

Essays on the Value of Accounting Disclosure on Capital Markets

Petya Platikanova

Universitat Pompeu Fabra
Department of Economics and Business
Barcelona

December 2009

Advisor: Ester Oliveras

To my family

Contents

Introduction	1
1 Long-term price effect of S&P index additions and earnings quality	3
1.1 Introduction	4
1.2 Literature Survey and Motivation	6
1.2.1 The S&P effect and abnormal returns	6
1.2.2 Accounting earnings, earnings quality and abnormal returns	8
1.3 Method and Data	11
1.4 Results	13
1.4.1 Earnings quality around S&P 500 additions	13
1.4.2 Long-term stock returns and S&P 500 listing	19
1.5 Conclusions	24
2 Market liquidity effects of the IFRS introduction in Europe	41
2.1 Introduction	41
2.2 Prior literature and hypothesis development	45
2.2.1 Capital market costs around the adoption of IFRS	45
2.2.2 Heterogeneous capital market response to the introduction of IFRS: legal origin differences	48
2.3 Research design, sample selection and variable description	49
2.3.1 Research design and methodology	49
2.3.2 Sample selection and variable description	52
2.4 Results	55
2.4.1 Descriptive statistics	55
2.4.2 Regression analysis	60
2.4.3 Sensitivity tests	70
2.5 Conclusions and implications	71
3 B/M and distress measures under alternative accounting regimes	91
3.1 Introduction	91
3.2 Literature survey and motivation	94

3.2.1	Capital market effects of accounting reconciliation disclosure	94
3.2.2	Explaining returns under different accounting regimes: book-to-market and bankruptcy risk	96
3.3	Research design, sample selection and empirical tests	98
3.4	Empirical results	101
3.4.1	Descriptive statistics	101
3.4.2	Regression results	105
3.5	Conclusions	109

Acknowledgments

Many people made this thesis possible. I would like to acknowledge the advices and support received over my PhD studies from my thesis advisor Ester Oliveras. I am very indebted to Christopher Nobes for his valuable suggestions, continuous encouragement and sympathy. Special thanks also go to Oriol Amat for his readiness to help me during my studies, to Soledad Moya and Jordi Perammon for our discussion over accounting topics. I would like to thank finance faculty at UPF, and in particular Jose Marin and Francisco Penaranda, for their comments and guidance on the finance aspects of my research. I would like to acknowledge Jaume Ventura for his support as placement director in my year on the job market. Special mention deserve Antonio Ladron and Joachim Voth for their moral support and sympathy over the years.

My research has benefited significantly from the following events: (1) seminar presentations at ESADE Business School, London School of Economics, HEC-Paris, ESSEC, Cass Business School, Judge Business School, and University Carlos III, (2) 20th Asian-Pacific Conference on International Accounting Issue (2009), European FMA conference (2006, 2007), Foro de Finanzas (2008, 2009), and (3) Internal seminars at UPF. Special thanks go to Carmen Ansotegui, Vasiliki Athanasakou, Al Bhimani, Jenifer Conrad, Ariadna Dumitrescu, Thomas Jeanjean, Gilles Hilary, Liisa Kurunmki, Peter Miller, Michael Power, Ana Simpson, Kazbi Soonawalla, Wim A. Van der Stede, and Herve Stolowy.

I want to thank my friends and colleagues Sunnee Billingsley, Irina Cojuharencu, Davide Debortoli, Christina Felfe, Gueorgui Kolev, Aniol Llorente-Saguer, Marta Maras, Benedetto Molinari, Rucardo Nunes, Antoni Rubi, Virginie Solelhac, Gerry Ugarte, Blaz Zakelj, for their sharing experience over our PhD studies together. Their presence helped me overcome the downs and enjoy the ups of my PhD studies. I would like to acknowledge for the continuous support and ready advice my friends Dani and Poli.

I would like also to acknowledge the excellent support over my PhD studies received from our colleagues at the GPEFM secretary office: Marta Araque, Marta Arague, and Gemma Burballa.

Last but not least, I want to express my thanks to my family, my mother and father, my sisters Vesselka and Tzvetelina and my brother Kiril for their love and

support. I am grateful for the unconditional support, encouragement and love to my husband, Stefan. With love, I dedicate my work to my family and my son Dani.

Introduction

The purpose of this thesis is to analyze how capital markets interpret accounting disclosure. In three empirical studies, I evaluate the role that accounting disclosure plays in evaluating financial prospects and facilitating pricing decisions.

The present thesis contains three essays that analyze the market response to changes in accounting disclosure. I examine the relationship between financial disclosure and stock market reaction in three event studies, after: (1) a company's inclusion in the S&P 500 index (in Chapter 1), (2) the introduction of international accounting standards (IFRS) in Europe (in Chapter 2), and (3) cross-listing of a Canadian company on the US stock exchange (in Chapter 3).

In **Chapter 1**, "*Long-term Price Effect of S&P Index Additions and Earnings Quality*", I suggest that earnings quality changes after the S&P 500 Index addition. Research has shown that, historically, companies recently added to the S&P 500 Index tend to outperform in the near term. Various theories have been put forward to explain this phenomenon; for instance, the excess returns could be the result of increased price pressure emanating from the added demand from indexers. I suggest a different explanation for the price effect of S&P 500 additions: Newly added companies possess an increased managerial incentive to make high-quality financial disclosures. My tests confirm that the index listing has a positive effect on managerial discretion over accruals, which is significantly lower for S&P 500 companies than for other companies.

In **Chapter 2**, "*Market Liquidity Effects of the Introduction of IFRS in Europe*", I examine how the mandatory introduction of IFRS, generally considered of high quality, affects the information asymmetry on the European capital market. The

introduction was intended to improve accounting quality and ensure greater comparability and transparency of financial reporting around the world. However, contradictory views about the plausible effect of IFRS introduction on accounting quality and stock valuation have been expressed, primarily due to the large differences among the adopting countries. Previous studies on the mandatory introduction of IFRS examine the market liquidity effects but do not empirically relate positive/negative market reactions with particular accounting differences under alternative regimes. Using reported accounting differences in the annual reports of more than 1,500 companies from four large European countries and four major legal origin groups (France, Germany, United Kingdom and Sweden) I relate liquidity costs with restated accounts under IFRS. Findings confirm that liquidity costs of UK companies are strongly affected by IFRS restatements; for French companies this effect is present but weaker. Restatements of equity and net income under IFRS are associated with an increase in liquidity costs (significant for French and UK companies). Empirical results suggest that investors anticipate the IFRS effect but in several cases adjust liquidity costs over several reporting periods.

In **Chapter 3**, "*B/M and Distress Measures Under Alternative Accounting Regimes*", I focus on cross-listed companies in the US. After their listing on the US stock exchange, these companies report material differences between their domestic and US accounting standards (US GAAP). When the difference between these accounting standards is very large, financial analysts and investors could be confused about which standards should be used in their valuation. The book-to-market (B/M) ratio comprises a standard pricing model, where it is assumed that this ratio has a unique value. However, this is not always the case: Every company that reports under two accounting standards actually has two B/M ratios. I examine whether we can extract more precise information about the value of the company from these two B/M ratios and from other accounting disclosures under the two accounting standards. Using accounting reconciliations of Canadian companies, the largest group of foreign listed companies on the US stock exchange, the study examines the value-relevance of accounting differences and their effect on stock pricing models.

Chapter 1

Long-term price effect of S&P index additions and earnings quality

Published in the *Financial Analysis Journal*, September/October, Vol. 64, No. 5: 62-76, 2008.

Abstract. When a company is added to the S&P 500 Index, it receives a positive price response. Several explanations for this effect have been suggested, but empirical findings do not provide a conclusive cause. The inclusion of a company in the index may strengthen managerial incentives to provide high-quality disclosures of financial data. This study is an examination of the earnings quality of S&P 500 companies before and after their addition to the index. It finds that discretionary accruals significantly decrease after companies are added to the index, which greatly improves earnings quality. Additionally, it concludes that total accruals of S&P 500 companies are consistently negative which suggests reporting conservatism, or higher earnings quality. This change in earnings quality provides a possible explanation for the price response to the S&P 500 addition.

1.1 Introduction

The S&P 500 Index is the most widely used benchmark for measuring the performance of large-capitalization U.S.-based stocks. The stocks that it includes constitute about 75 percent of the market capitalization of all regularly traded stocks in the U.S. equity market¹.

From the S&P 500's inception in 1957 through 2005, the total number of companies added to the index is 957. Standard & Poor's introduces changes to the index based on public criteria: The company should be profitable and a leader in an important U.S. industry, with sufficient liquidity and a relatively diverse ownership structure. Since 1962, about three-quarters of all changes to the index occurred because of involuntary deletions stemming from mergers, bankruptcies, or other restructuring events. Voluntary changes occurred because the companies ceased to represent the U.S. economy, either because the industry was no longer representative of the economy or because the company was no longer representative of its industry.

Both voluntary and involuntary deletions require additions to the S&P 500, and empirical findings suggest that addition generates significant positive abnormal returns for the company added: between 2.7 percent (Shleifer 1986; Harris and Gurel 1986) and 5.48 percent (Beneish and Whaley 1996). In contrast, deletions from the S&P 500 are associated with negative abnormal returns that are larger in magnitude than the gain by additions: between 10.8 percent (Beneish and Whaley) and 12.6 percent (Lynch and Mendenhall 1997; Chen, Noronha, and Singal 2004).

The significant abnormal returns following a company's addition to the S&P 500 (henceforth, referred to simply as "the index effect") have received different interpretations. Information asymmetry and trading costs could explain the abnormal returns; empirical findings are not always consistent, however, with these explanations. Another possibility is that addition to the index conveys new information about a company's future returns; this information would justify the positive price response. Standard & Poor's rejects this possibility and assures investors that the future merits of a company do not influence the selection procedure. Nevertheless, empirical studies suggest that some sort of new information may be made available

with an S&P 500 listing. Dhillon and Johnson (1991) found that the information is relevant to a stock's fundamental value. The option price should not be affected by temporary price movement, but the authors found that it changes with S&P 500 inclusion, which would occur if new information about the expected distribution of a security's future returns has been released. Jain (1987) argued that it is the index's reputation that causes the index effect; Standard & Poor's is known to closely monitor the companies in its indices, so its preference for stable companies could signal to investors that an addition will provide better future returns at a lower risk than will the company's market rivals. Denis, McConnell, Ovtchinnikov, and Yu (2003) focused on managerial incentives and argued that it is the increase in investors' scrutiny that indirectly affects the abnormal returns; because of this scrutiny, managers of newly indexed companies devote more time and effort to their companies; thus, the financial performance of the companies improves, and the stock market responds by increasing the stocks price.

The study reported in this article contributes to the debate about the information content of addition to the S&P 500. I consider that media attention and investor scrutiny may affect not only managerial performance but also the incentives that managers have for making high-quality financial disclosures. Index listing may lower information risk, as measured by earnings quality, which contributes to the index effect. Denis et al. (2003) argued that investors earnings expectations for newly added companies capture the index effect; hence, they investigated EPS forecasts and forecast errors. They found upward revisions to earnings expectations after S&P 500 addition and suggested that it is because of the expectation that managerial efforts would improve financial performance. The quality of financial reporting, however, may also significantly improve the accuracy of analysts' predictions. If listing reduces earnings management, then analysts have more precise financial reports on which to base their estimates, information risk falls, and investors demand lower returns. Altogether, this chain of events should contribute to a positive price reaction.

To study whether inclusion in the S&P 500 strengthens managerial incentives to provide high-quality financial disclosures, and thus contributes to the price effect, I analyzed the earnings of 202 additions to the S&P 500 in the 1990-2005 period and

came to conclusions about the quality of earnings before and after index listing.

Earnings may be related to the price effect in two ways: (1) The quality of earnings reported and the components of earnings data may be different for the companies after index inclusion and (2) the market may respond differently to reported earnings for companies added to the S&P 500. As a measure of earnings quality, I used current accruals, which can be decomposed into its nondiscretionary and discretionary components.

1.2 Literature Survey and Motivation

The motivation for my study comes from two strains in the literature: studies of the price effect when companies are added to an index and studies of the relationship of the quality of reported earnings to abnormal stock returns.

1.2.1 The S&P effect and abnormal returns

Numerous empirical studies have examined the effect of index changes on returns. But because authors cumulate abnormal returns over different windows (1-60 days after the effective inclusion date), the results are not directly comparable. Current findings are as follows: New additions to the S&P 500 from 1976 through 1983 had 2.79 percent cumulative abnormal returns (CARs) at the inclusion date (Shleifer 1986); inclusions from 1984 through 1988 had 3.55 percent CARs at the announcement date and the day after (Dhillon and Johnson 1991); additions from 1989 through 1993 had 5.90 percent CARs cumulative from the announcement date to the day after the addition (Beneish and Whaley 1996); and additions from 1989 through 2000 had 5.44 percent CARs at the announcement day (Chen et al. 2004).

Current research suggests five competing explanations of the index effect: price pressure, imperfect substitution, liquidity, investor awareness, and the certification (information) hypothesis. The price-pressure explanation argues that stocks have a short-term downward-sloping demand curve and that the abnormal returns of additions are primarily a result of indexers.

The long-held assumption that stocks have perfect substitutes, and that perfect elasticity of demand follows, is central to modern finance theory. If securities have a demand curve that is close to perfectly elastic, then a shock (news) that is devoid of information should not have any (long-term) impact on prevailing prices. In this view, the increased demand for the stock from index funds and others adding the stock to their portfolios explains how the prices of newly added companies are momentarily affected after the inclusion. Once the excess demand is satisfied, the index effect dissipates (Shleifer 1986). Harris and Gurel (1986) empirically supported the findings of full price reversal after two weeks for S&P 500 stocks.

Other authors claim that the index effect has a long-term impact on price. In theory, stocks, bonds, puts, and calls may be close substitutes for one another, but in practice, different tax treatments and transaction costs affect investors' preferences and render these four options imperfect substitutes. The imperfect-substitute explanation (meaning that the long-term demand curve is downward sloping) proposes that S&P 500 stocks are not easily replaceable by non-S&P 500 stocks because the securities may differ in investment risk and, as a result, trading costs. If S&P 500 companies do not have substitutes, the index price effect should be at least partly permanent. Wurgler and Zhuravskaya (2002) suggested that the lack of a substitute explains the limited arbitrage with S&P 500 stocks and that risk prevents arbitrage from completely flattening the demand curve of these stocks.

Some empirical studies have addressed liquidity changes accompanying addition to the S&P 500. Liquidity can improve without new information if trading volume increases. If market makers face lower inventory costs, overall trading costs decrease, and the bid-ask spread will reflect this liquidity effect. Erwin and Miller (1998) found that the addition of stocks that do not have traded options, but not of stocks with traded options, has a positive effect on liquidity and bid-ask spreads, which is consistent with the liquidity hypothesis.

Information asymmetry and trading costs also enter the investor-awareness explanation. With segmented markets, investors hold portfolios that are not completely diversified. Following index inclusion, more investors than previously become informed about a security and hold it for its diversification potential. This explanation

proposes that the increase in investors' awareness brings with it a decrease in returns demanded; the more informed asset pricing causes the price to rise. Chen et al. (2004), who noted that S&P 500 companies are not necessarily well known, found that increased awareness following S&P addition enhances monitoring by financial analysts, reduces the information asymmetry component of the bid-ask spread, improves access to capital markets, and reduces the cost of underdiversification².

The certification (information) explanation also posits that index inclusion conveys positive information-but not that it is related to trading costs. Rather, the index addition itself leads to a revision in analysts' forecasts of the financial prospects of the company because of the information content of index inclusion. Jain (1987) found excess returns for companies in S&P indices other than the S&P 500, even though funds do not try to match these indices (i.e., the price pressure cannot explain the observed market response). Therefore, Standard & Poor's preference for stable companies may signal a reduction in the riskiness of a company's securities, which would explain the abnormal returns. Denis et al. (2003) found that intensified monitoring improves the efficiency of managers of S&P 500 additions, which could explain the index effect³. Dhillon and Johnson (1991) found that corporate bonds also respond positively to the listing announcement, and they concluded that the listing suggests new information about a security's fundamental value.

1.2.2 Accounting earnings, earnings quality and abnormal returns

If addition to the S&P 500 conveys positive information about a company's future performance, empirical research is not conclusive about the source of this information. Denis et al. (2003) argued that EPS forecasts for a company improve after it is added to the index and that the reason might be more efficient management at the company. The quality of financial reporting, however, can also significantly improve the accuracy of analysts predictions. Index listing may reduce earnings management, which would lower information risk, decrease demanded returns, and provide analysts with more precise financial reports on which to base their estimates.

The academic literature offers at least two pieces of empirical evidence that reported earnings may not be an objective measure of company performance because of managerial discretion over the components of these earnings: (1) Earnings manipulation may involve not only accruals with no direct cash-flow consequences (for instance, asset write-offs) but also management of real activities with direct cash-flow consequences, such as overproduction (Roychowdhury 2006). (2) Many managers may use their discretion to mislead investors; therefore, (discretionary) accruals may be regarded as opportunistic (Guay, Kothari, and Watts 1996). The question is, Do these findings mean that financial analysts can accurately forecast EPS by using financial reports that simply record cash transactions without accounting manipulation?

A series of empirical papers confirms that the properties of earnings and other accounting variables—notably, accruals—make earnings information useful in valuation (e.g., Dechow 1994) and contracting (Christensen, Feltham, and Sabac 2005). The authors of these papers examined time-series properties of accounting information that are related to the ability to forecast future value-relevant variables. The authors argued that certain properties of accounting earnings may yield a more accurate forecast of earnings than other properties. The desirable properties are often referred to in the existing literature as “earnings quality” (or “accounting quality” or “accruals quality”).

Although the concept is still not precisely defined, several dimensions of earnings quality have been suggested by empirical studies as desirable for achieving investment efficiency. Among the measures of earnings quality are such theoretical constructs, sometimes measured jointly, as (1) accounting conservatism, which captures how rapidly economic losses are incorporated into accounting income (Ball, Kothari, and Robin 2000); (2) loss avoidance, which can explain how managers report less negative earnings, try to increase quarterly earnings, and try to beat analysts’ forecasts (Burgstahler and Dichev 1997; Degeorge, Patel, and Zeckhauser 1999); (3) earnings smoothing, which is managers’ efforts to reduce earnings volatility in the reporting periods (Leuz, Nanda, and Wysocki 2003); and (4) price sensitivity to earnings (i.e., the earnings response coefficient in the earnings-to-price relationship), which suggests how prices adjust to reflect changing expectations about a company’s ability to

generate earnings (Beaver, Clarke, and Wright 1979).

Although earnings quality is a multidimensional concept, empirical research on the topic since 1996 has focused primarily on the role of accruals. Studies link the properties of earnings and their quality to the financial market microstructure (e.g., insider trading; see Aboody, Hughes, and Liu 2005), to managers' decisions (e.g., investment activities and stock-split decisions; see Louis and Robinson 2005), and to company-specific characteristics (e.g., governance structure; see Wang 2006).

Accruals distinguish accounting from mere counting of cash, and without them, investors could not distinguish the cash-flow movements associated with a change in the company's fundamentals from cash flows arising from managers' ordinary operating decisions. Accruals allow managers to use their discretion about what to report and when, however, particularly because the timing of cash transactions does not necessarily match the timing of economic transactions. This dual character of accruals has motivated research on earnings decomposition—the effort to disentangle the factors that drive changes in accruals.

