regression

VARIABLES	RET	t-stat
RET		
EARN	3.854***	8.281
SWE_D	0.0203	0.529
FIN_D	-0.0285	-0.701
ES_D	0.0327	0.733
GR_D	-0.00634	-0.165
IFRS	-0.0533**	-2.221
LOSS	0.0926*	1.927
INT	-0.343**	-2.544
BETA	0.0381*	1.752
SIZE	0.00197	0.626
BTM	-0.000994	-0.0778
MOM	-0.000942	-1.248
EARNIFRS	-0.322	-0.852
EARNSWE	0.595	1.496
EARNFIN	0.302	0.618
EARNES	-0.219	-0.315
EARNGR	0.0197	0.0401
EARNLOSS	-4.380***	-10.73
EARNINT	0.0216	0.0700
EARNBETA	-0.0329	-0.170
EARNBTM	-0.338**	-2.294
EARNMOM	-0.0246	-1.150
EARNIFRS_SWE	0.332	0.613
EARNIFRS_FIN	0.664	1.047
EARNIFRS_ES	2.583***	3.317
EARNIFRS_GR	1.156*	1.822
Constant	0.216*	1.674
Observations	2,796	
R-squared	0.238	

*** p<0.01, ** p<0.05, * p<0.1

As illustrated by table 12, the main coefficient for the BRC, the estimated coefficient for variable BVPS, is highly significant. Among the moderators for countries, all estimated coefficients except for BVPS_SWE are highly significant. Adding the moderating effects of IFRS to the COUNTRY indicator yields mixed levels of significance. The estimated coefficients for BVPSIFRS_SWE and BVPSIFRS_GR are not significant whilst BVPSIFRS_FIN and BVPSIFRS_ES are significant. Note that 24 observations have been dropped as a result missing values.

Table 13 presents similar results in terms of the return regression. The estimated main coefficient for the ERC, the coefficient of variable EARN, is highly significant. The estimated coefficients for the COUNTRY interaction yield no significant values. However, the estimated coefficient for the interaction between the IFRS, COUNTRY and EARN variable yields, just as in the price regression, mixed levels of significance. EARNIFRS_SWE and

EARNIFRS_FIN are not significant. EARNIFRS_ES is highly significant whilst EARNIFRS_GR is considerably significant.

In the return regression, a few additional observations have been dropped as the result of missing values for momentum in 2002.

The variation in levels of significance for our estimated coefficients in both regressions is not fully satisfying. However, the significance does not affect our testing of the sub hypotheses as we are testing the joint effect of the estimated coefficients of the COUNTRY interaction and later COUNTRY and IFRS interactions, respectively. By simply examining the significance of one variable at a time does not provide insight to if the sought after harmonization effect has occurred across countries simultaneously.

5.3 Test of Hypotheses A and B

Testing sub hypothesis A provides us with insight to the interaction between countries in the period before mandatory IFRS adoption. For simplification matters, the γ_x below represents the α_x, and β_x in the price and return regressions, respectively:

$$H_{A,0}: \gamma_1 = 0 \;\&\; \gamma_{j,c} = 0$$

$$H_{A,1}: \gamma_1 \neq 0 \;\&\; \gamma_{j,c} \neq 0$$

Sub hypothesis B tests if the significance of the estimated coefficients has changed in the second period for the interaction with IFRS:

$$H_{B,0}: \gamma_3 = 0 \;\&\; \gamma_{l,c} = 0$$

$$H_{B,1}: \gamma_3 \neq 0 \;\&\; \gamma_{l,c} \neq 0$$

The null hypothesis is rejected if:

$$F = \frac{SSE_{restricted} - SSE_{unrestricted}/R}{s_e^2} > F_{critical}(n - K - R - 1)$$

Tables 14.1 and 14.2 below presents the results of testing the simultaneous joint effects of all of the estimated coefficients of the interaction between BVPS and EARN with the COUTNRY indicators. Notice that this table presents the F-statistic for the first period.

Table 14.1 – F-test for H_A in Price Regression

```
( 1)  BVPSSWE = 0
( 2)  BVPSFIN = 0
( 3)  BVPSGR = 0
( 4)  BVPSES = 0
( 5)  BVPSW = 0

      F(  5,  3174) =  113.82
           Prob > F =    0.0000
```

Table 14.2 – F-test for H_A in Return Regression

```
( 1)  EARNSWE = 0
( 2)  EARNFIN = 0
( 3)  EARNGR = 0
( 4)  EARNES = 0
( 5)  EARNW = 0

      F(  5,  2682) =   26.38
           Prob > F =    0.0000
```

As can be seen in the tables above, the first null hypothesis for the price regression can be rejected at the highest possible significance level, implying that all the estimated coefficients for the country effect are significantly different from zero. Thus, the country interaction has an impact on the BRC. The exact same result can be seen for the return regression where we also reject the null hypothesis at the highest possible level of significance. In other words, the BRC and ERC are affected, to a great extent, by differences in local GAAPs .