Probably the most common methods to identify what drives earnings management are based on a model of discretionary accruals proposed by Jones (1991). With a time-series model, Jones estimated an expected or "normal" level of accruals and then used the residual as a measure of the discretionary portion of accruals. Recent studies have suggested, however, that the Jones model does not consider some factors (e.g., company characteristics) that affect normal accruals (see Ashbaugh, LaFond, and Mayhew 2003). This criticism has led to a modified Jones model of discretionary accruals.

The original or modified Jones model has served to identify earnings management in numerous studies. Examples include the study of Bergstresser and Philippon (2006), which found greater earnings management in companies where executives have a greater sensitivity to equity price movements, and the Menon and Williams (2004) finding that earnings management is greater in companies where the executives are former audit partners.

Numerous scholars have examined whether the financial markets price earnings (or accruals) quality, but the empirical findings are not conclusive. Sloan (1996)

posited that investors naively fixate on earnings and overweight the accruals component of current earnings when forecasting future earnings. As a result, high-accrual companies earn lower abnormal returns than low-accrual companies. His hedge strategy based on this "accruals anomaly" earned size-adjusted abnormal returns of 10.4 percent, on average, in the year following portfolio formation for the 1962-91 time period.

Since Sloans study, a large number of empirical studies have sought to identify which factors are behind the accruals anomaly and how investors can still find a profitable trading strategy based on this public information if financial markets are efficient⁴. Scholars have examined various components of accruals in an effort to detect which of them contributes significantly to the accruals anomaly. Several empirical studies suggest that the accruals anomaly continues to exist because, at least partly, (1) the anomaly is not arbitrated away because of high transaction costs and arbitrage risk (Mashruwala, Rajgopal, and Shevlin 2006) and (2) investors either do not have the time to process the large amount of information or find that treating the earnings component differently from the cash-flow component is not cost-efficient (the "limited attention theory" of Hirshleifer, Hou, Teoh, and Zhang 2004).

Recent studies have questioned previous findings about the accruals anomaly and have identified arbitrage strategies that suggest that investors do price accruals quality. Francis, LaFond, Olsson, and Schipper (2005) found that poor accruals quality is associated with larger costs of debt and equity. Kraft, Leone, and Wasley (2005) replicated, with robustness checks, three studies that claimed accruals are mispriced and concluded that the results were biased toward the "investor fixation" hypothesis of Sloan (1996).

1.3 Method and Data

To capture the effect of S&P 500 addition on earnings quality, I decomposed current accruals into its components and examined their behavior before and after a stock entered the index. If managers reduced their earnings management after being listed in the S&P 500, I expected to find quite different accruals components after

the listing event than before it; in particular, discretionary accruals should be lower.

I applied a model based on Jones (1991). The original discretionary model suggested by Jones estimated expected accruals as the fitted value from a regression of total accruals on lagged company size, the change in company sales, and gross property, plant, and equipment scaled by total company assets. Empirical research since 2000 has argued, however, that performance-adjusted models that use current accruals provide more precise measurement of any earnings management. Ashbaugh et al. (2003) suggested the performance-adjusted accruals model that I used in this study (see the details in Appendix A). The applied model estimates expected accruals as the fitted value from a regression of current accruals on lagged company size, the change in company sales, and the change in accounts receivable scaled by total company assets. The residual, which is used as a measure of managerial discretion, contains the current accruals' variance that is not explained by the model.

Using the sample of S&P 500 additions, I set out to distinguish how the listing event changes financial reporting quality, in general, and earnings, in particular. Following Jones (1991), I could accurately capture (with an event study) the effect of the inclusion of a stock in the S&P 500 and compare discretionary accruals before and after the event. Econometrically, an event study had an advantage in the case of my study because it allowed me to pool all the S&P 500 additions in a period without a large number of control variables; the benchmark was the company itself before, as opposed to after, index listing.

During the 1990-2005 period, Standard & Poor's announced 419 additions and deletions from the S&P 500. I used two sources for the S&P 500 changes: (1) the Standard & Poor's corporate website, which provided data for the 2000-05 period, and (2) the database accessible at the website of the Journal of Finance and used by Chen et al. (2004), which has data for the 1963-2000 period. The main requirement for the final sample was that the company have financial information available in Thomson Datastream for at least three consecutive years around the time of index listing in the 1990-2005 period. The sample comprises 202 companies added to the S&P 500⁵.

1.4 Results

This section presents the results of regression analyses carried out to find any changes in earnings quality at the time of addition to the S&P 500 and tests of the long-term effect on stock returns of S&P 500 listing.

1.4.1 Earnings quality around S&P 500 additions

To capture the effect of index addition, I examined (1) how discretionary current accruals (DisAcc) evolved over time and (2) how the information content of DisAcc changed, as revealed in the association between current earnings (and their components) and future earnings.

Earnings components and S&P 500 additions

Existing literature has not resolved the debate about how informative earnings are in comparison with realized cash flows.¹ The success of a company ultimately depends on its ability to generate cash receipts, but realized cash flows are not typically used as a summary measure of company performance in executive compensation plans, in debt covenants, or by investors and creditors. The information asymmetry problem between the company's management and outside parties contracting with the company creates the demand for a measure of company performance that, in contrast to realized cash flows, is not strongly influenced by the timing of cash receipts and disbursements. The accrual process provides such a measure. The process establishes rules for the timing of cash-flow recognition in earnings so that earnings will reflect company performance⁶. Current findings suggest the following: (1) For short-term performance (i.e., interim and annual evaluation), earnings are more strongly associated with stock returns than are realized cash flows. (2) When accruals are large in magnitude (either positive or negative), earnings will reflect company performance more closely than will realized cash flows (Dechow 1994).

Table 1 presents average earnings and components before and after S&P 500 addition for my sample (see Appendix A for details about the procedure used for

decomposing current earnings). In contrast to the findings reported by Denis et al. (2003), these results suggest that on average, newly added companies do not have higher earnings after listing. Inclusion in the S&P 500 could be associated, however, with an increase in the cash-flow-generating potential of the added company. Although cash flows represented on average 9.4 percent of total assets before the addition, after the listing year, they increased significantly to 11.2 percent. Together with the increase in cash flows, total accruals decreased further after listing from -3.6 percent of total assets to -5.4 percent. Both components of current accruals are significantly different before and after the index listing. Managerial discretion over accruals is evidently lower after a stock enters the S&P 500.

[Table 1 about here.]

Figure 1 illustrates how the earnings structure changed for the companies in my study after the company was listed in the index. Cash flows increased gradually for companies after being added to the S&P 500. Negative accruals predominated in total earnings, however, to offset this change in the cash-flow component. This result explains why the increase in reported earnings is not as large as it is in realized cash flows.

Managerial discretion over accruals was lower after the company entered the S&P 500. Figure 2 shows the trend in expected current accruals and discretionary current accruals over a five-year period around the listing event. The variables are scaled by total assets, the data is in percents. Discretionary current accruals decrease consistently in the period except in the third year after listing, when they rise slightly. Five years after S&P 500 addition, discretionary accruals are about one-half their magnitude at the time of inclusion.

[Figure 1 and 2 about here.]

Earnings quality, reporting conservatism and S&P 500 additions

Numerous empirical studies discuss the relation between the sign of accruals and a company's performance. Companies with high (low) sales growth are likely to have large positive (negative) accruals and correspondingly lower (higher) cash flow-to-price ratios (Desai, Rajgopal and Venkatachalam 2004). Since the sum of earnings over the life of a company must be the same regardless of the accounting choice, current research on accruals recommends that investors adjust prices for the forthcoming reversal in accruals. A number of factors, however, affect over how many periods a company reverses its excessive accruals made in the past. Empirical studies suggest that negative accruals can be sustained over years due to conservative accounting decisions. Givoly and Hayn (2002) show that total accruals exhibit a negative accumulation over time for a sample of U.S. companies, especially after 1981. They argue that a consistent predominance of negative accruals across companies over a long period is an indication of conservatism, while the rate of accumulation of net negative accruals is an indication of the shift in the degree of conservatism over time. The adoption of more conservative reporting is justified with the increasingly litigious U.S. environment in which auditors are more careful in client selection and managers release voluntary and timely unfavorable developments and bad news. Additionally, conservatism of accounting principles in the last 20 years and guidelines strengthens the trend towards early recognition of expenses and delayed recognition of revenues.

If managers or auditors are more conservative in their accounting choices today compared to early 1980s, Graph 1 shows that S&P 500 addition increases further this reporting conservatism. Accruals are negative before the index inclusion and the trend towards larger negative accrual adjustments increases after the S&P 500 listing event. Five years after the addition to the index, newly included S&P 500 companies have ten times larger (negative) accruals compared to their pre-listing period. Perhaps, factors affecting reporting conservatism can explain the conservative accounting choices made by the management of S&P companies: Higher reputation costs in the litigious U.S. environment increase further when a company enters S&P 500 and is followed by a large number of financial analysts and journalists. More conservative guidelines than

those mandated by earlier accounting pronouncements also encourage management to recognize expenses more timely than revenues.

Givoly and Hayn (2002) show that accounting conservatism leads not only to consistently negative accruals but also to more frequently reported losses; this explains the drop in a company's profitability that US companies experience over the last decades. My findings also confirm this effect of reporting conservatism: There is a trend toward more conservative reporting which becomes stronger after S&P 500 addition. Not only reported earnings decrease (see Table 1) but also management reports more frequently losses after S&P 500 inclusion compared to their pre-listing period. Although two years before S&P 500 addition only 4% of all firms had negative net income, about 13% of newly included firms to the index report losses two years after their addition (Note that this result is not tabulated in the paper). Hence, it seems that the index listing affects the behavior of reported earnings, as the management of S&P 500 companies or their auditors made more conservative accounting choices.

[Figure 3 about here.]

Givoly and Hayn (2002) argue that the rate of accumulation of net negative accruals is an indication of the shift in the degree of conservatism over time. **Graph 3** shows that this rate of accumulation. It exhibits the rate of accumulations in a ten-year period before and after the S&P 500 addition. Total accruals are consistently negative over the period of twenty years: Ten years before the addition, total accruals per share (*APS*) are -0.44; *APS* decrease to -0.92 in the addition year and reach their lower value over the period of -1.47 in the eight year after addition. The rate of accumulation of net negative accruals indicates that S&P 500 companies have conservative reporting even before their addition. Due to the larger magnitude of negative accruals after the S&P 500 addition, however, this rate is much larger in the post-addition period.

Information content of the earnings components

The earnings data and the components of earnings change when a company is added to the S&P 500, but how do these changes affect the information content of earnings data? I expected company performance to be affected by a number of factors. First, in Model 1, I regressed future earnings (one year before and after listing) against current earnings. But past performance is not alone in affecting the profitability of a company; a number of other company characteristics have an impact; for instance, a strong brand image or corporate values may help generate revenues for a company over a long time horizon. Hence, I expected the (current) cash-flow-generating potential of a company also to positively influence (future) reported earnings. I used Models 2 and 3 to test this possibility. In Model 2, future earnings were regressed against cash flow and accruals. And in Model 3, future earnings were regressed against the three components of earnings—cash flow, discretionary accruals, and expected accruals.

Table 2 presents the results of these tests. The association between current and future earnings (the regression coefficient on earnings in Model 1) is positive, which suggests that the financial performance of a company is determined by, among other things, its past financial results. The regression coefficient on cash flows is positive and statistically significant, which confirms that a relationship exists between future earnings and cash flows.

Table 2 also provides empirical results that demonstrate how the S&P 500 listing changes the relationship between current earnings (or cash flows) and future earnings by providing data for before and after listing. The addition of a company to the S&P 500 may increase investors' and media awareness and may thus change managerial incentives to provide high-quality financial disclosures. If so, the information role of earnings data would increase after a company entered the index (i.e., the relationship between current and future earnings would be stronger, with a larger regression coefficient, after addition to the index). The regression results for Model 1 demonstrate that after S&P 500 listing, the marginal effect of current earnings does increase: A \$1.00 increase in current earnings explains an increase of \$0.68 in future earnings before and \$0.75 after addition. The relationship between future earnings and cash

flows also strengthens slightly; after the stock's addition, the marginal effect of cash flows increased by about 0.04 when cash flows and accruals were regressed against future earnings (Model 2) and by about 0.01 when discretionary and expected accruals and cash flows were included (Model 3).

The information content of reported earnings changes with S&P 500 listing, but which measure of company performance—realized cash flows or total earnings—is preferable for outside parties contracting with the company? Dechow (1994) argued that when accruals are large (either positive or negative), earnings will more closely reflect company performance than will realized cash flows. My results suggest that S&P 500 listing strengthens the information provided by earnings in comparison with realized cash flows. The size of the explained variance in future earnings before and after listing demonstrates how the information content of the accounting variables changes for S&P 500 companies. Table 2 shows that when cash flows and accruals explain the variance in future earnings (Model 2) instead of current earnings (Model 1) before index addition, the adjusted R² increases from 49.2 percent to 53.4 percent. In contrast, after index listing, the explanatory role of cash flows and accruals decreases in Model 2 in comparison with current earnings.

After index listing, the total accruals of S&P 500 companies in my study not only remained negative but also significantly increased in magnitude (see Table 1 for the size of absolute expected and discretionary accruals). My findings suggest, then, that the information content of earnings increases and closely reflects company performance, as measured by future earnings, when compared with cash flows; that is, the explained variance decreases from Model 1 to Model 2 in the year after index inclusion.

Table 2 also indicates what role discretionary accruals play in providing information. The decomposition of current accruals from Model 2 to Model 3 does not improve the overall predictive properties of the estimation model, but the discretionary accruals are significant before and after index listing. These findings suggest that the association between future earnings and discretionary accruals changes when a company enters the S&P 500. Although the relationship between discretionary accruals (DisAcc) and future earnings in Model 3 is positive one year before the inclusion, it

becomes negative one year after. The sign also reverses for expected current accruals, but the marginal effect is not significant for this variable.

The negative relationship between discretionary accruals and future earnings after index listing could be a result of the earnings structure of S&P 500 companies. As Table 1 shows, with index addition, current accruals decreased significantly for my sample and became negative; on average, they were about 0.5 percent of total assets before and 2.6 percent after index inclusion. Additionally, both components of current accruals changed significantly. Discretionary accruals decreased from 6.3 percent to 5.1 percent (of total assets), whereas expected accruals were about 15 times larger after the listing event. Although reported earnings decreased together with total and discretionary accruals, cash flows were significantly larger after a company entered the S&P 500.

The negative association between future earnings and discretionary accruals confirms that when a company is listed, and after controlling for other factors (among them, the level of cash flows), future earnings increase, not because of managerial discretion over accruals, but rather, because of increased realized cash flows.

1.4.2 Long-term stock returns and S&P 500 listing

The main challenge of empirical research on S&P 500 additions is disentangling the effects of various factors that determine the price response. This section presents my analysis of (1) cumulative market-adjusted returns (MARs) in a period of three years after the listing event and (2) the information content of discretionary accruals and how it explains MARs.

Long-term price effect

Previous research about S&P 500 additions exclusively examined the short-term price effect that is, up to only 60 days after the listing event. If long-term demand curves of newly added stocks are perfectly elastic, short-term providers of liquidity will require a temporary price premium to accommodate the excess demand by index funds for newly listed companies during the event week. New information, however,

also may explain the short-term price effect. If investors anticipate an increase in earnings quality based on their previous experience with S&P 500 additions, they will reduce demanded returns because their information risk is lower after corporate disclosure of high-quality earnings, thus causing the price after S&P 500 addition to rise.

In contrast to the liquidity and price-pressure explanations, which predict a price reversal once the abnormal demand has subsided, the price effect associated with an increase in earnings quality (a decrease in information risk) may be more than temporary. If the expected increase in earnings quality really allows for more informative asset pricing after S&P 500 listing, then the price effect may be permanent. Its magnitude would be a function of how informative reported earnings are for daily asset-pricing decisions.

Empirical research has found that abnormal returns to the accruals anomaly are realized in a 12-month period and the abnormal returns to other pricing anomalies are realized over longer horizons from three to five years. An immediate consensus about expected earnings is difficult for the market to reach when correct judgments about the truthfulness of financial disclosures and the information content of the earnings components have not been settled. If the abnormal returns of newly added companies are partly a result of expected improvement in earnings quality, the positive index effect may influence prices not only in the first month(s) after addition but also over some number of subsequent year(s).

To distinguish the competing explanations, scholars usually examine not only how large the price revision is but also whether it reverses later. Madhavan (2003) suggested a simple approach that examines the relative importance of temporary and permanent price effects: the decomposition of price movements around the time of the index changes (in his study, around the reconstitution date of the Frank Russell Company indices). In this approach, a long-term price change reflects a permanent effect of index inclusion, which would be consistent with the new information and imperfect-substitute explanations. In my study, the reversal in stock price in the first day(s) after the inclusion distinguishes a short-term from long-term price effect, as follows:

$$R_{temp} = \ln(p_1) - \ln(p_0)$$
$$R_{perm} = \ln(p_t) - \ln(p_0),$$

where p_0 is the price in the month the company is added to the S&P 500 and p_t is the price for the following month(s), where $t=2, \dots, 11$ months after addition to the index.

Table 3 summarizes the temporary and permanent price effect in the year following index inclusion. The results confirm that both effects are present for S&P 500 additions. Madhavan (2003) estimated that the temporary price impact for additions to the Russell 2000 Index (at 5.79 percent) was much larger than the permanent price impact (1.41 percent). In contrast, the price effect of addition to the S&P 500 tends to be spread over time; the temporary effect is only 0.01 percent, whereas the long-term effect is larger than 2.40 percent in each month for a year.

[Table 3 about here.]

Table 4 provides market-adjusted abnormal returns before and after S&P 500 addition. The abnormal returns were measured relative to the S&P 500's returns⁸. Companies that entered the S&P 500 in the 1990-2005 period had, on average, higher mean MARs after addition than they had before addition. The difference between the two returns is statistically significant.

[Table 4 about here.]

Some authors have argued that the price effect reverses in the days following the announcement (e.g., Beneish and Whaley found a 2.2 percent price reversal), which would be consistent with the liquidity and price-pressure explanations of abnormal returns following S&P 500 addition. Other empirical studies support the permanent price effect of S&P 500 inclusion. For example, Chen et al. (2004) documented a permanent change in the price of added stocks (positive abnormal returns of 6.4 percent accumulated over a 60-day window), which they ascribed to an increase in investors' awareness of the stocks after the index listing date.

Figure 4 shows the cumulative MARs for companies added to the S&P 500 for the full sample period and for two subperiods. These returns were calculated by summing the stock's market-adjusted returns over a window of up to three years.

Figure 4 illustrates a permanent price effect for S&P additions that extends for three years following S&P 500 inclusion. Cumulative MARs after S&P 500 addition are economically significant: approximately 6.5 percent in the 1999-2005 period (8.5 percent in the 1990-98 period) in the first year after the addition, 12.8 percent (26.1 percent) up to two years after listing, and 15.9 percent (42.6 percent) at three years after listing.

[Figure 4 about here.]

Market response to discretionary accruals: information content

The findings so far suggest that earnings quality changes for a company that is included in the S&P 500 and that this event is associated with significant abnormal long-term returns. If the price effect of being listed is related to earnings playing a more informative role than before listing, one should observe a significant market reaction to discretionary accruals.

Prior literature is not conclusive as to whether and how much investors use accruals in their valuations and whether accruals affect the security's price. The "anomaly" research (e.g., Sloan 1996) explains the abnormal returns associated with observable company attributes as arising from slow (or biased) investor responses to information in accruals. In contrast to these findings, Francis et al. (2005) showed that companies with poor accruals quality have higher costs of capital than do companies with good accruals quality. They argued that poor accruals quality is associated with larger required returns because poor accruals quality indicates greater information risk, for which investors require compensation in the form of larger expected returns than otherwise.