Tables 15.1 and 15.2 below presents the results of, again, testing the simultaneous joint effects of all of the estimated coefficients of the interaction between BVPS and EARN with the COUNTRY and IFRS indicators. Notice now that this table presents the F-statistic for the second period.

Table 15.1 – F-test for H_B in Price Regression

```
( 1)  BVPSIFRS_SWE = 0
( 2)  BVPSIFRS_FIN = 0
( 3)  BVPSIFRS_GR = 0
( 4)  BVPSIFRS_ES = 0
( 5)  BVPSIFRS = 0

      F(  5,  3174) =   13.63
           Prob > F =    0.0000
```

Table 15.2 – F-test for H_B in Return Regression

```
( 1)  EARNIFRS_SWE = 0
( 2)  EARNIFRS_FIN = 0
( 3)  EARNIFRS_GR = 0
( 4)  EARNIFRS_ES = 0
( 5)  EARNIFRS = 0

      F(  5,  2682) =    2.68
           Prob > F =    0.0200
```

The second null hypothesis for the BRC can also be rejected at the highest possible significance level implying that the estimated coefficients for this interaction also are significantly different from zero. In terms of the return regression, the estimated coefficients of the interaction can be rejected at 98% significance level, also implying that the coefficients are significantly different from zero, having an impact on the ERC.

6 Conclusion

6.1 General Conclusion

The presented results from our main tests indicate that we cannot prove that a harmonization effect from the mandatory IFRS reporting on the different countries capital markets' reactions has occurred. We observe from our tests that both the estimated coefficients for the interaction effect from the COUNTRY indicator variable, and the estimated coefficient for the joint interaction with COUNTRY and the IFRS indicator variable, are significantly different from zero. The results imply that a country difference still exists between the moderators for the ERC and BRC for the different countries in our sample, even after the interaction with the IFRS indicator variable is included.

For a harmonization effect to be detected, the interaction between the COUNTRY indicator and the BVPS and EARN variables, respectively, should lose their significance when we include the interaction with the IFRS moderator, implying that they cannot be statistically separated from zero any longer. In other words, the interaction with the IFRS on the different estimated coefficients for the COUNTRY moderators should present a loss in significance during the second period of mandatory IFRS reporting. For a harmonization effect to be present, the IFRS reporting should eliminate all the country differences that could previously be attributable to local GAAP.

Observe that the computed F statistics, although still higher than the critical value for F in both regressions, have converged toward the critical value of F. In addition to this, we observe that the significance is slightly impacted in the return regression, down to 98% significance level.

As we have tested the coefficients joint effect and their interactions without identifying any apparent harmonization effects, we try a different approach through altering our procedure since we see a converging F statistic towards the critical value of F. We proceed with testing the interaction, with the same F-test as previously, between the COUNTRY coefficient effect and the combined IFRS and COUNTRY effect for each observed country, separately, against our benchmarks transition to the IFRS. By changing statistical assumptions of the test, we may receive a stronger indication of a harmonization effect.

The first null hypothesis for each country is stated as (see section 5.3 for the definition of γ_x and the subscripts):

$$H_0: \gamma_{j,c} = \gamma_1$$

$$H_1: \gamma_{j,c} \neq \gamma_1$$

The hypothesis tests if the estimated coefficient for the country interaction is significant different from the estimated coefficient of the benchmark BVPS variable. Similarly to the test of sub hypothesis A, we test the interaction effect between COUNTRY and BVPS for the first period. A rejection of the null hypothesis indicates that the effect from the COUNTRY interaction leads to different countries' capital market reactions to differ from those of the benchmark.

The formulation of the second hypothesis is identical to the first, but is applied to the period for IFRS reporting. The null hypothesis is stated as:

$$H_0: \gamma_{l,c} = \gamma_3$$

$$H_1: \gamma_{l,c} \neq \gamma_3$$

The test follows the same logic as the first test and rejecting the null hypothesis would indicate that differences in capital market's reactions caused by the COUNTRY interaction between the different countries and the benchmark (UK) still exist during the second period. Thus, we can rule out a harmonization effect. Intuitively then, we want to be able reject the first null hypothesis and be unable to reject the second one.

The results of the tests are presented in the tables 16-17 below. In testing the first hypothesis, we are able to reject the null hypothesis, on the highest possible significance level, for both regression models. This implies that there is a significant difference in how local GAAPs affect different market's reactions compared to the benchmark. For the second test, the null hypothesis cannot be rejected at any decent significance level (5%-10%), which implies that, in general, the differences in market reactions have conjugated towards the benchmark. However, the interaction coefficient for Spain is statistically different from the estimated coefficient of the benchmark. In other words, in Spain there is still a difference in market reactions arising from national differences not yet eliminated by IFRS. Conclusively, a general harmonization effect of market reactions between countries in the EU can be identified.