In line with the accruals pricing literature, my study argues that investors price the lower information risk associated with index listing and measured by discretionary

accruals. I tested the association between past discretionary accruals and current market-adjusted returns to discover the possible pricing of earnings quality. I carried out regressions of the association between market-adjusted returns and earnings (and the components of earnings). In Model 1, I regressed discretionary accruals before and after listing (periods $t - 1$, t , and $t + 1$). In Model 2, I used the same measures plus cash flow, and in Model 3, I used discretionary accruals and total earnings (Earnings).

Table 5 presents the results of my study, and Appendix B contains the details of the estimation procedure. The coefficient on the market's response to managerial discretion over earnings in the last reporting year before listing, $\hat{\beta}_{DisAcct_{t-1}}$, is negative and statistically significant in all three models in Table 5.

What about periods t and $t + 1$? If the quality of reported earnings is a priced factor, then investors will lower their demand for returns as high-quality earnings reduce the uncertainty about management manipulation in reporting financial performance. The findings presented in Table 5 suggest that investors do, indeed, follow this pattern; other things being constant, current *MAR* increases when investors find information risk, measured by past discretionary accruals, to be lower than their expectations.

The level of cash flows or total earnings may also influence abnormal returns of S&P 500 companies. To disentangle their effects, I used Models 2 and 3. The Table 5 results confirm that discretionary accruals remain a significant factor in explaining the variance in current *MAR* even after I included the other accounting variables; that is, the discretionary component has an effect on abnormal returns that is different from the effect of earnings itself or the other component, cash flows.

If managerial discretion over accruals is a priced factor, how does S&P 500 listing affect it? My findings suggest that the information content of discretionary accruals increases, together with that of reported earnings, after a company's listing. In Model 1, the R^2 increases from 5.41 percent before listing to 6.71 percent after listing, and the same pattern is observable in the results for Model 2 and Model 3. Moreover, addition to the S&P 500 may change the role of future discretionary accruals, $DisAcct_{t+1}$, in price formation. Before listing, future discretion over accruals does not affect *MAR*, but it does after S&P 500 listing. Additionally, the relationship between *MAR* and

(expected) future discretion of management differs after the company's listing. The findings suggest that one year after listing, greater discretion over accruals has a positive effect on abnormal returns. Perhaps, the lower level of discretionary accruals for S&P 500 companies explains the reversal in this relationship, which is negative before the listing. Alternatively, listing may change investors' views about the quality of management and managements discretion over reported earnings.

Prior literature argued that corporate managers may attempt to mislead investors by manipulating discretionary accruals or use its reporting discretion to signal private information to the market. Louis and Robinson (2005) examined the market reaction to discretionary accruals around the time of stock splits, which prior studies had suggested are a tool managers use to signal their optimism about future earnings. They confirmed that discretionary accruals are positively correlated with abnormal returns around the split event, and they argued that investors perceive the positive discretionary accruals prior to the stock split to be signals of management's optimism rather than the result of opportunistic behavior. The positive association between MAR and future DisAcc is consistent with this signaling explanation if the listing event changes either the purpose of discretionary accruals for the management or investors' perception of this discretion. The inclusion of a company in the S&P 500 is an important event, and it can easily make the managers of a newly listed company optimistic about future earnings. Thus, company managers may use discretionary accruals as they use stock splits to signal their optimism to the market. Moreover, the addition of a company to the S&P 500 is recognition that the company is a leader in its industry; hence, the inclusion may affect investors' perceptions of the quality of management. Future research may search for relationships among index listing, level of managerial optimism, and investor perception of managerial discretion over accruals.

1.5 Conclusions

This study investigated the relationship between earnings quality and the long-term price effect of addition to the S&P 500. The trading-based explanations of

the positive abnormal returns following index addition undermine the importance of information risk and the information in earnings data for price formation. This study provides evidence of increased earnings quality when companies are added to the S&P 500 and argues that the association between market-adjusted returns and discretionary accruals reveals the possible pricing of accruals quality. The larger magnitudes of accruals before index listing, which indicate greater information risk than after listing, could be associated with larger required returns. After index addition, discretionary accruals fall, which reduces information risk and increases the stock price. These results find an important role for information risk and accruals pricing, therefore, which is consistent with the finding of Francis et al. (2005) that companies with poor accruals quality have higher costs of capital.

Several issues connected to the effect of earnings quality on stock returns for companies added to the S&P 500 deserve further attention. The association between the index listing and stock splits could also be further examined to shed light on whether accruals are priced. Louis and Robinson (2005) found that investors may perceive discretionary accruals to be a sign of managerial optimism. If the signaling role of discretionary accruals differs around the time of index listing, this result would confirm that not only information risk but also managerial signals are priced factors.

Appendix A. Estimating Discretionary Current Accruals

Discretionary accruals are estimated with the methodology suggested by Ashbaugh, LaFond and Mayhew (2003). Their estimation procedure provides the discretionary component of current accruals after controlling for firm performance with two alternative measures: namely, accounts receivable and returns on assets. Although they perform the estimation with a portfolio technique, the small number of S&P 500 additions in a single year prohibits this possibility in this study (i.e., usually there are less than 20 additions). The estimation procedure is as follows:

$$CAcc = \alpha_1 * (1/laglasset) + \alpha_2 * (\Delta Rev - \Delta AR),$$

where current accruals

Current accruals ($CAcc$) - net income before extraordinary items, plus depreciation and amortization, minus operating cash flows, scaled by total assets;

$laglasset$ is total assets at the beginning of the year;

ΔRev is equal to the net sales in year t , less net sales in year $t-1$, scaled by total assets, and;

ΔAR is equal to accounts receivable in year t , less accounts receivable in year $t-1$, scaled by total assets.

The expected current accruals ($ExpAcc$) are obtained using the estimated parameters. The difference between actual current accruals and $ExpAcc$ is the managerial discretion over accruals: $DisAcc$. Ashbaugh et al. (2003) suggest that returns on assets can also be used as a measure of financial performance when estimating discretionary accruals. The findings obtained with this alternative measure are not reported, since they do not differ from the estimates obtained with the procedure explained above. The variables are winsored at the 1% level to guarantee that extreme observations do not drive reported results.

Appendix B. Estimating the Market Response to Discretionary Accruals

The market response to discretionary accruals is measured with the three following models:

$$Model1 : MAR_t = \alpha + \beta_1 * DisAcc_{t-1} + \beta_2 * DisAcc_t + \beta_3 * DisAcc_{t+1} + e$$

$$Model2 : MAR_t = \alpha + \beta_1 * DisAcc_{t-1} + \beta_2 * DisAcc_t + \beta_3 * DisAcc_{t+1} + \beta_4 * CashFlow_{t-1} + \beta_5 * CashFlow_t + \beta_6 * E$$

$$Model3 : MAR_t = \alpha + \beta_1 * DisAcc_{t-1} + \beta_2 * DisAcc_t + \beta_3 * DisAcc_{t+1} + \beta_4 * Earnings_{t-1} + \beta_5 * Earnings_t + \beta_6 * E$$

where MAR stands for the average market-adjusted returns in year t , $DisAcc$ - for discretionary current accruals, measured as explained in Appendix A, $CashFlow$ - for operating cash flows, and $Earnings$ - for net income before extraordinary items (all variables are scaled by total assets). The regression coefficients $\beta_{1,2,3}$ capture the effect of past, current and future discretionary components of accruals ($DisAcc$) on stock returns. The level of cash flows is also expected to affect market-adjusted returns. We disentangle the effect of managerial discretion over accruals from that of the level of cash flows on MAR with Model 2; $\beta_{4,5,6}$ is the effect of past, current and future cash flows on stock returns. Market-adjusted returns depend on reported earnings which affect MAR . We draw conclusions on the individual effect of discretionary accruals with Model 3, where $\beta_{4,5,6}$ represent the effect of past, current and future earnings on stock returns. The explained variance in MAR is captured with the coefficient of determination (R^2).

Model 1 reveals the information role of discretionary accruals in explaining the variance in market-adjusted returns. Models 2 and 3 include other factors which additionally affect MAR . Expected current accruals are not included in the estimated model, as they do not contribute either individually or jointly to the explained variance.

Endnotes

¹ Although S&P 500 companies are generally large, they are not always so. Some large companies, such as USA Networks and Liberty Media Corporation, are not in the S&P 500. Also, the widely held belief that S&P 500 companies are well known is not necessarily true. S&P 500 companies specializing in non-consumer-oriented products, such as the Fifth Third Bancorp and Automatic Data Processing, are not recognized by many investors (Chen, Noronha, and Singal 2004).

² Chen et al. (2004) examined the effect of a company's inclusion in the S&P 500 on Mertons (1987) "shadow cost", a premium for the nonsystematic risk that investors bear if they hold only the stocks they are aware of, thus being inadequately diversified. Chen et al. argued that with the stocks addition to the index, the stocks shadow cost falls, causing

the price to rise.

³There is a significant difference between Jain's (1987) explanation and the explanation of Denis et al. (2003). Jain argued that Standard & Poor's decisions offer information content about the future prospects of a company. Denis et al. stated that the inclusion event itself is information free but that it improves future performance because it leads to scrutiny (or monitoring) of managers by investors.

⁴ For example, Xie (2001); Hirshleifer, Hou, Teoh, and Zhang (2004); Mashruwala, Rajgopal, and Shevlin (2006); Lui and Qi (2006).

⁵ Not all additions announced in the period could be examined, primarily because they lacked financial information for three consecutive years in Thomson Datastream. Moreover, note that Standard & Poor's introduced an increased number of index changes during the second half of the period, when more added companies could be matched in the financial database. Hence, the final sample includes more additions in the later years than in the early years. The omitted S&P 500 additions may have introduced a bias if they are, for some reason, systematically different from the companies examined in the study; for instance, if bankrupt companies with low-quality earnings were omitted.

⁶ For example, Dechow (1994); Livnat and Santicchia (2006); Livnat and Espinosa (2008).

⁷ Two important accounting principles that guide the reporting of earnings are the "revenue recognition principle" and the "matching principle". Corporate managers may recognize revenues after providing the service when the cash receipt is reasonably certain (the revenue recognition principle). Cash outlays associated directly with revenues should be accounted for in the period in which the company recognizes revenues (the matching principle). Additionally, certain accounting conventions-such as objectivity, verifiability, and the use of historical cost valuation models-limit the ability of management to manipulate revenue and expense recognition.

⁸ MARs are abnormal price movements on a particular day. They are the deviation of a stock's normal returns from that of the market. In many studies of the S&P 500 effect, scholars refer to MARs as abnormal or excess returns. MAR is a preferred measure because it captures stock returns not explained by price movements of the market in general, which would be captured by a selected benchmark.

References

- Aboddy, D., J. Hughes, and J. Liu. 2005. "Earnings Quality, Insider Trading, and Cost of Capital." *Journal of Accounting Research*, vol. 43, no. 5 (December):651-673.
- Ashbaugh, H., R. LaFond, and B. Mayhew. 2003. "Do Non-Audit Services Compromise Auditor Independence? Further Evidence." *Accounting Review*, vol. 78, no. 3:611-638.
- Ball, R., S. Kothari, and A. Robin. 2000. "The Effect of International Institutional Factors on Properties of Accounting Earnings." *Journal of Accounting and Economics*, vol. 29, no. 1 (February):1-51.
- Beaver, W., R. Clarke, and W. Wright. 1979. "The Association between Unsystematic Security Percentage Change in Prices and the Magnitude of Earnings Forecast Errors." *Journal of Accounting Research*, vol. 17, no. 12:316-340.
- Beneish, M., and R. Whaley. 1996. "An Anatomy of the S&P Game: The Effect of Changing the Rules." *Journal of Finance*, vol. 51, no. 5 (December):1909-1930.
- Bergstresser, D., and T. Philippon. 2006. "CEO Incentives and Earnings Management." *Journal of Financial Economics*, vol. 80, no. 3 (June):511-529.
- Burgstahler, D., and I. Dichev. 1997. "Earnings Management to Avoid Earnings Decreases and Losses." *Journal of Accounting and Economics*, vol. 24, no. 1 (December):99-126.
- Chen, H., G. Noronha, and V. Singal. 2004. "The Price Response to S&P 500 Index Additions and Deletions: Evidence of Asymmetry and a New Explanation." *Journal of Finance*, vol. 59, no. 4 (August):1901-1929.
- Christensen, P., G. Feltham, and F. Sabac. 2005. "A Contracting Perspective on Earnings Quality." *Journal of Accounting and Economics*, vol. 39, no. 2 (June):265-294.
- Dechow, P. 1994. "Accounting Earnings and Cash Flows as Measures of Firm Performance: The Role of Accounting Accruals." *Journal of Accounting and Economics*, vol. 18, no. 1 (July):342.
- Denis, D., J. McConnell, A. Ovtchinnikov, and Y. Yu. 2003. "S&P 500 Index Additions and Earnings Expectations." *Journal of Finance*, vol. 58, no. 5 (October):1821-1840.
- DeGeorge, F., J. Patel, and R. Zeckhauser. 1999. "Earnings Management to Exceed Thresholds." *Journal of Business*, vol. 72, no. 1 (January):1-33.
- Desai, H., S. Rajgopal, and M. Venkatachalam. 2004. "Value-glamour and Accruals Mispricing: One Anomaly or Two?" *Accounting Review*, vol. 79, no. 2: 355-385.

Dhillon, U., and H. Johnson. 1991. "Changes in the Standard and Poor's 500 List." *Journal of Business*, vol. 64, no. 1 (January):75-85.

Erwin, G., and J. Miller. 1998. "The Liquidity Effects Associated with Addition of a Stock to the S&P 500 Index: Evidence from Bid/Ask Spreads." *Financial Review*, vol. 33, no. 1 (February):131-146.

Francis, J., R. LaFond, P. Olsson, and K. Schipper. 2005. "The Market Pricing of Accruals Quality." *Journal of Accounting and Economics*, vol. 39, no. 2 (June):295-327.

Givoly, D., and C. Hayn. 2002. "Rising Conservatism: Implications for Financial Analysis." *Financial Analysts Journal*, vol. 58, no. 1 (January/February):56-74.

Guay, W., S. Kothari, and R. Watts. 1996. "A Market-Based Evaluation of Discretionary-Accruals Models." *Journal of Accounting Research*, vol. 34, (Supplement):83-105.

Harris, L., and E. Gurel. 1986. "Price and Volume Effects Associated with Changes in the S&P 500 List: New Evidence for the Existence of Price Pressures." *Journal of Finance*, vol. 41, no. 4 (September):815-829.

Hirshleifer, D., K. Hou, S. Teoh, and Y. Zhang. 2004. "Do Investors Overvalue Firms with Bloated Balance Sheets?" *Journal of Accounting and Economics*, vol. 38, no. 1-3 (December):297-331.

Jain, P. 1987. "The Effect on Stock Price of Inclusion in or Exclusion from the S&P 500." *Financial Analysts Journal*, vol. 43, no. 1 (January/February):58-65.

Jones, J. 1991. "Earnings Management during Import Relief Investigations." *Journal of Accounting Research*, vol. 29, no. 2:193-228.

Kraft, A., A. Leone, and C. Wasley. 2006. "An Analysis of the Theories and Explanations Offered for the Mispricing of Accruals and Accrual Components." *Journal of Accounting Research*, vol. 44, no. 2 (May):297-339.

Leuz, C., D. Nanda, and P. Wysocki. 2003. "Earnings Management and Investor Protection: An International Comparison." *Journal of Financial Economics*, vol. 69, no. 3 (September):505-527.

Liu, Q., and R. Qi. 2006. "Do We Accept Accrual Profits at Our Peril?" *Financial Analysts Journal*, vol. 62, no. 4 (July/August):627-5.

Livnat, J., and G. Espinosa. 2008. "Quarterly Accruals or Cash Flows in Portfolio Construction." *Financial Analysts Journal*, vol. 64, no. 3 (May/June):67-79.

Livnat, J., and M. Santicchia. 2006. "Cash Flows, Accruals, and Future Returns."

Financial Analysts Journal, vol. 62, no. 4 (July/August):48-61.

Louis, H., and D. Robinson. 2005. "Do Managers Credibly Use Accruals to Signal Private Information? Evidence from the Pricing of Discretionary Accruals around Stock Splits." *Journal of Accounting and Economics*, vol. 39, no. 2 (June):361-380.

Lynch, A., and R. Mendenhall. 1997. "New Evidence on Stock Price Effects Associated with Changes in the S&P 500 Index." *Journal of Business*, vol. 70, no. 3 (July):351-383.

Madhavan, A. 2003. "The Russell Reconstitution Effect." *Financial Analysts Journal*, vol. 59, no. 4 (July/August):51-64.

Mashruwala, C., S. Rajgopal, and T. Shevlin. 2006. "Why Is the Accrual Anomaly Not Arbitraged Away? The Role of Idiosyncratic Risk and Transaction Costs." *Journal of Accounting and Economics*, vol. 42, no. 12 (October):3-33.

Menon, K., and D. Williams. 2004. "Former Audit Partners and Abnormal Accruals." *Accounting Review*, vol. 79, no. 4 (October):1095-1118.

Merton, R. 1987. "Presidential Address: A Simple Model of Capital Market Equilibrium with Incomplete Information." *Journal of Finance*, vol. 42, no. 3 (July):483-510.

Roychowdhury, S. 2006. "Earnings Management through Real Activities Manipulation." *Journal of Accounting and Economics*, vol. 42, no. 3 (December):335-370.

Shleifer, A. 1986. "Do Demand Curves for Stocks Slope Down?" *Journal of Finance*, vol. 41, no. 3 (July):579-590.

Sloan, R. 1996. "Do Stock Prices Fully Reflect Information in Accruals and Cash Flows about Future Earnings?" *Accounting Review*, vol. 71, no. 3 (July):289-315.

Wang, D. 2006. "Founding Family Ownership and Earnings Quality." *Journal of Accounting Research*, vol. 44, no. 3 (June):619-656.

Wurgler, J., and E. Zhuravskaya. 2002. "Does Arbitrage Flatten Demand Curves for Stocks?" *Journal of Business*, vol. 75, no. 4 (October):583-608.

Xie, H. 2001. "The Mispricing of Abnormal Accruals." *Accounting Review*, vol. 76, no. 3 (July):357-373.

Table 1. Average earnings and its components

Full period	Before addition	After addition	<i>t-test</i>
Earnings	0.059	0.054	(1.30)
Cash flow	0.094	0.112	(5.25 ^{**})
Total accruals	-0.036	-0.054	(6.84 ^{**})
Current accruals (unsigned)			
* Discretionary current accruals (DCA)	0.063	0.051	(4.18 ^{**})
* Expected current accruals (ECA)	0.016	0.250	(16.24 ^{**})

Notes: Earnings and its components are scaled by total assets. The results are obtained with the decomposition procedure suggested by Ashbaugh et al. (2003), as explained in Appendix 1. T-test values are significant at 5% (^{**}) and 10% level (*).