Table 16.1 – Price Regression: F-test on the first H_0: The Interaction Between BVPS and COUNTRY

```
( 1)  BVPSW - BVPSSWE = 0

      F(  1,  3174) =   43.75
           Prob > F =    0.0000

( 1)  BVPSW - BVPSFIN = 0

      F(  1,  3174) =  108.15
           Prob > F =    0.0000

( 1)  BVPSW - BVPSGR = 0

      F(  1,  3174) =   80.08
           Prob > F =    0.0000

( 1)  BVPSW - BVPSES = 0

      F(  1,  3174) =   81.88
           Prob > F =    0.0000
```

Table 16.2 Return Regression: F-test on the first H_0: The Interaction Between EARN and COUNTRY

```
( 1)  EARNW - EARNSWE = 0

      F(  1,  2682) =   18.45
           Prob > F =    0.0000

( 1)  EARNW - EARNFIN = 0

      F(  1,  2682) =   19.99
           Prob > F =    0.0000

( 1)  EARNW - EARNGR = 0

      F(  1,  2682) =   20.54
           Prob > F =    0.0000

( 1)  EARNW - EARNES = 0

      F(  1,  2682) =   18.34
           Prob > F =    0.0000
```

Table 17.1 – Price Regression: F-test on the second H_0: The Interaction Between BVPS, COUNTRY and

```
( 1)  BVPSIFRS - BVPSIFRS_SWE = 0

      F(  1,  3174) =    0.13
           Prob > F =    0.7157


( 1)  BVPSIFRS - BVPSIFRS_FIN = 0

      F(  1,  3174) =    0.74
           Prob > F =    0.3913


( 1)  BVPSIFRS - BVPSIFRS_GR = 0

      F(  1,  3174) =    1.17
           Prob > F =    0.2805


( 1)  BVPSIFRS - BVPSIFRS_ES = 0

      F(  1,  3174) =    0.79
           Prob > F =    0.3737
```

Table 17.2 – Return Regression: F-test on the second H_0: The Interaction Between EARN, COUNTRY and

```
( 1)  EARNIFRS - EARNIFRS_SWE = 0

      F(  1,  2682) =    0.62
           Prob > F =    0.4301


( 1)  EARNIFRS - EARNIFRS_FIN = 0

      F(  1,  2682) =    1.24
           Prob > F =    0.2647


( 1)  EARNIFRS - EARNIFRS_GR = 0

      F(  1,  2682) =    2.81
           Prob > F =    0.0937


( 1)  EARNIFRS - EARNIFRS_ES = 0

      F(  1,  2682) =    8.88
           Prob > F =    0.0029
```

Our results, however, are conditioned on how we have chosen to operationalize our variables and how we chose to specify our regression models. Consequently, it is of interest to examine how our operationalizations, and assumptions made, have affected our results. Through altering certain methods and assumptions we conduct a robustness analysis of our results.

6.2 Robustness Tests

6.2.1 Using a Constant Sample

As a robustness test, we use a constant sample of 345 identical firm each with three years of IFRS and three years of local GAAP observations, totaling 2070 observations in the price regression. The return regression is affected by an additional drop due to the lack of momentum observations year 2002. The total amount of observations in this case decreases to 1725. For our first sub hypotheses, we are still able to reject the null hypotheses at, although slightly lower, statistically significant levels. Similarly to our main results, we are unable to reject the second null hypotheses at any statistically significant level. The estimated coefficients are presented in tables 18 and 19 in the appendix. Notice that no major changes to the results have occurred. Consequently, our conclusions are robust for a control with identical firms in each of the samples (in addition to controlling for differences in risk and earnings attributable to each individual firm over time).

6.2.2 Without Winsorizing

To check the robustness with regards to the winsorized observations on the 1st and 99th percentile, we reintroduce the full sample without winsorizing the extreme observations.

In general, we are still able to reject the first null hypotheses at, although lower, statistically significant levels. Sweden emerges as an exception in the test of the price regression and Greece in the test of the return regression. Just as in our first test, certain countries deviate from our main results. We are generally unable to reject the second null hypotheses at any statistically significant level but not in the cases of Sweden (under the tests for the price regression) and Spain (under the tests for the return regression). The results are presented in tables 20 and 21 in the appendix.

6.2.3 Using Only Positive Earnings

Previous research conducted has provided evidence that negative earnings affect the estimated coefficients of the ERC. A further robustness test is thus to exclude negative earnings from our sample. Equity owners' limited liabilities to a firm's financial crisis cause them to react differently to negative earnings than they do to positive earnings (Lipe et al. 1998). In order to test the robustness of our return regression, we run a test on the same sample as before but exclude negative earnings. By dropping the observations containing negative earnings, we remove 524 observations and are left with 2399 observations. What we observe is that in the second test, we are now able to reject the null hypotheses at statistically significant levels indicating that there is still a significant difference between market reactions in our benchmark and our observed countries. The results are presented in table 22 in the appendix.

6.2.4 Conclusive Comment

Finally, it can be stated that our conclusions drawn in section 6 from our altered test are valid to a great extent even when we conduct a series of robustness tests. The individual country interactions no longer have an effect on the different market's reactions, which have conjugated towards the benchmark. The last robustness test, although limited to affecting the return regression, indicates that the difference is still significant. Overall however, the robustness checks show that there seems to be a high degree of reliability in our study.

The purpose of our study, as specified in our introduction, is to observe how users of financial information react and whether or not their reactions to similarly reported information have been harmonized by the IFRS: an enquiry we now regard as reciprocated.

7 Discussion and Further Research

7.1 Discussion

The purpose of this study is to examine whether or not the mandatory implementation of IFRS reporting for listed firms across the EU has brought the union one step closer to a harmonized capital market, by scrutinizing the value relevance of reported financials. This is done by observing how different membership countries' markets react to value relevant financial information.

After altering our test, our findings suggest that the difference in market reactions explained by the differences in local GAAPs has, to a great extent, been eliminated by the implementation of standardized accounting rules. This has been illustrated by comparing the difference in market reactions between a chosen benchmark, with a GAAP closely related to the IFRS (the UK), and selected EU member states with different accounting practices. The study concludes that the different countries' market reactions have converged towards those of the benchmark during the period of IFRS reporting.

We consider our results to be of use to standard setters in the EU who, through the use of directives, strive to harmonize capital markets. As presented, a direct implication of the adoption of a new framework has affected capital markets' reactions to reported financial information.

7.2 Further Research

Further research in this field could, as a suggestion, study the harmonization effect of the IFRS a few years ahead, assuming adaption to the new frameworks takes considerable time. To evaluate long term effects, similar studies can be conducted but with a greater time span. Other indicators of a harmonized reactions would be of interest. In our study we investigate the capital markets' reaction to financial reports. Presumably, there are indicators and measures of harmonization that would be interesting to further examine. For example, a harmonization of the implied cost of capital for firms with the same underlying economic conditions operating in different member states could be of great interest.

7.2.1 Inference

Whether or not the conclusions drawn above is representative for the population tested is questionable. As previously presented, the sample consists of larger firms listed on stock

exchanges in various countries. All countries affected by the mandatory adoption of IFRS are not included in our study, many times as the direct result of data of poor quality. Mandatory IFRS adoption is applicable only to listed firms and the scope of our study only includes the effects on this category of firms. Consequently, a harmonization inference cannot be drawn for each country's entire firm population.

As we have not required firms to be listed during each of the periods (newcomers and exits affect the sample), our results should not be affected by survivorship bias to any extent. With survivorship bias, our sample would be befouled by firms with survivor traits, which would be misleading for the entire population. In addition to this, our results are not affected by the presence, frequency or density of different types of firms listed during the different time periods (2003-2005 and 2005-2007), as there is no requirement for firms to be listed during the entire time window. The variation between the samples from each country is regarded to reflect the key players on each country's stock exchange and consequently, a general conclusion can be drawn for the different market reactions on financial reports to stock markets.

7.2.2 Reliability

Attempts to replicate this study and generate equal results are likely to succeed. We have given a thorough account of the operationalization of our variables as well as explained all reasons for dropping observations. The sample has also been subject to random comparisons from other databases. The largest concern is that there are errors in the collected data from Datastream, which is difficult to control or adjust for. Also, the INTAN variable has been subject to the author's judgment and may result differently in a replicating study if industry perception differs.

7.2.3 Validity

If our test methodology is valid and measures what we are aiming for is disputable. The operationalizations we made generally follow a methodology used by previous researchers. In addition to this, this study made use of two different value relevance measures. We argue that in order to achieve a harmonized capital market, conjugating the accounting standard is not, in itself, sufficient. Of course, the accounting standard is impactful to a great extent and is what standard setters can influence, but it is the market as such where the harmonization effect occurs. By analyzing the users of financial information, we deem our tests appropriate to identify an actual harmonization effect has occurred leading to a more efficient market within the boundaries of the EU.