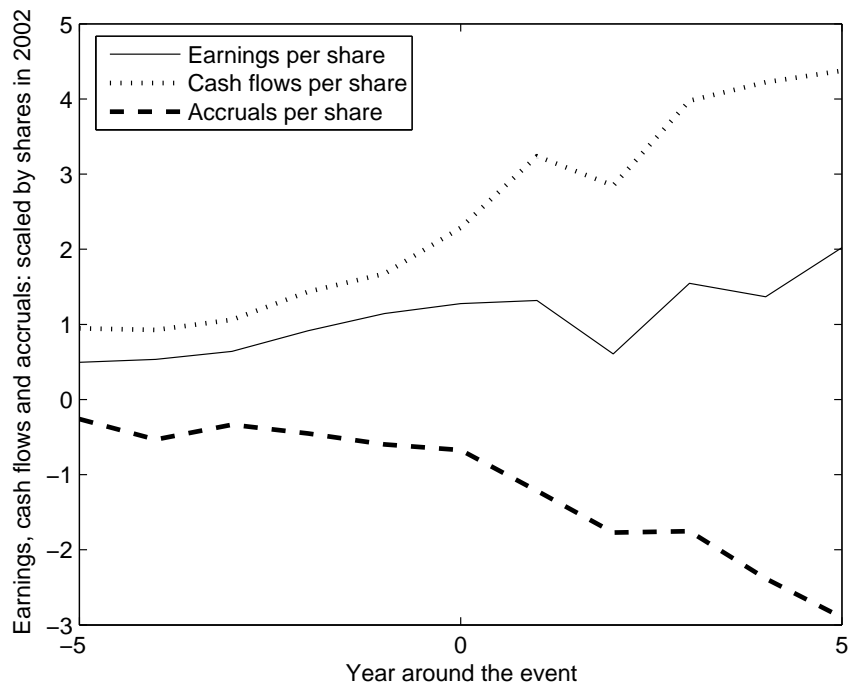


Figure 1. Behavior of Cash Flow and Total Accruals around the Time of S&P 500 Addition, 1990-2005 *Note:* Scaling is per share in 2002.

Table 2. Regression of future earnings against current earnings, cash flows, expected and discretionary accruals.

Year relative to the inclusion:				Adj. R^2
<i>Model 1 : $Earnings_{t+1} = \alpha + \beta_1 * Earnings_t + e$</i>				
	$\hat{\beta}_{Earnings}$			
One year before	0.684 (≤ 0.001)			49.24%
One year after	0.748 (≤ 0.001)			52.45%
<i>Model 2 : $Earnings_{t+1} = \alpha + \beta_1 * CashFlow_t + \beta_2 * Accruals_t + e$</i>				
	$\hat{\beta}_{CashFlow}$	$\hat{\beta}_{Accruals}$		
One year before	0.702 (≤ 0.001)	0.386 (≤ 0.001)	53.38%	
One year after	0.745 (≤ 0.001)	0.541 (≤ 0.001)	47.91%	
<i>Model 3 : $Earnings_{t+1} = \alpha + \beta_1 * CashFlow_t + \beta_2 * DiscAcc_t + \beta_3 * ExpAcc_t + e$</i>				
	$\hat{\beta}_{CashFlow}$	$\hat{\beta}_{DisAcc}$	$\hat{\beta}_{ExpAcc}$	
Two years before	0.377 (≤ 0.001)	0.350 (≤ 0.001)	0.086 (0.817)	37.11%
One year before	0.516 (≤ 0.001)	0.292 (≤ 0.001)	0.014 (0.974)	43.78%
One year after	0.526 (≤ 0.001)	-0.395 (≤ 0.001)	-0.131 (0.799)	34.82%
Two years after	0.535 (≤ 0.001)	-0.519 (≤ 0.001)	-0.549 (0.255)	40.71%

Table 3. Temporary and permanent price impact for the S&P 500 additions: raw returns in the year after an addition

<i>Impact</i>	<i>Period (1990-2005)</i>
<i>Temporary impact</i>	0.01%
<i>Permanent impact at:</i>	
2 months	2.63%
3 months	2.71%
4 months	2.71%
5 months	4.18%
6 months	3.97%
7 months	4.45%
8 months	3.79%
9 months	2.49%
10 months	2.66%
11 months	3.46%

Table 4. Monthly market-adjusted mean returns (*MAR*)

Before and after the addition:			
	Before addition = 0	After addition = 1	<i>t</i> -test: $t(z)$
<i>Full period</i>			
Mean <i>MAR</i>	-0.34%	0.43%	(7.59**)
<i>N</i>	19,407	15,135	

Notes: "MAR" are monthly market-adjusted returns of S&P 500 additions. "N" is the number of observation in each of the four sub-samples. The null hypothesis of the *t*-test is that there is no difference in means between the samples. *T*-statistics are significant at the 5% level (**).

Table 5. Market Response to Discretionary Accruals

	$\hat{\beta}_{DisAcc_{t-1}} + \hat{\beta}_{DisAcc_t} + \hat{\beta}_{DisAcc_{t+1}} + \beta_2 * DisAcc_t + \beta_3 * DisAcc_{t+1} + e$						R^2
One year before	-0.124 (0.009)	$\hat{\beta}_{DisAcc_t}$ -0.004 (0.936)	$\hat{\beta}_{DisAcc_{t+1}}$ -0.001 (0.973)				5.41%
Inclusion year	0.074 (0.094)	0.070 (0.026)	-0.060 (0.151)				5.73%
One year after	-0.051 (0.120)	0.043 (0.292)	0.095 (0.009)				6.71%
	$Model.2 : MAR_t = \alpha + \beta_1 * DisAcc_{t-1} + \beta_2 * DisAcc_t + \beta_3 * DisAcc_{t+1} + \beta_4 * CashFlow_{t-1} + \beta_5 * CashFlow_t + \beta_6 * CashFlow_{t+1} + e$						
One year before	-0.103 (0.034)	$\hat{\beta}_{DisAcc_t}$ -0.004 (0.945)	$\hat{\beta}_{DisAcc_{t+1}}$ -0.004 (0.917)	$\hat{\beta}_{CashFlow_{t-1}}$ 0.010 (0.790)	$\hat{\beta}_{CashFlow_t}$ 0.034 (0.381)	$\hat{\beta}_{CashFlow_{t+1}}$ -0.061 (0.056)	7.85%
Inclusion year	0.063 (0.147)	0.063 (0.038)	-0.042 (0.308)	0.067 (0.008)	-0.015 (0.584)	-0.076 (0.003)	15.15%
One year after	-0.058 (0.077)	0.028 (0.510)	0.102 (0.005)	0.039 (0.137)	-0.013 (0.693)	-0.046 (0.192)	9.40%
	$Model.3 : MAR_t = \alpha + \beta_1 * DisAcc_{t-1} + \beta_2 * DisAcc_t + \beta_3 * DisAcc_{t+1} + \beta_4 * Earnings_{t-1} + \beta_5 * Earnings_t + \beta_6 * Earnings_{t+1} + e$						
One year before	-0.134 (0.004)	$\hat{\beta}_{DisAcc_t}$ 0.022 (0.705)	$\hat{\beta}_{DisAcc_{t+1}}$ -0.067 (0.126)	$\hat{\beta}_{Earnings_{t-1}}$ 0.001 (0.987)	$\hat{\beta}_{Earnings_t}$ 0.065 (0.197)	$\hat{\beta}_{Earnings_{t+1}}$ -0.105 (0.002)	11.71%
Inclusion year	0.079 (0.078)	0.033 (0.318)	-0.043 (0.304)	0.022 (0.472)	-0.017 (0.604)	-0.072 (0.011)	15.36%
One year after	-0.024 (0.469)	0.027 (0.520)	0.010 (0.823)	0.001 (0.981)	0.060 (0.045)	-0.106 (0.001)	15.76%

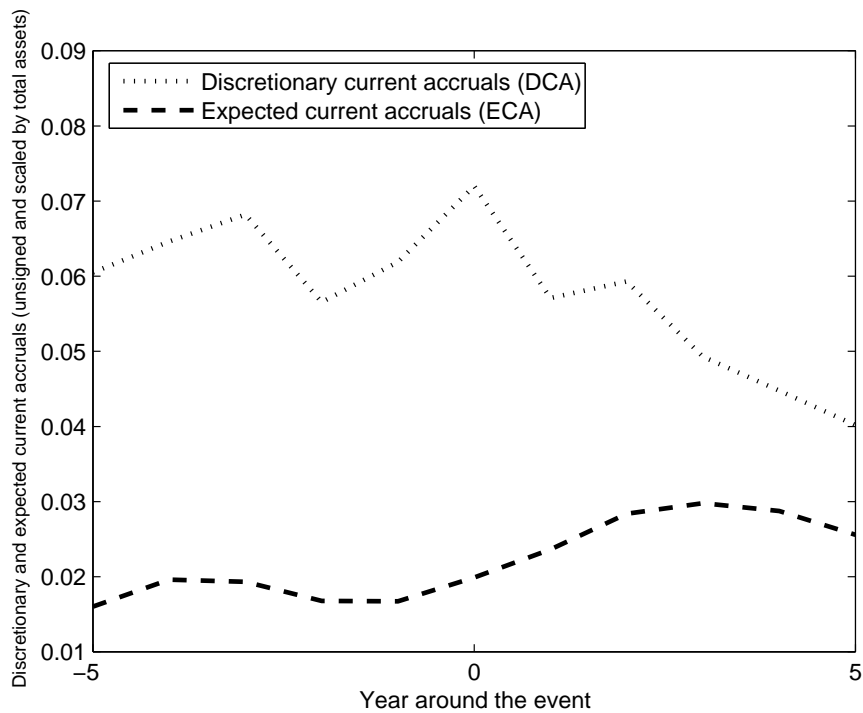


Figure 2. Discretionary Current Accruals and Expected Current Accruals around the Time of S&P 500 Addition, 1990-2005

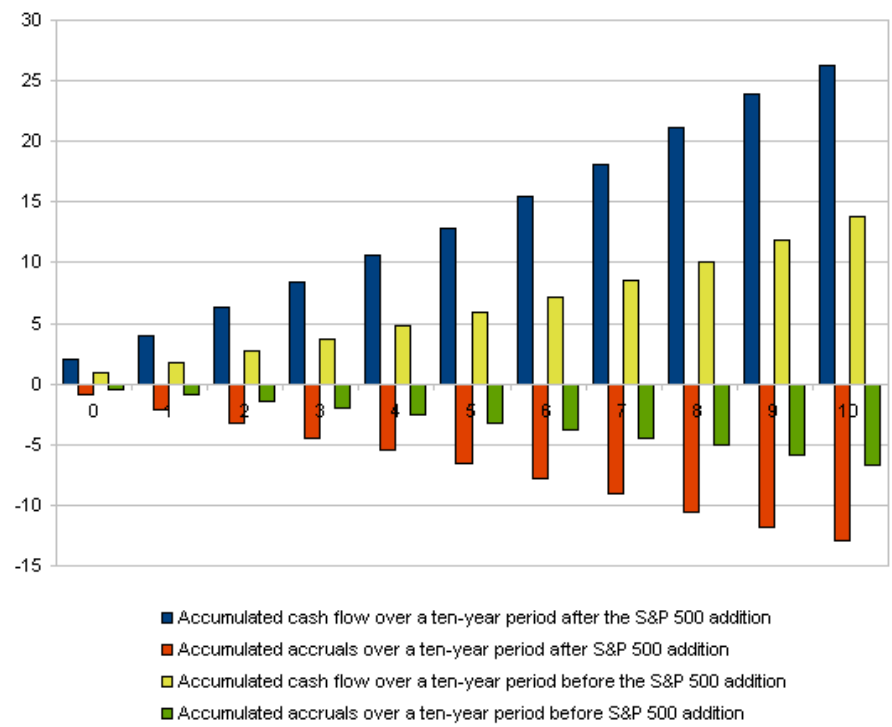


Figure 3. Accumulated Cash Flows and Total Accruals Before and After S&P 500 Addition. Notes: Scaling is per share in 2002. On the y-axis: the number of years in the accumulation.

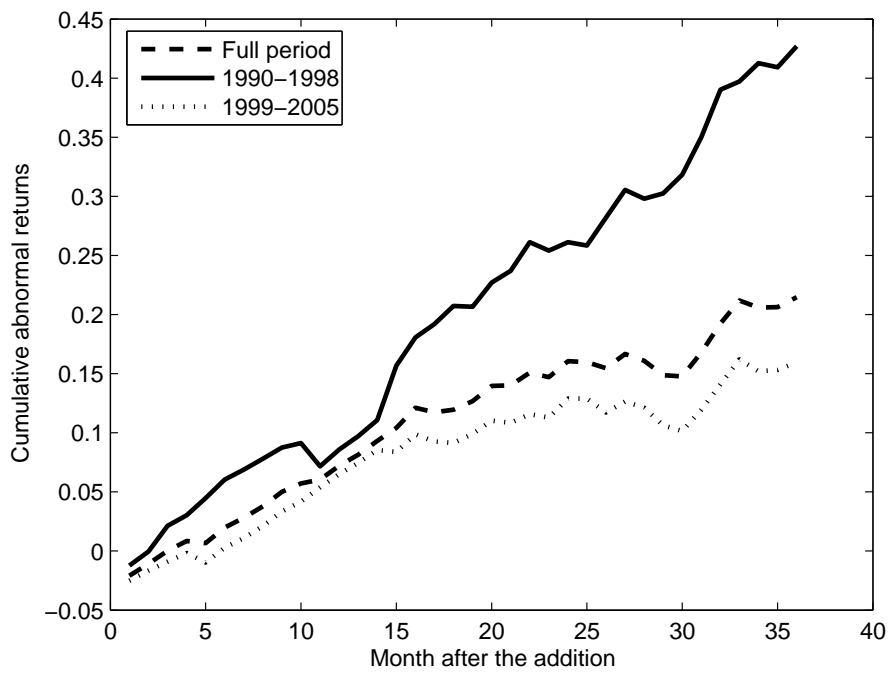


Figure 4. Cumulative Market-Adjusted Abnormal Returns after S&P 500 Addition, 1990-2005

Chapter 2

Market liquidity effects of the IFRS introduction in Europe

Revise-and-resubmit at the *European Accounting Review* (1st round)

Abstract. The introduction of IFRS was intended to improve accounting quality and ensure greater comparability and transparency of financial reporting around the world. This study examines market liquidity costs and concludes on the heterogeneous IFRS effect across adopting countries in Europe. Using reported accounting differences, the study relates liquidity costs with restated accounts under IFRS (i.e., IFRS effect on financial statements) in four legal origin groups (France, Germany, United Kingdom and Sweden). Findings confirm that liquidity costs of UK companies are strongly affected by IFRS restatements; for French companies this effect is present but weaker. Restatements of equity and net income under IFRS are associated with an increase in liquidity costs (significant for French and UK companies). Empirical results suggest that investors anticipate the IFRS effect but in several cases adjust liquidity costs over several reporting periods.

2.1 Introduction

Since 2005, more than 7,000 listed firms from the European Union are required to comply with the International Financial Reporting Standards (IFRS). The introduction of a global set of accounting standards was intended to improve account-

ing quality and ensure greater comparability and transparency of financial reporting around the world. Lack of comparability creates information asymmetry, which the adoption of a single set of accounting techniques is expected to eliminate. Additionally, the adoption of IFRS should limit the opinion-shopping practice and thereby should enhance credibility of financial statements (Ball, 2006). Nevertheless, skepticism about the plausible benefits of mandated accounting harmonization has been expressed. Simply mandating accounting standards may not produce financial information of higher quality, especially in the presence of lax enforcement mechanisms and strong adverse reporting incentives (Ball et al., 2003). Moreover, even though there is little doubt that investors prefer high quality information over low, the IFRS introduction may not be required. Global standards may not only limit competition among accounting jurisdictions, which affects quality, but also may call for judgments in application that necessarily vary across companies and thus affect comparability of financial reporting (Sunder, 2008).

This study contributes to the growing body of literature on the economic consequences of mandating a uniform accounting regime. Compared to previous studies on market liquidity costs, it employs a new source of accounting information - reported accounting reconciliations from domestic regimes to IFRS. With reported accounting differences, the study can more precisely distinguish the IFRS effect on liquidity costs after the IFRS introduction. The accounting regimes of adopting countries differ significantly, which is likely to affect capital-market benefits of mandated IFRS. The expectation that the IFRS effect is heterogeneous across adopting countries explains the country focus: European countries that are representative of four different legal origin groups, France, Germany, Sweden and the United Kingdom. First-time adopters of IFRS on financial markets of these four countries are included. I conclude about the IFRS effect on market liquidity costs using three popular proxies of market liquidity costs (the proportion of zero returns, the price impact of trades and bid-ask spreads) that should capture, among other things, investors' perception of reporting quality and comparability after the IFRS introduction. The IFRS effect is measured as the marginal response of liquidity costs to accounting restatements in total assets, shareholder's equity and net income under IFRS. The findings are consistent with

the expectation that accounting differences affect market liquidity costs and additionally confirm the heterogeneous IFRS effect across adopting countries. Liquidity costs are affected by accounting adjustments reported by French and UK companies under IFRS. Although larger total asset restatements reduce liquidity costs, equity and net income restatements vary significantly across adopting companies and this most likely explains their negative effect on market liquidity costs. Findings also confirm that financial markets react in anticipation to IFRS reporting for French and UK companies. Perhaps, voluntary disclosure spreads the IFRS effect over several reporting periods. Additionally, liquidity costs are affected by restatements in net income long after the release of first-time IFRS reconciliations. Results confirm that adjustment effect of these restatements is significant two years after the first IFRS reports.

The mandatory switch from domestic to internationally recognized accounting standards is a commitment to increase levels of disclosure and it is expected to reduce information asymmetry between the company and its shareholders and, as a result, market liquidity costs. This theoretical prediction is simple to expose but hard to test with empirical data. The application of IFRS is mandated for all publicly traded companies in a given country after a certain date. A benchmark group is required to distinguish the price response attributable to the switch from domestic to international standards and not to other factors, such as portfolio unbalancing, changes in risk preferences or a change in investor base. However, in practice it is hard to find the right benchmark given that all public companies report under the same set of accounting rules. Nevertheless, previous studies try to address this methodological problem and benchmark first-time IFRS adopters against public companies from non-adopting countries and against a global worldwide sample (Daske et al., 2008). Indirectly testing the IFRS effect with a benchmark group, however, has its limitations. Perhaps the major limitation is that it cannot differentiate which factors related to accounting disclosure under IFRS contribute to the market response.

The current study attempts to address this limitation with the design and implementation of a direct test. The contribution to existing literature is that it concludes on: (a) the IFRS effect using actual disclosure of accounting differences under IFRS,

(b) the presence of an anticipation effect of IFRS reporting on liquidity costs before the effective introduction of IFRS, and (c) the presence of adjustments over several reporting periods in liquidity costs that IFRS reporting effectively demands. First-time adopters disclose accounting adjustments under IFRS in the format of accounting reconciliations. I measure market liquidity costs and estimate the marginal effect of accounting restatements in total assets, shareholder's equity and net income on variance in liquidity costs. Following Daske et al. (2008), I explain variance in market liquidity costs of adopting companies with market size, share turnover, price volatility but additionally include in the regression models reported restatements in the three accounts. I conclude on the heterogeneous effect with a country focus and cross-country comparison. Additionally, as recognized by Daske et al. (2007), financial market participants may use a lower cost of capital in pricing IFRS adopting companies well before the actual regulatory change. The anticipation effect is expected to camouflage the capital-market reaction to IFRS by affecting the benchmark group in the same direction as the first-time IFRS adopters, but we can also estimate it by using IFRS reporting differences after 2005. I explain market liquidity costs before the introduction with the accounting restatements after the effective adoption of 2005, along with other explanatory variables. Accurate or not in their forecasts, investors may react to IFRS reporting with trading cost adjustments over a longer period. I explain market liquidity costs two years after the adoption of IFRS with first-time disclosure under international standards and conclude about the adjustment effect.