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Appendix

Appendix I – Results from tests for Multicollinearity, Heteroscedasticity, and Autocorrelation

Table 6.1 – Price Regression Collinearity Diagnostics: VIF

Collinearity Diagnostics

Variable	VIF	SQRT VIF	Tolerance	R-Squared
BVPSW	19.78	4.45	0.0505	0.9495
SWE_D	2.21	1.49	0.4518	0.5482
FIN_D	2.27	1.51	0.4409	0.5591
ES_D	2.09	1.45	0.4784	0.5216
GR_D	2.01	1.42	0.4984	0.5016
LOSS	1.53	1.24	0.6537	0.3463
INT	1.52	1.23	0.6586	0.3414
BETA	1.45	1.20	0.6894	0.3106
SIZE	2.12	1.45	0.4725	0.5275
BVPSSWE	5.66	2.38	0.1766	0.8234
BVPSFIN	5.06	2.25	0.1976	0.8024
BVPSES	5.06	2.25	0.1975	0.8025
BVPSGR	3.92	1.98	0.2552	0.7448
BVPSLOSS	2.65	1.63	0.3769	0.6231
BVPSINT	2.37	1.54	0.4220	0.5780
BVPSBETA	3.30	1.82	0.3035	0.6965
BVPSSIZE	28.02	5.29	0.0357	0.9643
BVPSIFRS_SWE	2.51	1.59	0.3978	0.6022
BVPSIFRS_FIN	2.40	1.55	0.4168	0.5832
BVPSIFRS_GR	2.59	1.61	0.3863	0.6137
BVPSIFRS_ES	2.44	1.56	0.4104	0.5896
Mean VIF	4.81			

Table 6.2– Price Regression Collinearity Diagnostics: Condition Number

	Eigenval	Cond Index
1	6.4166	1.0000
2	2.4580	1.6157
3	2.2872	1.6749
4	2.2438	1.6911
5	1.8720	1.8514
6	1.4364	2.1136
7	0.8605	2.7308
8	0.6870	3.0561
9	0.5834	3.3165
10	0.5465	3.4265
11	0.5290	3.4829
12	0.4848	3.6381
13	0.3177	4.4945
14	0.2724	4.8532
15	0.2504	5.0623
16	0.1946	5.7415
17	0.1732	6.0869
18	0.1651	6.2348
19	0.0974	8.1171
20	0.0671	9.7766
21	0.0459	11.8185
22	0.0110	24.1049

Condition Number 24.1049
Eigenvalues & Cond Index computed from scaled raw sscp (w/ intercept)
Det(correlation matrix) 0.0000

Table 6.3 – Price Regression Collinearity Diagnostics with Dropped Variables: VIF

Collinearity Diagnostics

Variable	VIF	SQRT VIF	Tolerance	R-Squared
BVPSW	4.87	2.21	0.2052	0.7948
SWE_D	2.14	1.46	0.4677	0.5323
FIN_D	2.18	1.48	0.4595	0.5405
ES_D	1.97	1.40	0.5075	0.4925
GR_D	1.94	1.39	0.5147	0.4853
LOSS	1.52	1.23	0.6570	0.3430
INT	1.52	1.23	0.6600	0.3400
BETA	1.45	1.20	0.6905	0.3095
SIZE	1.33	1.16	0.7494	0.2506
BVPSSWE	5.32	2.31	0.1879	0.8121
BVPSFIN	4.66	2.16	0.2145	0.7855
BVPSES	4.24	2.06	0.2360	0.7640
BVPSGR	3.73	1.93	0.2679	0.7321
BVPSLOSS	2.61	1.61	0.3839	0.6161
BVPSINT	2.34	1.53	0.4277	0.5723
BVPSBETA	3.27	1.81	0.3062	0.6938
BVPSIFRS_SWE	2.49	1.58	0.4008	0.5992
BVPSIFRS_FIN	2.38	1.54	0.4202	0.5798
BVPSIFRS_GR	2.58	1.61	0.3872	0.6128
BVPSIFRS_ES	2.42	1.56	0.4131	0.5869
Mean VIF	2.75			

Table 6.4– Price Regression Collinearity Diagnostics with Dropped Variables: Condition Number

	Eigenval	Cond Index
1	5.7011	1.0000
2	2.4092	1.5383
3	2.2700	1.5848
4	2.2420	1.5946
5	1.7456	1.8072
6	1.4359	1.9926
7	0.8603	2.5742
8	0.6836	2.8880
9	0.5833	3.1264
10	0.5417	3.2442
11	0.5285	3.2844
12	0.4848	3.4292
13	0.2837	4.4831
14	0.2716	4.5814
15	0.2357	4.9177
16	0.1946	5.4131
17	0.1709	5.7751
18	0.1649	5.8798
19	0.0945	7.7672
20	0.0656	9.3194
21	0.0325	13.2397

Condition Number 13.2397
Eigenvalues & Cond Index computed from scaled raw sscp (w/ intercept)
Det(correlation matrix) 0.0001

Table 7.1 – Return Regression Collinearity Diagnostics: VIF

Collinearity Diagnostics

Variable	VIF	SQRT VIF	Tolerance	R-Squared
EARNW	26.60	5.16	0.0376	0.9624
SWE_D	2.05	1.43	0.4866	0.5134
FIN_D	1.79	1.34	0.5601	0.4399
ES_D	2.31	1.52	0.4326	0.5674
GR_D	1.95	1.40	0.5138	0.4862
IFRS	1.22	1.10	0.8222	0.1778
LOSS	2.35	1.53	0.4264	0.5736
INT	1.16	1.07	0.8656	0.1344
BETA	1.09	1.05	0.9138	0.0862
SIZE	2.47	1.57	0.4055	0.5945
BTM	1.10	1.05	0.9129	0.0871
MOM	1.07	1.03	0.9342	0.0658
EARNSWE	3.87	1.97	0.2584	0.7416
EARNFIN	3.11	1.76	0.3219	0.6781
EARNES	2.69	1.64	0.3715	0.6285
EARNGR	3.93	1.98	0.2547	0.7453
EARNLOSS	4.82	2.20	0.2074	0.7926
EARNINT	1.69	1.30	0.5900	0.4100
EARNBETA	2.76	1.66	0.3623	0.6377
EARNSIZE	26.18	5.12	0.0382	0.9618
EARNBTM	2.04	1.43	0.4906	0.5094
EARNMOM	1.10	1.05	0.9079	0.0921
EARNIFRS_SWE	1.89	1.38	0.5288	0.4712
EARNIFRS_FIN	2.42	1.55	0.4141	0.5859
EARNIFRS_ES	1.89	1.37	0.5301	0.4699
EARNIFRS_GR	2.92	1.71	0.3427	0.6573

Table 7.2– Price Regression Collinearity Diagnostics: Condition Number

	Eigenval	Cond Index
1	6.4559	1.0000
2	4.4532	1.2040
3	2.1925	1.7160
4	2.0840	1.7601
5	1.9070	1.8399
6	1.2363	2.2852
7	0.8973	2.6823
8	0.8534	2.7504
9	0.8014	2.8382
10	0.7468	2.9402
11	0.7387	2.9563
12	0.6105	3.2520
13	0.5456	3.4400
14	0.4701	3.7056
15	0.4570	3.7585
16	0.4283	3.8822
17	0.3533	4.2744
18	0.3388	4.3652
19	0.3041	4.6075
20	0.2645	4.9407
21	0.2277	5.3249
22	0.2009	5.6691
23	0.1798	5.9920
24	0.1330	6.9678
25	0.0682	9.7325
26	0.0403	12.6508
27	0.0115	23.6912

Condition Number 23.6912
Eigenvalues & Cond Index computed from scaled raw sscp (w/ intercept)
Det(correlation matrix) 0.0000

Table 7.3 – Return Regression Collinearity Diagnostics with Dropped

Collinearity Diagnostics

Variable	VIF	SQRT VIF	Tolerance	R-Squared
EARNW	9.68	3.11	0.1033	0.8967
SWE_D	1.94	1.39	0.5160	0.4840
FIN_D	1.68	1.30	0.5944	0.4056
ES_D	2.15	1.47	0.4657	0.5343
GR_D	1.89	1.37	0.5294	0.4706
IFRS	1.21	1.10	0.8262	0.1738
LOSS	2.32	1.52	0.4318	0.5682
INT	1.16	1.07	0.8656	0.1344
BETA	1.09	1.05	0.9144	0.0856
SIZE	1.60	1.26	0.6253	0.3747
BTM	1.09	1.05	0.9134	0.0866
MOM	1.07	1.03	0.9342	0.0658
EARNSWE	3.24	1.80	0.3089	0.6911
EARNFIN	2.91	1.71	0.3435	0.6565
EARNES	2.28	1.51	0.4389	0.5611
EARNGR	3.70	1.92	0.2701	0.7299
EARNLOSS	4.62	2.15	0.2165	0.7835
EARNINT	1.67	1.29	0.5992	0.4008
EARNBETA	2.76	1.66	0.3624	0.6376
EARNBTM	2.04	1.43	0.4908	0.5092
EARNMOM	1.10	1.05	0.9085	0.0915
EARNIFRS_SWE	1.88	1.37	0.5333	0.4667
EARNIFRS_FIN	2.39	1.54	0.4191	0.5809
EARNIFRS_ES	1.88	1.37	0.5313	0.4687
EARNIFRS_GR	2.91	1.71	0.3431	0.6569
Mean VIF	2.41			

Table 7.4– Return Regression Collinearity Diagnostics with Dropped Variables: Condition Number

	Eigenval	Cond Index
1	5.7713	1.0000
2	4.2375	1.1670
3	2.1918	1.6227
4	2.0826	1.6647
5	1.9067	1.7398
6	1.2362	2.1607
7	0.8972	2.5363
8	0.8496	2.6063
9	0.7958	2.6929
10	0.7466	2.7804
11	0.7353	2.8015
12	0.6104	3.0749
13	0.5443	3.2562
14	0.4697	3.5054
15	0.4564	3.5558
16	0.4158	3.7255
17	0.3533	4.0415
18	0.3388	4.1274
19	0.3036	4.3599
20	0.2631	4.6835
21	0.2241	5.0750
22	0.2009	5.3601
23	0.1501	6.2011
24	0.1327	6.5948
25	0.0603	9.7812
26	0.0258	14.9422