The remainder of the paper is as follows. Section 2 contains previous findings on the financial market effects of the IFRS introduction in different countries and around the globe. Sample selection and research methodology are discussed in Section 3. Section 4 offers interpretation of the empirical results. In Section 5 conclusions follow, along with some directions for further research.

2.2 Prior literature and hypothesis development

2.2.1 Capital market costs around the adoption of IFRS

Over the last decade, contradicting views have been expressed about the mandatory introduction of IFRS and its plausible capital-market effects. Proponents argue that a single set of high quality accounting standards can benefit investors by reducing market liquidity costs through improved information transparency and enhanced information comparability (e.g., GAAP, 2001). Opponents, on the other hand, express concerns about whether the IFRS adoption can credibly increase disclosure and comparability in settings where implementation and enforcement of international standards is poor (Ball et al., 2003), and whether a uniform set of standards adequately reflects and accommodates the economic and political differences across countries (e.g., Sunder, 2008).

There are at least two reasons why mandatory IFRS adoption may be expected to reduce liquidity costs: (a) greater financial disclosure and transparency, and (b) enhanced information comparability. First, the switch from domestic standards to IFRS represents a substantial increase in a company's commitment to timely and high-quality accounting disclosure. Prior research finds that IFRS requires greater financial disclosure and transparency than most domestic accounting regimes (e.g., Ashbaugh and Pincus, 2001; Bae et al., 2007). Greater information asymmetry among market participants translates into higher transaction costs and lower liquidity for trading shares, thus raising the required rate of returns and lowering current stock prices (Diamond and Verrecchia, 1991). Hence, it is credible to assume that the improved information disclosure under IFRS reduces information asymmetry and thereby lowers transaction costs. A number of empirical studies examine the economic consequences of this increased disclosure before 2005, i.e., after a voluntary switch to high-quality accounting standards (e.g., IFRS or US GAAP). Empirical findings are consistent with the expectation that information quality improves and financial markets respond positively to the switch in accounting regime. This voluntary adoption not only improves earnings quality (Barth et al., 2007), it also changes

perception of disclosure quality (Daske and Gebhardt, 2006), attracts more foreign investment (Covrig et al., 2007) and reduces the cost of equity capital (e.g., Botosan, 1997; Easley and O'Hara 2004; Barth et al. 2007; Lambert et al. 2007). Additionally, it significantly lowers market liquidity costs: Public companies switching to IAS or US GAAP experience lower bid-ask spreads and higher stock turnover ratios (Leuz and Verrecchia, 2000) and it is more than likely that the increased disclosure of early IFRS adopters (Daske and Gebhardt, 2007) plays a role. And, second, prior research argues not only that disclosure improves but also that a single set of uniform accounting standards is likely to improve comparability of financial reporting across countries. Convergence benefits, such as lowering the costs of comparing a company's financial position and performance across countries, are expected. In their presence, European capital markets would become more globally competitive, consequently increasing liquidity for European firms. (e.g., Armstrong et al., 2007). Empirical research suggests that the voluntary adoption of IFRS is followed by a positive price response in the stock exchange (e.g., Armstrong et al., 2007; Barth et al., 2007; Daske et al., 2008), and this could be partially because of the process of convergence and greater information comparability across countries.

Nevertheless, scholars and practitioners express doubts about the possible benefits of this process in regards to convergence in accounting standards. First, how the capital market will respond to the introduction of IFRS is hard to discern, especially based on empirical results from voluntary adopters. Voluntary IFRS adoption has significant economic consequences, specifically it improves market liquidity and lowers costs of capital (e.g., Leuz and Verrecchia, 2000; Barth et al., 2007), but these findings may not be generalizable to first-time mandatory adopters. Analysts absolute forecast error and earnings management decrease, whereas timely recognition and value-relevance of accounting numbers increase after voluntary switching to IFRS; however, results based on voluntary adopters cannot be attributed solely to the change in financial reporting system since they could be driven by the characteristics of companies that choose to switch from local GAAP to IFRS (Ashbaugh and Pincus, 2001; Barth et al., 2008). Second, as a number of forces interact in financial reporting to determine the expected outcome of the convergence process, it could be

additionally hard to predict the outcome of IFRS introduction. In the presence of lax enforcement mechanisms, the mandatory adoption of IFRS will lead to a negligible or insignificant improvement of the reporting environment. Furthermore, not only the reporting standards per se but also the varying reporting incentives of individual companies in a specific institutional setting largely determine the transparency and quality of financial reporting, and, as a result the effectiveness of the mandatory adoption (e.g., Ball et al., 2003). And, third, general accounting principles are concise and call for judgment in its application, which will vary across companies and situations and give rise to greater variability in application. Therefore, the mandatory introduction of IFRS may not lead to greater comparability of financial reporting across borders (e.g., Sunder, 2008). Additionally, market participants could effectively deal with accounting diversity even before the change in reporting requirements. Managers not only voluntarily disclose internal corporate information, but also financial analysts engage in strategic analysis of such disclosure and effectively distinguish credible from non-credible information content (e.g., Choi and Levich, 1991; Baginski et al., 2004).

Empirical studies on the capital-market effect of the mandatory adoption of IFRS are not conclusive. Daske et al. (2008) examine the economic consequences of mandatory IFRS adoption in 26 countries and find that market liquidity improves around the time of mandatory IFRS adoption, with capital market benefits concentrated in countries with strong legal enforcement and managerial incentives for transparent disclosure. Capkun et al. (2008) examine restated financial statements of EU companies and conclude about the value relevance of reported earnings under IFRS, in the presence of earnings management during this transition period. Lee et al. (2008) document significant, nonuniform IFRS across European countries, with a positive effect in investor-friendly environments, such as in the UK. Byard et al. (2008) find that mandatory adoption of IFRS in EU countries resulted, on average, in an improvement in analysts' forecast accuracy, and that this effect is more pronounced for firms in countries with better law enforcement. Beuselinck et al. (2008) examine price synchronicity and documents an increase in the post-IFRS adoption period when analyst activity is higher. Additionally, they find that synchronicity returns to pre-IFRS

adoption levels during the post-IFRS adoption period for firms with higher institutional ownership, which is consistent with a continuing private information advantage enjoyed by institutional investors under the IFRS regime.

2.2.2 Heterogeneous capital market response to the introduction of IFRS: legal origin differences

Adopting countries differ largely in accounting quality and capital market efficiency, which additionally motivates policy makers in their attempts to unify financial reporting disclosure. Doubts about the feasibility, as well as the desirability, of this policy goal, however, have been raised. First, accounting differences are deeply-rooted in legal traditions and may be hard to overcome. And, second, financial market participants and public authorities may find compliance with IFRS, as promulgated by the IASB, not desirable. Rather than adopting the full version of IFRS, they may decide to adjust the international standards to their local needs (i.e., design and implement a "national" version of IFRS) and thus partially comply with IFRS, at the country and company level. The latter will further increase accounting differences under IFRS application.

The adoption of IFRS is intended to reduce accounting differences, but these differences are long-lasting and deeply-rooted. The general dichotomy between accounting systems, i.e., a shareholder versus stakeholder presentation of accounting information, is a difficult obstacle to overcome without major changes in attitudes and incentives (Nobes and Parker, 2006). Empirical findings support the view that legal traditions and institutions have a very strong role in shaping capital markets and their stage of development. Today there is little doubt that good institutions are rewarded in financial markets, as companies from countries with better legal institutions (a) are larger in terms of sales and assets (Kumar et al., 2001), (b) have higher valuation relative to their assets (La Porta et al., 2002), (c) have a lower concentration of ownership and control (La Porta et al., 1999), (d) are most likely to suffer from the accrual anomaly (Pincus et al., 2007), (e) have better access to external finance (Demirgüç-Kunt et al., 2002) and (f) have lower trading costs¹(Eleswarapu and Venkataraman,

2006). When the departing point is different, it is likely that the market responses to the imposed accounting standards vary across adopting countries. Even if national governments and financial reporting preparers have good intentions when introducing and implementing IFRS, various forces, especially those rooted deeply in a country's legal tradition, may obstruct their efforts.

Additionally, the IFRS adoption may not produce the desired effect on capital markets even when policy makers efficiently enforce accounting rules and when managers commit to high-quality disclosure. Investors may have doubts about the IFRS effect on financial reporting in the long-term. Even in the short-term, the degree of compliance with IFRS at the national level, over which accounting authorities and managers have discretion, has raised questions about the comparability of financial reporting across adopting countries and companies. For instance, various jurisdictions have not accepted IFRS exactly as promulgated by the IASB, and have instead made various changes thereto. Thus, financial statements prepared under different ("national") versions of the IFRS are likely to remain incomparable, reducing the expected benefits from the process of international harmonization². Two surveys assess overall compliance with IFRS and confirm dual reporting in the UK and Germany (Nobes and Zeff, 2008; ICAEW, 2007), as well as in the Netherlands and France (ICAEW, 2007). Nobes and Zeff show that the explicit reference to the full IFRS version in the auditor reports is for foreign private issuers in the United States, i.e., companies that face higher reporting and corporate disclosure requirements³.

2.3 Research design, sample selection and variable description

2.3.1 Research design and methodology

Prior empirical studies on the capital-market response to the adoption of international standards face a number of empirical challenges. First, IFRS reporting is mandated for all publicly traded companies in a particular country and thus it is

hard to find an appropriate benchmark against which to evaluate and attribute the market response to the IFRS introduction. Second, the first-time application of IFRS may create a short-lived adoption effect; for instance, with the break in the historical financial information, some financial analysts may find it difficult to perform their future profitability analysis, whereas sophisticated and well-informed investors may be in a better position to understand and unravel the one-time effect of IFRS adoption. Moreover, IFRS 1 provides firms with certain recognition and disclosure exemptions when they apply IFRS for the first time, which may create short-term differences across firms. Thus, there could be a time period over which information asymmetries among investors increase, even though IFRS reporting itself is more informative (Daske et al., 2008). Third, the mandatory adoption of IFRS is a step in the process of international harmonization; it follows the voluntary application of IAS/IFRS in some countries (e.g., in Germany) where management was allowed to use the international standards before the mandatory switch in 2005. The application of international standards by voluntary adopters creates the possibility that investors more than likely only partially anticipate the effect of IFRS reporting requirements on the financial accounts that were previously reported on under the domestic accounting regime.

How IFRS reporting affects market liquidity costs could be difficult to identify, in particular in estimation settings where the actual impact of the international standards is not observable. In the cases where a benchmark group does not exist, we may attribute the change in market liquidity to the IFRS accounts, while other regulatory changes or management choices that happen simultaneously with the adoption of international standards may actually be what explain the changes. Daske et al. (2008) conduct their study on the capital-market effect of IFRS introduction very thoroughly, with a benchmark sample of non-adopting countries and a global worldwide sample. The authors recognize the difficulty of benchmarking the consequences of a regulatory change that simultaneously affects all firms in an economy; they report that the magnitude and statistical significance of the documented effects vary substantially depending on the benchmark sample, the length of their sample period, and whether they include companies from IFRS-adopting countries that have not yet switched to

IFRS as a benchmark. However, if we observe the actual accounting differences under IFRS reporting, we may effectively distinguish its effect on market liquidity costs after the mandatory switch, without a benchmark group. First-time adopters are required to disclose accounting adjustments and their effect on total assets and net income, along with their accounting choices in explanatory notes to the financial statements. I collect accounting information under both domestic accounting and IFRS and use the percentage difference in reported restatements to measure the actual IFRS effect on financial results. The variance in three measures of market liquidity costs is then explained with percentage restatements under IFRS, along with other control variables. The significant marginal effect of IFRS restatements on market liquidity costs signifies that capital markets react to IFRS disclosure by adjusting price levels on a timely basis.

Empirical research on market liquidity recognizes that it is challenging to estimate the financial market response in the presence of an anticipation effect, which can mute the capital-market effects in the introduction year (Daske et al., 2008). Voluntary disclosure and disclosure requirements may only strengthen this effect. As previous research argues, voluntary disclosure, along with financial analysts experience dealing with accounting diversity, can significantly increase forecast accuracy before the effective introduction of IFRS and strengthen the anticipation effect. Additionally, disclosure requirements to provide IFRS financial information earlier than 2005 may further produce anticipation⁴. An electronic database on voluntary disclosure, unfortunately, is not available for conducting a large-scale empirical test on its effect on liquidity costs. With a benchmark group, where the actual impact of IFRS reporting is not observable, we cannot empirically measure this anticipation effect. However, with the release of first annual reports under IFRS, along with restated accounts, we can estimate it. The first IFRS reports release previously held proprietary information about the IFRS effect on financial statements, which most likely determined the management choice to disclose voluntary IFRS estimates before they were due. I explain variance in liquidity costs at the country level before the effective introduction of IFRS with the accounting restatements released consequently with the annual reports for 2005. The significant marginal effect of accounting reconciliation variables

signifies that capital markets adjust liquidity costs in anticipation of IFRS reporting. This estimation procedure concludes on the anticipation effect under the assumption that users of the financial information could relatively precisely predict the actual effect on financial results from the IFRS application. Furthermore, the anticipation test supposes that financial markets are efficient, i.e., they reflect financial analysts' estimates in a timely manner. We may conclude about the lack of anticipation when it is present if (a) financial analysts are not precise in their estimates, and (b) their estimates are accurate (i.e., correlate with the actual IFRS effect on financial statements) but financial markets are slow in adjusting the price level accordingly.

If IFRS disclosure is value-relevant and financial markets reflect accounting information in a timely manner, we should not expect a market response to first-time IFRS results in the long-term. However, users of financial markets may gradually adjust their estimates about the financial prospects of IFRS adopters using the first-time disclosures. Additionally, the adjustment effect of IFRS reporting on liquidity costs will be present when (a) financial markets are not efficient and prices do not reflect new, relevant disclosures in a timely manner, (b) financial market participants do not find the information sufficient for making their pricing decisions and anticipate further IFRS disclosure before fully adjusting price levels, and (c) investors, rationally or irrationally, do not properly respond to the first disclosure but consequently correct for this mispricing and adjust the price level over time. All these situations assume that IFRS reporting is value-relevant. I explain variance in market liquidity costs two years after first-time IFRS reporting with accounting restatements in total assets, equity and net income, which allows me to conclude on long-term price adjustments.

2.3.2 Sample selection and variable description

Previous studies examine the capital-market response to the mandatory IFRS adoption either with a global sample of first-time adopters (Daske et al., 2008) or focus on a particular country (e.g., Horton et al., 2008; Christensen et al., 2007). This study attempts to estimate the effect of the mandatory adoption of IFRS on

market liquidity costs with the expectation that this effect is heterogeneous across adopting countries. This explains its cross-country focus. Four countries are selected that are commonly referred to as representing the four different legal origin groups: France (Continental-French group), Germany (Continental-German group), Sweden (Continental-Swedish group) and the United Kingdom (Common Law-British group). The most common approach in empirical accounting research is to group countries only into two legal origin groups: Code-law (Continental) and Common-law group. This dual country classification captures major country differences that are likely to affect the capital-market effect of the IFRS adoption, for instance, in accruals accounting (Pincus et al., 2007). However, it omits other country-specific differences that could also influence the market response to mandatory adoption of international standards. For instance, corporate disclosure, as discussed before, affects the value-relevance of first-time reports and their expected effect on market liquidity costs. Bushman et al. (2003) examine various factors that determine corporate transparency and report significant variation in the reporting environment within the Code-law legal origin group. The four countries (France, Germany, Sweden and the UK) have a different level of reliance on accounting principles (the country-specific measure, as estimated by Bushman et al., is in brackets): France (70.65), Germany (39.13), Sweden (39.13), and the UK (100)⁵. Perhaps Bushman et al. (2003) avoid the dual legal origin classification and divide countries into three legal origin groups (British, French and German) due to the significant variation in the reporting environments of their member countries.

This study contributes to the literature on the economic consequences of IFRS reporting with a narrower country focus. Previous empirical studies suggest that the capital-market effect is not homogeneous across adopting countries (Daske et al., 2008), but without empirical evidence. Four legal origin groups are included⁶. The sample selection is as follows. Only companies with accounting reconciliations available in Thomson Datastream as of February 2009 are selected. The final sample is comprised of 1437 companies from the four country legal origin groups: France (330), Germany (290), Sweden (330) and the United Kingdom (489). Early voluntary adopters are excluded, because they have provided accounting restatements before the

mandatory introduction in 2005. Thomson Datastream provides information on the accounting standards that were followed and the reasons for financial restatement. Accounts are restated not only when a company changes its accounting policy or the accounting standards followed but also after merger and acquisition and as a correction of accounting irregularities, for instance. Only accounting restatements that follow the adoption of IFRS are included. Accounting information under IFRS, along with restated accounts, for almost all first-time adopters in France, Sweden and Germany, was obtained (i.e., more than 90% of all mandatory adopters of IFRS that are registered in the respective country). In the United Kingdom about 620 companies had to switch to IFRS in 2005 and around 80% of British first adopters are included with all accounting restatements readily available. Market and accounting information for three consecutive years, relative to the fiscal year's end, was collected from Thomson Datastream.

The empirical analysis explores three measures of market liquidity costs: the proportion of zero return days, the Amihud (2002) illiquidity (or price impact) metric, and the bid-ask spread. Following Daske et al. (2008) the measurement of these dependent variables is as follows. "Zero return days" is the proportion of zero daily returns out of all trading days in a given year. The zero returns metric commonly serves as a proxy for illiquidity. Its exclusive reliance on price data, more frequently available for EU companies, is its advantage. "Illiquidity" is a measure suggested by Amihud (2002). This variable captures the price impact of trade, i.e., the ability of an investor to trade in stock without moving the price. It is the median daily price impact over the year computed as the weakly absolute price change in percent divided by trading volume. Higher values indicate more illiquid stocks. "Bid-ask spread" is the proxy for information asymmetry commonly used in the accounting literature. The variable is computed as the difference between the closing bid and ask prices for each day divided by the mid-point. Financial information is obtained in Thomson Datastream as of February 2009. The measurement period for all three variables starts in month four and runs for one year relative to the company's fiscal-year end. Sensitivity tests vary the start month of the measurement period and its length, but the empirical results are quantitatively similar and statistically not significant. All

variables are winsorized at the 5% level to reduce the impact of extreme observations on empirical findings.

Following previous research (Daske et al., 2008), the regression analysis explains market liquidity costs with the following continuous independent variables: "Market Value" is stock price times the number of shares outstanding, "Share Turnover" - the annual euro trading volume divided by the market value of outstanding equity, and "Return Variability" is computed as the annual standard deviation of monthly stock returns. Along with these market variables, accounting-reconciliation variables are included. The reported difference in total assets, shareholder's equity and net income is computed using financial accounts prepared under the domestic regime and IFRS.

2.4 Results

2.4.1 Descriptive statistics

Table 1 presents summary statistics of the three measures of market liquidity costs by country. Cross-country comparison shows that all three measures of market liquidity costs are larger for the UK, both before and after IFRS adoption: it had the largest percentage of zero returns (before: 54.38%; after: 53.81%), the highest price impact of trading (before: 12.87; after: 12.85), and the largest bid-ask spread (before: 3.16%; after: 2.94%), in comparison to companies reporting under French, German or Swedish accounting regimes before 2005. An early version of the Daske et al. (2008) study, in which European country level data is exhibited in a graph format, also reports the largest liquidity costs in 2004 and 2005 for UK companies. Their UK sub-sample is comprised of companies with bid-ask spreads of 3.6% in 2004 and of 3.8% in 2005; in contrast, French, Swedish and German companies have significantly lower spreads, for instance, Swedish companies have only 0.8% bid-ask spread in 2005 and French companies 1.1% (the significance of intra- and cross- country differences is not reported).