Condition Number 14.9422
Eigenvalues & Cond Index computed from scaled raw sscp (w/ intercept)
Det(correlation matrix) 0.0000

Table 8 – Breusch Pagan test – Price Regression

```
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of PRICEW

         chi2(1)      =  2143.44
         Prob > chi2  =   0.0000
```

Table 9 – Breusch Pagan test – Return Regression

```
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of RETW

         chi2(1)      =   273.56
         Prob > chi2  =   0.0000
```

Figure 1 – Presence of Heteroscedasticity: Plotted Residuals: Price Regression

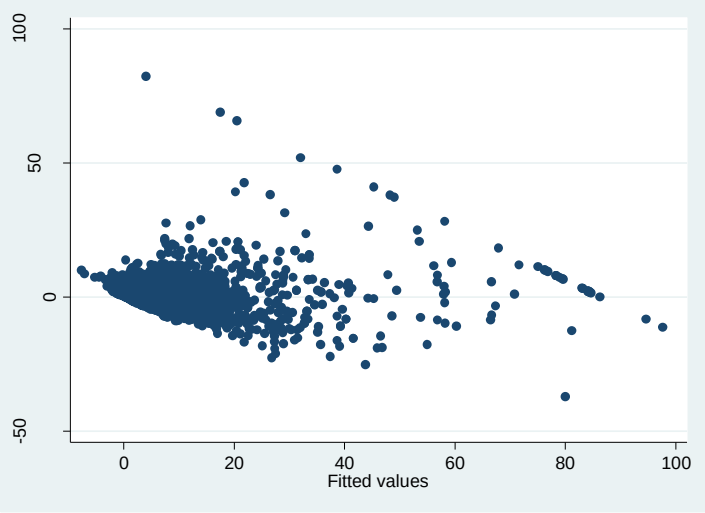

Figure 2 – Presence of Heteroscedasticity: Plotted Residuals: Return Regression

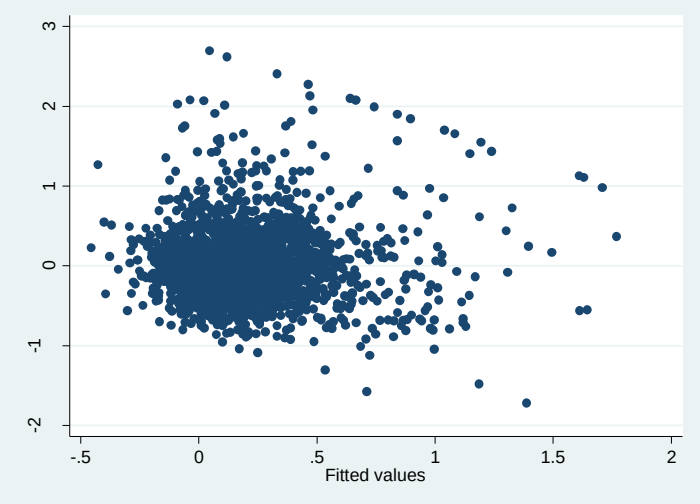

Table 10 – Arellano-Bond Test Results

Price Regression:

```
Arellano-Bond test for AR(1): z =  31.18  Pr > z = 0.0000
```

Return Regression

```
Arellano-Bond test for AR(1): z =  -2.16  Pr > z = 0.0308
```

Appendix II – Robustness Tests Results

Table 18.1 – Price Regression: F-test on the first H_0: Using a Constant Sample

```
( 1)  BVPSW - BVPSSWE = 0

      F(  1,  1975) =    8.97
           Prob > F =    0.0028

( 1)  BVPSW - BVPSFIN = 0

      F(  1,  1975) =   21.87
           Prob > F =    0.0000
( 1)  BVPSW - BVPSGR = 0

      F(  1,  1975) =   14.45
           Prob > F =    0.0001

( 1)  BVPSW - BVPSES = 0

      F(  1,  1975) =   12.93
           Prob > F =    0.0003
```

Table 18.2 – Return Regression: F-test on the first H_0: Using a Constant Sample

```
( 1)  EARNW - EARNSWE = 0

      F(  1,  1626) =    4.68
           Prob > F =    0.0306

( 1)  EARNW - EARNFIN = 0

      F(  1,  1626) =    3.33
           Prob > F =    0.0681

( 1)  EARNW - EARNGR = 0

      F(  1,  1626) =    5.22
           Prob > F =    0.0224

( 1)  EARNW - EARNES = 0

      F(  1,  1626) =    7.11
           Prob > F =    0.0077
```