This empirical finding is not consistent with the notion that transaction costs are lower in the UK stock exchange, which is also supported with evidence from an

empirical study conducted by the London Stock Exchange. The larger liquidity costs for UK companies cannot be explained with the industry composition. UK companies are more likely to belong to the health or technology sector (about 40% of all UK companies) in comparison to French companies (30% of all French companies) or Swedish companies (32% of all Swedish companies). However, there is no empirical evidence that market liquidity costs in these two sectors are significantly larger than the rest.

Nevertheless, it would not be appropriate to draw conclusions from this finding about less efficient financial markets in the UK for the following reasons. First, the UK financial market has managed in the last years to attract numerous international companies and its efficiency most likely played an important role in this process. LSE claimed in a press release that high liquidity is among the factors that attracted about 130 companies in 2005. If market liquidity costs indeed matter, as theory predicts, the revealed preference of foreign companies suggests relatively lower costs in the UK financial market, among other things. Second, the empirical results could capture a temporary change in market liquidity costs. Further investigation is required to distinguish the factors that explain the relatively large liquidity costs and time trend in their levels. Third, the estimation procedure may not be accurate enough to conclude about market efficiency. Accounting research usually includes market liquidity in its cross-sectional analysis, in the form of aggregate daily, monthly or yearly data at the firm level. Finance research on market microstructure, however, uses intra-day market data to conclude about trading efficiency, for instance, of different stock exchanges (Huang and Stoll, 1996). The intra-day price and volume dynamics could provide more precise estimates, especially when interested in trading efficiency. Furthermore, stock exchanges and related costs are often compared on the basis of a different set of market liquidity variables (e.g., the effect that a big order can have on a stock's price). These measures could be difficult to obtain or unnecessary to use in accounting research that is not particularly focused on trading efficiency. And, fourth, empirical results are not generalizable to all companies traded on the UK stock exchanges. The sample of this study comprises only companies, registered in the UK, that have first-time IFRS reports available, and excludes, for instance, all

foreign companies that trade their shares on the UK stock exchange.

The three measures of market liquidity costs for the other countries provide contradicting conclusions about the trend around the IFRS introduction. Two out of the three measures suggest that market liquidity improves for companies reporting previously under the French accounting regime but not for companies that switch from Swedish accounting to IFRS. We can discriminate between the measures based on the statistical significance of their difference across the IFRS introduction. However, both the average and median differences in all three measures is significant for French companies. For Swedish companies, this discrimination rule still yields inconclusive descriptive results: The percentage of zero returns increases significantly after the IFRS introduction, while the price impact on trade decreases after 2005.

The market liquidity measures may not be entirely precise in international settings and this limitation could explain the contradictory descriptive statistics. These measures intend to capture market liquidity costs but, for different reasons, may not proxy them as accurately as desired. If any of the three measures deserves further attention, this is the percentage of zero returns. As later regression analysis shows, the explained variance in this measure is significantly lower (between 20% and 31%) when compared to other measures (above 70% and usually around 90%). This suggests that other omitted variables contribute to the variance in zero returns but are left outside the model. How accurate this measure of liquidity costs is and, thus, useful for the purpose of this study, however, is hard to discern without further analysis. For all four countries, the percentage of zero returns is surprisingly large. Daske et al. (2008) report for their first-time IFRS companies an average of 19.7% (included in a distributed 2007 draft version of the published study). Additionally, their descriptive statistics distinguish larger variance across the four legal origin groups: UK companies had 53.7% zero returns in 2004, in contrast to 16.2% for French companies, 24.1% for German companies and 19.9% for Swedish companies. However, their findings, exhibited in a graph, show that for all four groups except the UK, the percentage consistently decreased over the period 2003-2005. Descriptive statistics in this study show that zero returns are less likely in 2005 not only for UK companies. However, it also suggests that the four legal origin groups do not significantly dif-

fer when compared on this measure. The lower variance across four countries biases the results towards not finding a heterogeneous capital-market response to the IFRS introduction; thus, it guarantees more conservative estimates.

Table 1 also reports descriptive statistics of the explanatory variables, including both market and accounting-reconciliation. Market explanatory variables include market size, price volatility and share turnover, all in a logarithmic transformation. From the four legal origin groups, Swedish companies are the largest in market size and have the most volatile prices (3.49%), whereas French companies have the largest share turnover (0.23). UK and Swedish companies do not significantly differ when compared on share turnover and price volatility; however, Swedish companies are significantly larger in market size than not only the UK but also the French companies. The significant variation across legal origin groups is not of particular interest for the purpose of this study. The control (explanatory) variables are included later in the regression analysis to distinguish the IFRS effect. With their inclusion, we can conclude whether this effect is significant or not, and that its significance is not because of other forces that theory predicts affect market liquidity costs and, additionally, may correlate with the IFRS restated accounts.

Panel C of Table 1 exhibits the effect of IFRS restatement on total assets, shareholder's equity and net income by legal origin group. The three accounting variables are the most commonly used in financial statement analysis. For instance, the shareholder's equity enters the book-to-market ratio (B/M), whereas the price-to-earnings ratio (P/E) and return on assets (ROA) measure a stock's profitability by using information either about a company's earnings or total assets. The average restatement effect is an increase in reported values under IFRS accounting. The difference in both means and medians is significantly different from zero at the 1% level. The largest restatement of total assets was found for companies switching from the French accounting regime to IFRS: An average increase of 4.11% compared to Swedish companies with 3.97%, German companies with 2.41% and UK companies with 0.78%. The change in shareholder's equity exhibits the same tendency: The increase after IFRS restatement is largest for French companies (an increase, on average, of about 7%; 5% for Swedish companies, 2.8% for German and UK companies). This

result is consistent with the notion that companies reporting under code-law accounting regimes produce more conservative balance sheets than common-law accounting regimes and IFRS. For instance, French and German accounting regimes permit flexibility in measuring assets at their lowest possible value to minimize tax liability, while IFRS constrains such flexibility.

[Table 1 about here]

Previous empirical findings on IFRS restatements reported by German companies switching voluntarily to IFRS suggest that most likely the elimination of tax-based accelerated depreciation method, less flexible recognition of provisions, capitalization of capital lease, goodwill, internally developed intangibles and development costs, the valuation of inventory at full cost (i.e., the increase in inventory value) all explain the larger total assets under IAS (Hung and Subramanyam, 2007). However, additional information on particular restatements and explanatory notes is required to conclude on which provisions significantly contribute to total asset restatements⁷.

Net income also significantly increases under IFRS reporting. Net earnings of French companies increase, on average, by 13.2%, Swedish companies report an increase of about 10%, UK companies 11.5% and German companies, the smallest restatement with the largest variation, 1.18%. Furthermore, earnings exhibit the largest variation of all accounting-reconciliation variables after the mandatory introduction of international standards, with the one of the larger variance in the British legal origin group (about 55% standard deviation around the average value). In general, the accounting differences do not necessarily change book value and net income in the same direction because book value captures the cumulative effect of accounting differences, whereas net income captures the effect during the fiscal year. However, empirical findings suggest that book-value and net-income accounting adjustments after the voluntary application of IAS have a similar impact on a company's restated accounts. Hung and Subramanyam (2007) explain the increase in net income under IAS, for their sample of German companies, with adjustments related to plant, property and equipment, leases, and goodwill. Our empirical results also document, on average, larger total assets, along with an increase in net income in all four country

groups. This suggests that the accounting differences that affect the increase in total assets of first-time (mandatory) adopters most likely also explain the increase in net income (i.e., the same result as for voluntary adopters of IFRS in Germany).

The larger variance in net income is consistent with the view that IFRS is more fair value-oriented and therefore likely to incorporate the effects of economic events into the financial statements in a faster but more volatile manner. Among the arguments for the introduction of high-quality IFRS is that domestic accounting regimes permit flexibility and income smoothing, for instance, through the use of reserves to dampen fluctuations in income. As discussed before, empirical studies suggest that income smoothing prevails in code-law countries and we would expect to find the largest variance of restated income in France or Germany rather than in the United Kingdom. However, if not for earnings management, an increase in net income for UK companies could be explained by a number of significant differences, for instance, capitalization of development costs and reclassification of an operating lease as a financial lease. Additionally, UK accounting, as a common-law regime, is generally considered very close to IFRS already and, hence, it is likely that the transition is a pure translation of accounting numbers with no impact on expected cash flows. However, empirical studies confirm that IFRS reporting contains price sensitive information and this explains the significant market reaction after the early release of restated accounts from UK accounting to IFRS (Christensen et al., 2008). Descriptive statistics suggest that the application of IFRS by UK companies leads to an increase in reported net income, which also becomes more volatile at the country level. Later results confirm that restated accounting information under IFRS affects market liquidity costs, which is consistent with previous findings on a significant IFRS effect in the UK.

2.4.2 Regression analysis

The regression analysis provides findings about the IFRS effect one year after the IFRS was effectively introduced, "IFRS (05) effect" (Table 2). Additionally, it accounts for the anticipation effect with a regression of average liquidity costs one year before the adoption against first-time IFRS restatements disclosed after 2005, "IFRS

anticipation effect” (Table 3). Moreover, the price level and trading costs could be adjusted to reported accounting differences over a longer period; Table 4 reports results from a regression where ‘future’ liquidity costs (“t+1” period) are explained with current accounting reconciliation variables (“t” period), “IFRS adjustment effect”. All market variables are measured for a period that starts in month four and runs for one year relative to the company’s fiscal-year end. The accounting-reconciliation variable is the percentage change in respective accounts after the mandatory switch to IFRS (e.g., Total assets under IFRS minus Total assets under French GAAP, divided by Total assets under French GAAP). For each country, three model specifications are examined. The differences between the three models are in the dependent variable as different measures of market liquidity costs are regressed against the accounting-reconciliation and control variables. The accounting-reconciliation variables are the percentage restatement change in a company’s assets and earnings, computed as the difference between a particular restated account (e.g., total assets) under IFRS minus its original value under domestic accounting, scaled by the original “domestic” value. As a proxy, the three measures, proportion of zero returns, price impact of trading and the bid-ask spread, are likely to estimate market liquidity with an error; hence, consistent findings across model specifications strengthen the reliability of empirical results.

[Table 2 about here]

Table 2 exhibits the regression analysis of the IFRS effect across legal origin groups and additionally presents the independent variables in two groups: “accounting-reconciliation” and “control” variables. Control variables are, as expected, significant almost in all model specifications and legal origin groups. The sign is consistent with the expectation that market liquidity costs, on one side, and market size, share turnover and return variability, on the other side, are inversely correlated. As this study focuses on the IFRS effect, the marginal effect of accounting-reconciliation variables on market liquidity costs is of particular interest. A sign prediction is not available in previous empirical studies that estimate the IFRS impact on market liquidity costs in an indirect manner (i.e., without the inclusion of accounting-reconciliation

variables). The sign prediction is as follows. The adoption of IFRS may create uncertainty around their application, and this may translate into larger market liquidity costs around the effective introduction of international standards. However, users of financial information may share the view that IFRS reporting is desirable and adjust price levels in the long-term accordingly. If the overall market response to the IFRS adoption is positive, a direct test would allow confirmation of this. A significant negative association between market liquidity costs and any accounting-reconciliation variables confirms that IFRS plays a role. On the other hand, if market liquidity costs increase along with an increase in restated accounts (i.e., positive association), then we can conclude that, other things equal, IFRS reporting does not positively affect market liquidity costs.

As expected, we find a heterogeneous IFRS effect across legal origin groups. For companies switching from Swedish accounting to IFRS, neither model specification provides evidence for a significant IFRS effect on market liquidity costs. Although accounting differences produce large restatements under IFRS for this group, as evident in an increase in net income of about 10% under IFRS, empirical findings suggest that this does not affect market liquidity. It could be that market anticipation of IFRS-related restatements could partially explain this result for Sweden. However, later empirical tests do not confirm this expectation. Additionally, further sensitivity tests, involving regression analysis in subgroups, support the robustness of this empirical finding⁸.

Previous empirical studies have found that Swedish accounting generates substantially less timely and value-relevant information than US accounting (Alford et al., 1993). IFRS reporting is intended to provide high-quality financial information on a timely basis, which would suggest a positive response to the mandatory switch to international standards from Swedish companies. However, empirical results also show that information reflected in earnings of Swedish companies is impounded in prices much more slowly than in the US, whereas for French and UK companies earnings information appears to be reflected in prices at approximately the same rate as for US companies (Alford et al., 1993). These empirical findings are obtained with a sample of Swedish companies listed on the US stock exchange where reconciliations

to US accounting are disclosed. How specific are foreign issuers is an empirical question. If their reports at least partially reflect properties of the Swedish accounting and users' perception about its quality, we may argue that IFRS reporting should be value-relevant but the price adjustments are more likely to occur over a longer time horizon. Later in this study, I examine the long-term effect referred to as the "IFRS adjustment effect". The study does not find a significant IFRS adjustment effect for Swedish companies, which suggests that if some price adjustments are likely, they are not present even two years after the effective introduction of IFRS. However, this does not necessarily mean that IFRS reporting in Sweden does not instigate a market response. If the prices do not adjust on a timely basis, market participants will gradually respond to the implementation of IFRS with respective price adjustments and we then will fail to document a significant IFRS effect on market liquidity costs.

While Swedish restatements do not influence market liquidity costs, French and UK restated accounts under IFRS do. As a code-law country, France is expected to benefit significantly from the adoption of high-quality international standards. The positive market response on the capital market can be captured with the effect that restated accounts have on market liquidity costs. As predicted, some regression estimates confirm that an increase in IFRS restatements would lower market liquidity costs. Both measures, proportion of zero returns and illiquidity, are significantly affected by the magnitude of total asset restatements (i.e., marginal effects of -0.18 and -1.14 for total asset restatements when explaining zero returns and illiquidity, respectively). In contrast to total assets, the estimated effect of shareholder's equity restatements on liquidity costs is positive but significant when the variance in zero returns is explained. The marginal effect of net income restatements on market liquidity costs is also significant but its direction is not clear. "Illiquidity" and "bid-ask spread" measures provide contradictory findings on this effect. The model specification that explains variation in illiquidity predicts an increase in market liquidity costs when net income under IFRS significantly diverges from reported net income under French accounting (i.e., for larger restatements in net income). However, if we explain variance in bid-ask spreads of French companies, the estimates suggest a negative association between liquidity costs and net income restatements.

The estimated effect of IFRS restated accounts on market liquidity costs for UK companies does not differ significantly from the French legal origin group. Restatements of total assets decrease market liquidity costs, whereas restated shareholder's funds under IFRS raise them. The marginal effect of net income does not exhibit consistent behavior over different measures of liquidity costs. Both positive and negative estimates are obtained in different estimation settings. For UK companies, the effect of shareholder's equity restatement is significant in two model specifications, i.e., when variance in the proportion of zero returns and bid-ask spreads is explained. In contrast, larger restated total assets under IFRS are associated with lower market liquidity costs and this association is significant when we proxy liquidity costs with bid-ask spreads. The model in which the variance in market liquidity costs is substantially explained uses the measure of illiquidity (i.e., not only in the case of UK companies but also for the full sample of first-time mandatory adopters, the R^2 is larger than 90% when the variance in illiquidity is explained). The model fails to explain a large portion of variance in percentage zero returns.

In both country groups, the direction of the IFRS effect that restated total assets and shareholder's equity have on market liquidity costs differs; it is negative for total assets and positive for shareholder's equity. This finding is robust in sensitivity tests that were conducted, which are discussed later in the study. Although both total assets and shareholder's equity are on average larger under IFRS reporting, the market reaction to these restatements differs. The reversal in the direction of the effect could be explained if both variables are highly correlated. For French companies, the correlation between percentage restatement changes in total assets and shareholder's equity is 0.44, while for UK companies, it is 0.28. Hence, the estimates are not affected by strong correlation and the opposing signs of both percentage restatements cannot be explained with limitations of the estimation procedure.

The negative effect of the shareholder's equity restatement on liquidity costs suggests that uncertainty around IFRS application by French and UK companies increases in capital markets. As restatements of total assets tend to reduce market liquidity costs (i.e., negative regression coefficient before the percentage restatements of total assets, which is significant across different model specifications), this uncer-

tainty is not related to all IFRS reporting but with particular accounting differences. How specific restatements relate to the information asymmetry problems, as perceived by users of financial information and reflected in larger market liquidity costs, deserves further analysis. Empirical research on the topic, however, may not reach conclusive results for the following reasons. First, the retrospective application of IFRS includes mandatory adjustment and exemptions (voluntary adjustments). Empirical findings suggest French companies use exemptions to minimize the difference in equity reported under French accounting and IFRS (Cazavan and Jeanjean, 2007) and thus to improve their leverage. It could be that information asymmetry increases because of the managerial discretion over the application of optional exemptions. For instance, an exemption that IAS 19 permits direct recognition in equity of all cumulative actuarial gains and losses (instead of the corridor approach) may have a significant effect on reported equity. To reach a conclusion on the marginal effect of a specific IFRS adjustment on market liquidity costs, however, it is necessary to distinguish accounting adjustments that are required from those that are optional. The notes to the financial statements contain details on accounting choices, but, unfortunately, this information is not available in Thomson Datastream. Second, IFRS application could produce no material difference, for instance, in reported equity but this could still affect investor's perception of corporate transparency, financial reporting quality and, as a result, market liquidity costs. For example, recognition of stock options in the income statement does not affect shareholder's equity, as the decrease in equity reserve is off-set with an increase in capital surplus. Nevertheless, even when accounting differences are off-set within a particular account, they could still affect capital market uncertainty. Valuable information about the quality of corporate governance and managerial compensation policy could be disclosed, for instance, with the stock option information discussed above. To test this expectation with empirical data, disclosures that are not available in any public database, but only in the annual reports of companies adopting IFRS, are once again required.

The negative impact of equity restatements, in contrast to the positive effect of total asset restatements, can be explained with the level of disclosure. First-time adopters disclose the IFRS effect on total assets and net income in detail. Account-

ing reconciliations explain how total assets and net earnings, for instance, under French accounting translate into total assets and net earnings under IFRS. Anecdotal evidence, however, suggests that disclosure on specific accounting adjustments in shareholder's equity, in the format of a detailed accounting reconciliation, is quite limited as often only aggregate information is available⁹. The level of disclosure related to equity may not be rich enough for the users of financial information who try to estimate managerial discretion over IFRS adjustments. In this case, other things equal, larger liquidity costs would be associated with larger percentage restatements in equity. This interpretation is consistent with the theoretical prediction that information asymmetry decreases with increased disclosure, which empirical studies also support (Diamond and Verrecchia, 1991; Leuz and Verrecchia, 2000).

When disclosure is not at the desired level, investors may perceive a company's security as a risky asset (i.e., some traders would be in a disadvantageous position if disclosure is not complete and insiders benefit from their preferential access to information). This, as a result, would lead to increased liquidity costs. Moreover, the negative effect of equity restatements, as opposed to the positive effect of total assets, on liquidity costs could be further explained with the *risky* factor. Not only could disclosure of accounting differences that affect equity be limited, but descriptive statistics also show that the percentage change in total assets has a substantially lower variance compared to the percentage change in shareholder's equity under IFRS reporting. The larger variance in restated equity under IFRS may increase investor's uncertainty about the managerial discretion over the application of international standards. It is interesting that, as in the case of restated equity, the estimated effect of restatements in net income also has a predominantly negative sign (even though not in all country groups): A larger percentage change in net income is associated with greater liquidity costs. This finding could additionally suggest that the larger variance in IFRS restatements probably determines, among other factors, the level of market liquidity costs after the mandatory switch to international standards.

The larger variance in some restatements, along with its expected effect on market liquidity costs, deserves further remarks. As discussed in the section on previous research, if there are benefits from the introduction of international standards, they are

expected to come from high-quality and more comparable financial reporting across countries. The first-time adopters disclose large variance in accounting restatements, especially in equity and net income, and this may raise some doubts about the comparability of financial accounts prepared either under (a) domestic accounting or (b) IFRS. The larger restatements could reflect the larger variance in the application of accounting methods permitted under domestic accounting, which the adoption of IFRS reduces with the resulting large restatements. If this is the case, financial analysts may wonder how accurate their estimates prepared before IFRS are about a company's financial position in respect to its competitors. Additionally, how to adjust historical financial records prepared under domestic accounting and account for accounting diversity in a company's time-series financial information also becomes a concern for users of this information. This concern about "reporting comparability before IFRS" could explain the larger information uncertainty and thus the negative impact of equity and net income restatements on liquidity costs. Alternatively, the large restatements could be present if managerial discretion over the application of IFRS rules and principles increases with the mandatory switch. If larger variance under IFRS is explained with discretion, for instance, when opting for exemptions, then again we would find larger market liquidity costs associated with the increased variance in financial results reported under IFRS, i.e., "reporting comparability after IFRS".

Although the significant IFRS effect for France, as a law-code country, is expected, it is not for the United Kingdom. It is a widely held view that financial disclosure quality is high under UK accounting and, hence, the mandatory switch to IFRS should not produce a significant reaction on the capital market. Additionally, as UK accounting is supposed to be very similar to IFRS, the transition to IFRS reporting is expected to be a pure accounting translation, which would not impact expected future cash flows. Nevertheless, empirical findings suggest that the restatements under IFRS have an impact on market liquidity costs of UK companies. As discussed later in the study, the IFRS reports for this country group is present if we account for the anticipation effect. Moreover, the sensitivity tests, including regression analysis of country sub-groups, confirm the robustness of this finding. Recent empirical

studies find that reconciliations from UK accounting to IFRS convey new information to which capital market participants demand and respond to with respective price adjustments when early released (Christensen et al., 2008). Empirical findings of this study also confirm that capital markets react to IFRS reporting by UK companies, as the association between the percentage restatements in equity and net income is significant (in different estimation settings).

[Table 3 about here]

Tables 3 and 4 exhibit empirical findings on the IFRS anticipation and IFRS adjustment effect. The marginal effects of other explanatory variables not of particular interest are omitted in the presentation of regression results. For UK companies, all three model specifications confirm the negative effect of restated shareholder's equity on market liquidity costs of UK companies; the marginal effect is estimated to be stronger on bid-ask spreads (0.38) and the illiquidity measure (0.37) than on the percentage zero returns (0.07). The effect of net income restatements on liquidity costs is not clear: It is positive and significant in Model 2 (illiquidity, 0.1) but negative and insignificant in Models 1 and 3 (zero returns and bid-ask spread). For Swedish companies, only percentage zero returns (Model 1) seems to change in anticipation to equity and net income restatements (with marginal effects 0.16 and -0.01, respectively). This finding, however, is sensitive to the sample composition and it disappears when we form groups based on the direction of IFRS restatements. In the French group, empirical evidence for IFRS restatement anticipation is limited: only for the illiquidity measure does the regression analysis document a negative and significant marginal effect of total asset restatements (marginal effect of -0.87, which is statistically different than other legal origin groups; Table 3). Nevertheless, sensitivity tests confirm that this effect is present when restatements under IFRS increase total assets and shareholder's equity (Table 5).

The regression analysis also tests whether IFRS reporting could explain market liquidity costs long after its disclosure. Average annual liquidity costs two years after the first-time IFRS reporting are explained with the first restatements. Additionally, robustness of reported results on the IFRS adjustment effect are later discussed (Table

5). Empirical evidence suggests that in two legal origin groups some of the measures of liquidity costs respond to accounting restatements reported with the first-time adopters report for 2005. In the case of French companies, restatements in total assets under IFRS significantly affect the level of liquidity costs even two years after the first reports, as evident in the significant negative regression coefficient (Table 4, Model 2, regression coefficient -1.19, significant at the 5% level). Furthermore, sensitivity checks confirm that this finding is present and significant independent of the sample split-off rule. Larger volatility could explain stock market uncertainty and, hence, the adjustment effect two years after the release of 2005 annual report. However, French companies do not have the most volatile restatements in total assets. Additionally, the overall effect of restated total assets under IFRS is positive. Thus, it is not clear why the price level does not reflect immediately accounting information that is generally considered positive in financial markets. Future empirical research needs to examine closely different accounts that are restated under IFRS and concludes on whether particular restatements explain this adjustment effect for French companies.

[Table 4 about here]

Empirical findings reported in Tables 4 and 5 confirm that IFRS restatements of German companies do not significantly affect liquidity costs. Although bid-ask spreads of first-time adopters in Germany is significantly lower after 2005, this trend cannot be explained with IFRS reporting, at least not with the restatements of total assets, equity and net income under IFRS. This finding is not consistent with previous results reported by Daske et al. (2008) that IFRS reporting affect liquidity costs of voluntary adopters in the switch year and after 2005 as well as of first-time adopters. Descriptive statistics confirms that IFRS reporting leads to significant restatements in key accounting variables. However, regression analysis does not confirm that accounting restatements affect liquidity costs, even when restatements of German companies do not differ significantly from restatements of French companies. Most likely previous disclosure under IFRS of German companies which voluntarily switched to IFRS dampens the IFRS effect in 2005 and beyond.

2.4.3 Sensitivity tests

The following sensitivity tests have been performed. Financial companies were separated from non-financial companies in the regression analysis, and the IFRS effect for French and UK companies remains significant. Additionally, different combinations of accounting restatements were included as explanatory variables (e.g., first-time restatements of 2004 results, restatements of 2005 results, the largest restatement or the average of all restatements disclosed with the first IFRS reports). The empirical results do not significantly differ. Additionally, other explanatory variables, e.g., leverage and profitability ratios, were included in the estimation model; the explained variance increases, as expected, but results do not change.

Moreover, additional regression analysis of the difference in market liquidity before and after the effective introduction of IFRS was conducted. Instead of *level* dependent variables, the first *difference* in means ("before" - "after") was regressed against the accounting-reconciliation variables, along with respective controls. Empirical findings confirm that IFRS reporting contributes to the change in market liquidity costs. However, the results are sensitive to the choice of "before IFRS" period (e.g., a window of six months respective to year-end provides different estimates than a window running for three months around the quarterly disclosure). The anticipation effect, along with other factors, most likely explains the sensitivity of the mean-difference results.

As referred to before, the company observations in each country group were further separated into two groups using the behavior of accounting restatements. Table 5 presents the results by sub-groups when total assets and net income are larger under IFRS reporting. If shareholder's equity is used instead of total assets, the results do not differ significantly.

[Table 5 about here]

The sensitivity tests confirm findings about the significant effect of IFRS reporting on market liquidity costs of French and UK companies. The overall effect of total asset restatement is negative, whereas equity and net income are positive. As suggested before, larger variance in restated accounts most likely explains capital market

uncertainty and larger liquidity costs, which are associated with larger restatements of net income and shareholder's equity. Empirical findings for the subgroup of German and Swedish companies are not disclosed as the overall IFRS is not significant most of the time across these models. Previous disclosure under IFRS could explain results for Germany. Timeliness of accounting disclosure and its effect on price levels, as discussed before, could lie behind the insignificant effect of IFRS introduction on liquidity costs of Swedish companies.

2.5 Conclusions and implications

This study contributes to the growing body of literature on the economic consequences of mandated international standards. Compared to previous studies on market liquidity costs (Daske et al., 2008), it employs a new source of financial information - reported accounting reconciliation from domestic regimes to IFRS. With reported accounting differences, the study relates the change in liquidity costs (i.e., perceived IFRS effect in financial markets) to reported restatements under IFRS (i.e., actual IFRS effect on financial statements) in four legal origin groups (France, Germany, United Kingdom and Sweden). The IFRS effect on market liquidity costs is examined using three popular proxies of market liquidity costs (the proportion of zero returns, the price impact of trades and bid-ask spreads) that should capture, among other things, investor's perception of reporting quality and comparability after the IFRS introduction. The IFRS effect is measured as the marginal response of liquidity costs to accounting restatements in total assets, shareholder's equity and net income under IFRS. The contribution to existing literature is that the study concludes on: (a) the IFRS effect using actual disclosure of accounting differences under IFRS, (b) the presence of an anticipation effect of IFRS reporting on liquidity costs before the effective introduction of IFRS, and (c) the presence of adjustments over several reporting periods in liquidity costs that IFRS reporting effectively demands.

The study documents that liquidity costs of UK companies are strongly affected by IFRS restatements; for French companies this effect is present but weaker. Empirical evidence suggests that investors anticipate the IFRS effect but do not adjust

price levels immediately. Most likely, uncertainly around the application of IFRS in the long-term explains the significant adjustment effect for UK (i.e., net income restatements) and French (i.e., total asset restatements) companies. Restatements from German and Swedish accounting do not significantly affect liquidity costs. If capital markets anticipate the IFRS effect on a company's accounts, especially in the case of Germany, the anticipation effect is not significant one year before the adoption of IFRS.

The introduction of IFRS was intended to improve accounting quality. The negative effect of equity and net income restatements do not signify that IFRS reports are of lower quality. Insufficient disclosure about the IFRS effect on a company's financial position, rather than lower quality of financial reporting, could also explain the larger liquidity costs associated with larger restatements under IFRS for UK and French companies. Larger variance in the first-time application of IFRS could additionally contribute to the larger uncertainty around the introduction of international standards. Further empirical research could conclude on how corporate disclosure and particular restatements under IFRS (e.g., application of fair value accounting, voluntary adoption of first-time exemptions, etc.) affect the level of uncertainty on capital markets. Furthermore, the mandatory adoption of IFRS is supposed to improve financial information comparability. This study documents heterogeneous effects across adopting countries that differ in legal traditions. Future empirical research, however, can shed light on whether IFRS restatements, along with the associated capital-market reaction, effectively reduce country differences and improve comparability of financial reporting. An empirical challenge then would be to disentangle the effect that an increase in accounting information quality and that in financial disclosure comparability produce on capital markets.

Endnotes

¹Moreover, actual trading costs reveal that financial market participants are sensitive to the level of institutional development. Less developed financial markets indeed experience larger trading costs as a result of their lower trading efficiency. Moreover, even if a minimum investor protection and rule enforcement is guaranteed, trading costs can significantly vary. At the EU level, where legal institutions are expected to function well, the differences in trading costs are economically significant. A study conducted by the London Stock Exchange (LSE) documents direct trading costs between 0.7bp and 3.4bp during 2004 and 2005. According to the same study, direct trading costs are lower in the LSE compared to NYSE, Nasdaq, Deutsche Boerse and Euronext. NYSE had the lowest indirect trading costs (i.e., the effect that a big order can have on a stock's price during execution was not that large), followed by Deutsche Boerse, Euronext (France), the LSE and Nasdaq. Overall, total trading costs are lowest on the NYSE (23.5bp), followed by the LSE (25.5bp excluding stamp duty), France and Germany, both with around 27bp total trading costs (LSE, 2006).

² For instance, EU-based companies reporting under IFRS may not be complying with the full set of standards as promulgated by IASB and its predecessor, IASC. The EU endorsement mechanism resulted in "carve-outs" of provisions of IFRS (in particular, with certain requirements pertaining to accounting for financial instruments), so that IFRS compliant reporting by EU-based companies may not be consistent with IFRS financial statements prepared by, for instance, Australian companies. This grounds the expectation that the capital-market response to the adoption of IFRS, or rather its local version, will not be homogeneous across countries.

³ Additionally, Nobes and Zeff (2008) document a widespread failure to claim compliance with IFRS when compliance has probably been achieved, which misses an important part of the point of 35 years worth of effort on international harmonization. . Among the possible explanations, the authors list legal reasons: in the case of Germany a reference to IFRS-EU activates a cap on auditor's liability.

⁴ For instance, Euronext (Amsterdam, Brussels, Paris) introduced rules that require companies included in the NextEconomy and NextPrime segments to fully comply with IFRS or provide a reconciliation to IFRS for interim and annual financial information commencing January 1, 2004. Additionally, the Committee of the European Securities Regulators recommended to the European companies to disclose relevant quantified information

as soon as they could quantify the impact of the change to IAS/IFRS on 2004 financial statements in a sufficiently reliable manner. Where interim financial reports are published in 2005, it is recommended that listed companies start applying from January 1, 2005 either IAS 34 "Interim Financial Reporting" or, if this is not possible, at least the IAS/IFRS recognition and measurement principles that will be applicable at the year's end. Anecdotal evidence suggests that many companies have disclosed provisional quantified estimates before the effective date of IFRS introduction in order to manage the price and volume effect of the IFRS reporting.

⁵ Bushman et al. (2003) also document significant variance, especially for the group of developed countries, across four countries in how timely accounting information is disclosed on financial markets: France (78.26), Germany (68.12), Sweden (86.23), and the UK (86.96). The countries' media development and financial analyst coverage does not seem to significantly differ across the legal origin groups.

⁶ The comparative accounting literature (e.g., Nobes and Parker, 2006) has broadly distinguished between the 'British' model based on the US-style standard setting (e.g., UK) and the alternative 'Continental European' model, with the latter further separated into regimes that have their origins either in the French approach to planned uniformity (Belgium, France, Greece, Portugal and Spain) or in the German detailed regulatory approach (Austria, Germany and Italy), together with a mixed Scandinavian model where earlier attempts at regional harmonization added to the cohesion within this grouping (Denmark, Finland and Sweden). As discussed before, a number of factors are expected to jointly affect the capital-market response of mandatory adoption of IFRS and these factors may significantly differ across the four legal origin groups. Institutional differences explain the level of trading costs, which are significantly higher for stocks from countries with civil law (French origin) than those with common law (English origin), according to Eleswarapu and Venkataraman (2006). Along with the reporting environment (see the above discussion on Bushman et al., 2003), corporate governance and the degree of capital market development (or its significance) are also expected to determine the outcome of the accounting harmonization process. French regimes have weak corporate governance, as measured by the strength of investor protection laws and law enforcement institutions, in contrast to Scandinavian regimes (Francis et al., 2003).

⁷ Most likely, the following accounting differences contribute to the change in total as-

sets under IFRS reporting: (a) Deferred tax differences, which the elimination of tax-book conformity produces; (b) Tax-based accelerated depreciation methods for property, plant, and equipment, which are not permitted under IFRS; (c) Provisions that previously were recognized on the basis of prudent management judgment were revalued for IFRS purposes at their most probable amount; (d) Goodwill capitalization that was previously offset against equity but capitalized and amortized under IFRS; (e) Capital lease adjustment as IFRS requires capitalization of finance leases; and (g) Accounting for financial instruments, which were most likely measured at their lower cost before while IFRS generally uses fair values. All regime differences, except deferred taxes with both book-value increasing (i.e., deferred tax assets) and book-value decreasing (i.e., deferred tax liabilities) adjustments, are likely to produce an increase in the book value of a company's assets or equity.

⁸We could fail to document a significant IFRS effect for Sweden if the choice of accounting-reconciliation variables is not particularly appropriate for this country. For instance, the study explains market liquidity costs after IFRS adoption with restated total assets; however, for various reasons, it could be that financial market participants find specific balance-sheet accounts more value-relevant than total assets, which they do not examine in the aggregate but only decomposed. Then, we would find a significant relationship between total asset restatements and market liquidity costs only if respective balance-sheet accounts are highly correlated with (aggregate) total assets. If this significantly limits the power of our empirical test, we would not find empirical support of the hypothesis that country-specific differences would make some accounts particularly more relevant than the aggregate accounting variables employed in the regression analysis.

⁹The format of IFRS restatements of a few French companies has been examined to find empirical support. The sample is not representative of the legal origin group. However, it confirms that information about the accounting adjustments to equity reported under IFRS is limited to the aggregate IFRS effect (i.e., only about total shareholder's equity and not about the accounting differences that produce the restated equity under IFRS).

References

- Alford, A., J. Jones, R. Leftwich, and M. Zmijewski. 1993. "The relative informativeness of accounting disclosures in different countries." *Journal of Accounting Research*, vol. 31: 183-223.
- Amihud, Y. 2002. "Illiquidity and Stock Returns." *Journal of Financial Markets*, vol. 5: 315-6.
- Armstrong, C., M. Barth, A. Jagolinzer, and E. J. Riedl. 2007. "Market Reaction to Events Surrounding the Adoption of IFRS in Europe." Working paper, Harvard Business School and Stanford University.
- Ashbaugh, H., and M. Pincus. 2001. "Domestic Accounting Standards, International Accounting Standards, and the Predictability of Earnings." *Journal of Accounting Research*, vol. 39: 417-434.
- Bae, K.-H., H. Tan, and M. Welker. 2007. "International GAAP Differences: The Impact on Foreign Analysts." *Accounting Review* 83, 593-628.
- Baginski, S., J. Hassell, and M. Kimbrough. 2004. "Why Do Managers Explain Their Earnings Forecasts?" *Journal of Accounting Research*, vol. 42. 1-28.
- Ball, R. 2006. IFRS: "Pros and Cons for Investors, Accounting and Business Research." *International Accounting Policy Forum*: 527.
- Ball, R., A. Robin, and J. S. Wu. 2003. "Incentives Versus Standards: Properties of Accounting Income in Four East Asian Countries." *Journal of Accounting and Economics*, vol. 36: 235-270.
- Barth, M., W. Landsman, and M. Lang. 2008. "International Accounting Standards and Accounting Quality." *Journal of Accounting Research*, vol. 46: 467-498.
- Beuselinck, C., P. Joos, and I. Khurana. 2008. "Mandatory IFRS Reporting and Stock Price Informativeness." Working paper, Tilburg University.
- Botosan, C. A. 1997. "Disclosure Level and the Cost of Equity Capital." *Accounting Review*, vol. 72: 323-349.
- Bushman, R., J. Piotroski and A. Smith. 2004. "What Determines Corporate Transparency?." *Accounting Review*, vol. 42, no. 2: 207-252.
- Byard, D, Y. Li, and Y. Yu. 2008. "The Effect of Mandated IFRS Adoption on Analysts' Forecast Errors." Working paper, Baruch College-CUNY.
- Capkun, V., J. Anne Cazavan, T. Jeanjean, and A. Lawrence. 2008. "Earnings Man-

agement and Value Relevance during the Mandatory Transition from Local GAAPs to IFRS in Europe.” Working paper, HEC-Paris.

Cazavan, J., and T. Jeanjean. 2007. ”Accounting choices under IFRS 1: Analysis and determinants.” Working paper, HEC-Paris.

Choi, F., and R. Levich. 1991. ”International Accounting Diversity: Does It Affect Market Participants?.” *Financial Analysts Journal*, vol. 47: 73-82.

Christensen, H. B., E. Lee, and M. Walker. 2007. ”Do IFRS/UK-GAAP reconciliations convey new information?” Working paper, Manchester Business School.