Table 19.1 – Price Regression: F-test on the second H_0: Using a Constant Sample

```
( 1)  BVPSIFRS - BVPSIFRS_SWE = 0

      F(  1,  1975) =    0.40
           Prob > F =    0.5268
( 1)  BVPSIFRS - BVPSIFRS_FIN = 0

      F(  1,  1975) =    0.13
           Prob > F =    0.7152

( 1)  BVPSIFRS - BVPSIFRS_ES = 0

      F(  1,  1975) =    0.06
           Prob > F =    0.8128
( 1)  BVPSIFRS - BVPSIFRS_GR = 0

      F(  1,  1975) =    0.96
           Prob > F =    0.3281
```

Table 19.1 – Return Regression: F-test on the second H_0: Using a Constant Sample

```
( 1)  EARNIFRS - EARNIFRS_SWE = 0

      F(  1,  1626) =    0.05
           Prob > F =    0.8210
( 1)  EARNIFRS - EARNIFRS_FIN = 0

      F(  1,  1626) =    0.04
           Prob > F =    0.8480
( 1)  EARNIFRS - EARNIFRS_ES = 0

      F(  1,  1626) =    3.59
           Prob > F =    0.0583
( 1)  EARNIFRS - EARNIFRS_GR = 0

      F(  1,  1626) =    0.20
           Prob > F =    0.6532
```

Table 20.1 – Price Regression: F-test on the first H_0: Without Winsorizing

```
( 1)  BVPS - BVPSSWE = 0

      F(  1,  3174) =    3.11
           Prob > F =    0.0781
( 1)  BVPS - BVPSFIN = 0

      F(  1,  3174) =   11.57
           Prob > F =    0.0007

( 1)  BVPS - BVPSGR = 0

      F(  1,  3174) =    9.24
           Prob > F =    0.0024

( 1)  BVPS - BVPSES = 0

      F(  1,  3174) =    7.40
           Prob > F =    0.0066
```

Table 20.2 – Return Regression: F-test on the first H_0: Without Winsorizing

```
( 1)  EARN - EARNSWE = 0

      F(  1,  2682) =    4.88
           Prob > F =    0.0272

( 1)  EARN - EARNFIN = 0

      F(  1,  2682) =   10.72
           Prob > F =    0.0011

( 1)  EARN - EARNGR = 0

      F(  1,  2682) =    3.27
           Prob > F =    0.0707

( 1)  EARN - EARNES = 0

      F(  1,  2682) =   12.37
           Prob > F =    0.0004
```

Table 21.1 – Price Regression: F-test on the second H_0: Without Winsorizing

```
 ( 1)  BVPSIFRS - BVPSIFRS_SWE = 0

       F(  1,  3174) =    4.26
            Prob > F =    0.0390

 ( 1)  BVPSIFRS - BVPSIFRS_FIN = 0

       F(  1,  3174) =    2.08
            Prob > F =    0.1491

 ( 1)  BVPSIFRS - BVPSIFRS_GR = 0

       F(  1,  3174) =    0.15
            Prob > F =    0.6964

 ( 1)  BVPSIFRS - BVPSIFRS_ES = 0

       F(  1,  3174) =    2.27
            Prob > F =    0.1319
```

Table 22.1 – Return Regression: F-test on the first H_0: Using Only Positive Earnings

```
 ( 1)  EARNW - EARNSWE = 0

       F(  1,  2287) =    9.28
            Prob > F =    0.0023

 ( 1)  EARNW - EARNFIN = 0

       F(  1,  2287) =   10.79
            Prob > F =    0.0010

 ( 1)  EARNW - EARNGR = 0

       F(  1,  2287) =   22.39
            Prob > F =    0.0000

 ( 1)  EARNW - EARNES = 0

       F(  1,  2287) =   15.51
            Prob > F =    0.0001
```

Table 21.2 – Return Regression: F-test on the second H_0: Without Winsorizing

```
 ( 1)  EARNIFRS - EARNIFRS_SWE = 0

       F(  1,  2682) =    0.29
            Prob > F =    0.5878

 ( 1)  EARNIFRS - EARNIFRS_FIN = 0

       F(  1,  2682) =    2.88
            Prob > F =    0.0897

 ( 1)  EARNIFRS - EARNIFRS_GR = 0

       F(  1,  2682) =    0.00
            Prob > F =    0.9760

 ( 1)  EARNIFRS - EARNIFRS_ES = 0

       F(  1,  2682) =   12.51
            Prob > F =    0.0004
```

Table 22.2 – Return Regression: F-test on the second H_0: Using Only Positive Earnings

```
 ( 1)  EARNIFRS - EARNIFRS_SWE = 0

       F(  1,  2287) =    2.29
            Prob > F =    0.1306

 ( 1)  EARNIFRS - EARNIFRS_FIN = 0

       F(  1,  2287) =    4.19
            Prob > F =    0.0408

 ( 1)  EARNIFRS - EARNIFRS_GR = 0

       F(  1,  2287) =   14.86
            Prob > F =    0.0001

 ( 1)  EARNIFRS - EARNIFRS_ES = 0

       F(  1,  2287) =   17.98
            Prob > F =    0.0000
```