Covrig, V., M. DeFond and M. Hung. 2007. ”Home Bias, Foreign Mutual Fund Holdings, and the Voluntary Adoption of International Accounting Standards.” *Journal of Accounting Research*, vol. 45: 4170.

Daske, H., and G. Gebhardt. 2006. ”International Financial Reporting Standards and Experts Perceptions of Disclosure Quality.” *Abacus*, vol. 42: 461-498.

Daske, H., L. Hail, C. Leuz, and R. Verdi. 2007. ”Mandatory IFRS Reporting Around the World: Early Evidence on the Economic Consequences.” *Journal of Accounting Research*, vol. 46: 1085-1142.

Demirguc-Kunt, A., and V. Maksimovic. 2002. ”Funding Growth in Bank-Based and Market-Based Financial Systems: Evidence from Firm-Level Data.” *Journal of Financial Economics*, vol. 65: 337-363.

Diamond D., and R. Verrecchia. 1991. ”Disclosure, Liquidity, and the Cost of Capital.” *Journal of Finance*, vol. 46: 1325-59.

Easley, D., and M. O’Hara. 2004. ”Information and the cost of capital.” *Journal of Finance*, vol. 59: 1553-1583

Eleswarapu, V., and K. Venkataraman. 2006. ”The Impact of Legal and Political Institutions on Equity Trading Costs: A Cross-Country Analysis.” *Review of Financial Studies*, vol. 19: 1081-111.

GAAP. 2001. ”A survey of national accounting rules benchmarked against International Accounting Standards.” Andersen, BDO, Deloitte Touche Tohmatsu, Ernst & Young, Grant Thornton, KPMG and PricewaterhouseCoopers.

Horton, J., G. Serafeim, and I. Serafeim. 2008. ”Does Mandatory IFRS Adoption Improve the Information Environment?” Working paper, London School of Economics.

Huang, R., and H. Stoll. 1996. ”Dealer versus Auction Markets: A Paired Comparison

of Execution Costs on NASDAQ and the NYSE." *Journal of Financial Economics*, vol. 41: 313-357.

Hung, M., and K. Subramanyam. 2007. "Financial Statement Effects of Adopting International Accounting Standards: The Case of Germany." *Review of Accounting Studies*, vol. 12. 623-657.

ICAEW. 2007. EU Implementation of IFRS and the Fair Value Directive, Institute of Chartered Accountants in England and Wales.

Kumar, K., R. Rajan, and L. Zingales. 2001. "What Determines Firm Size?." Working paper, National Bureau of Economic Research, Cambridge, MA.

Lambert, R. A., C. Leuz, and R. E. Verrecchia. 2007. "Accounting Information, Disclosure, and the Cost of Capital." *Journal of Accounting Research*, vol. 45: 385-420.

La Porta, R., F. Lopez-de-Silanes, A. Shleifer, and R. Vishny. 2002. "Investor Protection and Corporate Valuation." *Journal of Finance*, vol. 57: 1147-1170.

La Porta, R., F. Lopez-de-Silanes, and A. Shleifer. 1999. "Corporate Ownership around the World." *Journal of Finance*, vol. 54: 471-517.

Leuz, C., and R. E. Verrecchia. 2000. "The Economic Consequences of Increased Disclosure." *Journal of Accounting Research*, vol. 38: 911-24.

Lee, E., M. Walker, and H. Christensen. 2008. "Mandating IFRS: Its Impact on the Cost of Equity Capital in Europe." ACCA research report no. 105.

London Stock Exchange. 2006. "The Cost of Capital: An International Comparison." <http://www.londonstockexchange.com> (accessed on June 1, 2008)

Nobes, C., and S. Zeff. 2008. "Auditors' Affirmations of Compliance with IFRS around the World: An Exploratory Study." *Accounting Perspectives*, vol. 7: 279-292.

Nobes, C., and R. Parker. 2002. Ed. Comparative international accounting Imprint, Harlow : Financial Times/Prentice-Hall.

Pincus, M., S. Rajgopal, and M. Venkatachalam. 2007. "The Accrual Anomaly: International Evidence." *Accounting Review*, vol. 32: 169-203.

Sunder, S. 2008. "IFRS and the Accounting Consensus." Working paper, Yale School of Management.

Table 1: Descriptive statistics**Panel A. Dependent variables^a**

	<i>N</i>	Pre-adoption year		Adoption year		<i>(t-stat)</i>
		<i>Mean</i>	<i>St.dev.</i>	<i>Mean</i>	<i>St.dev.</i>	
France						
<i>Zero returns</i>	356	47.64%	21.39%	50.81%	18.59%	4.45***
<i>Illiquidity</i>	391	3.95	7.48	3.43	7.13	7.8***
<i>Bid-ask spread</i>	386	2.64%	10.50%	2.01%	4.64%	1.72**
Germany						
<i>Zero returns</i>	286	52.91%	19.52%	56.10%	19.17%	0.81
<i>Illiquidity</i>	286	19.61	21.43	21.13	21.52	0.75
<i>Bid-ask spread</i>	280	3.64%	3.68%	3.35%	3.24%	1.95***
Sweden						
<i>Zero returns</i>	288	35.42%	1.08%	42.83%	0.98%	9.41***
<i>Illiquidity</i>	276	12.79	46.83	9.54	35.71	2.04***
<i>Bid-ask spread</i>	262	2.19%	3.23%	2.22%	3.79%	0.69
United Kingdom						
<i>Zero returns</i>	525	54.38%	19.86%	53.81%	20.37%	0.65
<i>Illiquidity</i>	584	12.87	15.15	12.85	15.35	0.05
<i>Bid-ask spread</i>	575	3.16%	2.54%	2.94%	2.45%	4.08***

Panel B. Independent variables^b**Market variables**

	France		Germany		United Kingdom		Sweden	
	<i>Mean</i>	<i>St.Dev.</i>	<i>Mean</i>	<i>St.Dev.</i>	<i>Mean</i>	<i>St.Dev.</i>	<i>Mean</i>	<i>St.Dev.</i>
Market size	5.61	2.38	6.16	2.36	4.81	2.26	6.68	2.33
Share turnover	0.23	0.51	0.16	0.44	0.13	0.26	0.12	0.28
Price volatility	2.98%	1.39%	2.82%	1.16%	3.32%	1.59%	3.49%	1.17%

Accounting-reconciliation variables^c

	<i>N</i>	<i>Mean</i>	<i>St. dev</i>	<i>P1</i>	<i>P25</i>	<i>P50</i>	<i>P75</i>	<i>P99</i>
France								
Total assets	387	4.11%	0.70%	-8.21%	-0.63%	1.41%	7.65%	25.60%
Shareholder's equity	387	5.97%	15.87%	-18.61%	-1.13%	1.16%	9.78%	46.08%
Net income	387	13.20%	46.21%	-66.40%	-3.82%	4.90%	24.00%	129.40%
Germany								
Total assets	286	2.41%	7.62%	-10.92%	-0.61%	0.54%	4.43%	23.45%
Shareholder's equity	290	2.87%	15.93%	-27.56%	-3.65%	0.38%	8.10%	45.27%
Net income	290	1.18%	56.86%	-61.44%	-11.98%	0.72%	19.85%	127.27%
United Kingdom								
Total assets	596	0.78%	3.41%	-4.24%	-0.18%	0.00%	1.60%	9.06%
Shareholder's equity	595	2.80%	15.60%	-25.88%	7.24%	0.00%	4.37%	24.00%
Net income	586	11.54%	55.78%	-96.10%	-2.84%	0.00%	16.65%	145.81%
Sweden								
Total assets	301	3.97%	9.07%	-0.96%	0.00%	0.86%	2.90%	36.52%
Shareholder's equity	301	5.00%	9.51%	-1.21%	0.00%	1.49%	4.97%	33.55%
Net income	301	9.81%	38.72%	-62.82%	-0.86%	3.49%	16.86%	112.86%

Notes: ^a The complete sample comprises a maximum of 1437 companies from the four country legal origin groups between 2004 and 2007. Panel A reports descriptive statistics for the dependent variables. Three different measures of liquidity costs are employed in the regression analysis.

(1) "Zero return days" is the proportion of zero daily returns out of all trading days in a given year.

(2) "Illiquidity" is the yearly median of the Amihud (2002) illiquidity measure (i.e., the weekly absolute price change in percent divided by trading volume).

(3) "Bid-Ask Spread" is the yearly median quoted spread computed as the difference between the closing bid and ask prices for each day divided by the mid-point.

Financial information is obtained in Thomson Datastream as of February 2009. The

measurement period for all three variables starts in month four and runs for one year relative to the company's fiscal-year end. Sensitivity tests vary the start month of the measurement period and its length, but the empirical results are quantitatively similar and statistically not significant. All variables are winsorized at the 5% level to reduce the impact of extreme observations on empirical findings.

^b "Market Value" is stock price times the number of shares outstanding, "Share Turnover" - the annual euro trading volume divided by the market value of outstanding equity, and "Return Variability" is computed as the annual standard deviation of monthly stock returns.

^c Accounting reconciliation variables are computed as follows.

(1) Total assets: $(Total_Assets_{IFRS} - Total_Assets_{DomesticGAAP})/Total_Assets_{DomesticGAAP}$

(2) Shareholder's equity:

$Shareholder's_equity_{IFRS} - Shareholder's_equity_{DomesticGAAP}/Shareholder's_equity_{DomesticGAAP}$

(3) Net income:

$(Net_income_{IFRS} - Net_income_{DomesticGAAP})/Net_income_{DomesticGAAP}$

The table contains also the difference in mean (median), along with the respective test for significance *t*-test (*z*-test): *t*-statistics (*z*-statistics) with ***, ** and * signify that the difference in means (medians) is significant at the 5%, 10% and 15% level. All accounting-reconciliation variables are significantly different from zero at the 1% level.

Table 2. Market liquidity costs and IFRS effect

Dependent variable in the model:	Various liquidity measures					
	Model 1		Model 2		Model 3	
	Proportion of Zero Returns	Log(Iliquidity)	Log(Iliquidity)	Log(Bid-ask spread)	Proportion of Zero Returns	Log(Bid-ask spread)
Country:						
France						
<i>Accounting-reconciliation variables:</i>						
Firm's assets	-0.18 (2.44***)	-1.135 (2.44***)	-0.083 (0.18)	0.06 (0.54)	-0.29 (0.30)	1.01 (1.10)
Shareholder's equity	0.10 (2.55***)	-0.06 (0.27)	0.06 (0.23)	0.12 (2.54***)	0.15 (0.33)	-0.82 (1.97***)
Net income	0.104 (0.86)	0.13 (1.77**)	-0.12 (1.64**)	-0.01 (0.10)	-0.09 (0.70)	0.11 (0.97)
<i>Control variables:</i>						
Log(Market Value)	-0.013 (3.63***)	-0.11 (4.70***)	-0.013 (0.56)	-0.02 (6.25***)	0.15 (4.62***)	-0.06 (2.02***)
Log(Share Turnover)	-0.012 (4.03***)	-1.01 (54.15***)	-0.38 (20.94***)	-0.01 (2.47***)	-0.92 (27.66***)	-0.28 (9.35***)
Log(Return Variability)	-0.085 (5.72***)	1.25 (13.37***)	0.27 (3.05***)	-0.15 (6.34***)	0.80 (3.35***)	0.85 (4.13***)
Fixed effects	Industry	Industry	Industry	Industry	Industry	Industry
R ²	0.31	0.96	0.76	0.26	0.77	0.37
Number of companies	329	327	329	286	286	280

Table 2. Market liquidity costs and IFRS effect (continued)

Dependent variable in the model:	Various liquidity measures			
	Model 1 Proportion of Zero Returns Days	Model 2 Log(Iliquidity)	Model 3 Log(Bid-ask spread)	Model 3 Log(Bid-ask spread)
United Kingdom				
<i>Accounting-reconciliation variables:</i>				
Firm's assets	0.019 (0.15)	0.98 (1.26)	-0.41 (0.55)	-0.19 (1.16)
Shareholder's equity	0.078 (0.69)	-0.36 (0.52)	-0.01 (0.01)	0.04 (1.42*)
Net income	-0.023 (1.63**)	0.1 (1.15)	-0.06 (0.79)	0.01 (0.65)
<i>Control variables:</i>				
Log(Market Value)	-0.01 (0.84)	0.02 (0.56)	0.11 (3.41***)	-0.02 (7.43***)
Log(Share Turnover)	-0.012 (2.46***)	-1.22 (40.32***)	-0.4 (14.05***)	-0.01 (5.40***)
Log(Return Variability)	0.045 (1.65**)	1.14 (8.42***)	0.33 (2.11)	-0.08 (7.14***)
Fixed effects	Industry 0.31	Industry 0.97	Industry 0.72	Industry 0.43
Number of companies	228	228	228	468
				Industry 0.95
				466
				468
				0.73
				468
				0.14
				(8.86***)
				-0.23
				(18.00***)
				0.3
				(4.81***)
				Industry
				0.95
				466
				468
				0.73
				468

Notes: The following model is estimated:

$$Liq_costs_t = \beta_0 + \beta_1 Total_assets_t + \beta_2 Shareholder's_equity_t + \beta_3 Net_income_t + Controls_t + \varepsilon,$$

where

(1) Three measures of liquidity costs are employed in the regression analysis: (a) "Zero return days" is the proportion of zero daily returns out of all trading days in a given year. (b) "Illiquidity" is the yearly median of the Amihud (2002) illiquidity measure (i.e., the weekly absolute price change in percent divided by trading volume). (c) "Bid-Ask Spread" is the yearly median quoted spread computed as the difference between the closing bid and ask prices for each day divided by the mid-point.

(2) Control variables are market size, share turnover and price volatility. In all regressions industry fixed effect is included. Regression

(3) The accounting-reconciliation variable is the percentage change in respective accounts after the mandatory switch to IFRS. The variables are computed as: Total assets (Shareholder's equity or Net income) under IFRS minus Total assets (Shareholder's equity or Net income) under domestic accounting, scaled by Total assets (Shareholder's equity or Net income) under domestic accounting.

All market variables are measured for a period that starts in month four and runs for one year relative to the company's fiscal-year end. The table reports OLS coefficient estimates and (in parentheses) t-statistics based on robust standard errors that are clustered by company. T-statistics (z-statistics) with ***, ** and * signify that the difference in means (medians) is significant at the 5%, 10% and 15% level.

Table 3. Anticipation effect of IFRS introduction on market liquidity costs

Dependent variable in the model:	Model 1		Model 2		Model 3		Model 1		Model 2		Model 3	
	Proportion of Zero Returns Days	Log (Bid-ask spread)	Log(Illiquidity)	Log (Bid-ask spread)	Log (Bid-ask spread)	Log (Bid-ask spread)	Proportion of Zero Returns Days	Log(Illiquidity)	Log(Illiquidity)	Log(Illiquidity)	Log(Bid-ask spread)	Log(Bid-ask spread)
Country:												
France												
<i>Accounting-reconciliation variables:</i>												
Firm's assets	-0.1 (1.30)	-0.865 (2.04***)	0.25 (1.09)	-0.22 (0.54)	0.09 (0.43)	-0.08 (1.21)	Yes	-0.10 (0.92)	0.92 (1.84)	-0.02 (1.01)	-0.56 (0.58)	0.64 (0.86)
Shareholder's equity	0.20 (0.47)	0.25 (1.09)	-0.02 (0.30)	0.09 (0.43)	-0.08 (1.21)	-0.02 (1.01)	Yes	0.92 (1.84)	0.92 (1.84)	-0.02 (1.01)	-0.16 (0.38)	-0.62 (1.87**)
Net income	-0.014 (1.17)	-0.02 (0.30)	-0.02 (0.30)	-0.08 (1.21)	-0.08 (1.21)	-0.02 (1.01)	Yes	-0.02 (1.01)	-0.02 (1.01)	-0.03 (0.78)	-0.03 (0.78)	-0.05 (0.57)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed effects	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry
R ²	0.26	0.96	0.96	0.79	0.79	0.32	0.32	0.32	0.82	0.82	0.82	0.52
Number of companies	330	329	329	330	330	264	264	264	259	259	259	264
Country:												
Sweden												
<i>Accounting-reconciliation variables:</i>												
Firm's assets	-0.12 (1.09)	0.43 (0.56)	0.34 (0.49)	0.08 (0.12)	-0.202 (0.30)	-0.06 (0.72)	Yes	0.026 (0.15)	0.07 (2.14***)	-0.01 (1.10)	-1.42 (1.30)	-0.903 (1.19)
Shareholder's equity	0.16 (1.65**)	0.34 (0.49)	-0.1 (1.18)	-0.202 (0.30)	-0.06 (0.72)	-0.01 (1.10)	Yes	0.07 (2.14***)	0.369 (1.63**)	0.1 (1.66**)	0.369 (1.63**)	0.38 (2.44***)
Net income	-0.01 (1.42*)	-0.1 (1.18)	-0.1 (1.18)	-0.06 (0.72)	-0.06 (0.72)	-0.01 (1.10)	Yes	-0.01 (1.10)	-0.01 (1.10)	0.1 (1.66**)	0.1 (1.66**)	-0.05 (1.30)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed effects	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry
R ²	0.20	0.97	0.97	0.70	0.70	0.39	0.39	0.39	0.95	0.95	0.95	0.77
Number of companies	235	235	235	235	235	489	489	489	488	488	488	489

Notes: The following model is estimated:

$$Liq_costs_{t-1} = \beta_0 + \beta_1 Total_assets_t + \beta_2 Shareholder's_equity_t + \beta_3 Net_income_t + Controls_t + \varepsilon,$$

where

(1) Three measures of liquidity costs are employed in the regression analysis: (a) "Zero return days" is the proportion of zero daily returns out of all trading days in a given year. (b) "Illiquidity" is the yearly median of the Amihud (2002) illiquidity measure (i.e., the weekly absolute price change in percent divided by trading volume). (c) "Bid-Ask Spread" is the yearly median quoted spread computed as the difference between the closing bid and ask prices for each day divided by the mid-point.

(2) Control variables are market size, share turnover and price volatility. In all regressions industry fixed effect is included. Regression coefficients and t-statistics, which is almost always across models and countries significant, are not tabulated.

(3) Accounting-reconciliation variables are computed as: Total assets (Shareholder's equity or Net income) under IFRS minus Total assets (Shareholder's equity or Net income) under domestic accounting, scaled by Total assets (Shareholder's equity or Net income) under domestic accounting.

All market variables are measured for a period that starts in month four and runs for one year relative to the company's fiscal-year end. The pre-adoption period, t-1, runs for one year before the IFRS adoption, relative to the fiscal year-end. The table reports OLS coefficient estimates and (in parentheses) t-statistics based on robust standard errors that are clustered by company. T-statistics (z-statistics) with ***, ** and * signify that the difference in means (medians) is significant at the 5%, 10% and 15% level.

Table 4. Adjustment effect of IFRS introduction on market liquidity costs

Dependent variable in the model:	Model 1		Model 2		Model 3		Model 1		Model 2		Model 3	
	Proportion of Zero Returns Days	Log (Illiquidity)	Log (Bid-ask spread)	Proportion of Zero Returns Days	Log (Illiquidity)	Log (Bid-ask spread)	Proportion of Zero Returns Days	Log (Illiquidity)	Log (Illiquidity)	Log (Bid-ask spread)	Proportion of Zero Returns Days	Log (Bid-ask spread)
Country:												
France												
<i>Accounting-reconciliation variables:</i>												
Firm's assets	-0.08 (1.15)	-1.19 (2.39***)	-0.08 (0.16)	0.08 (0.86)	-0.42 (0.46)	1.34 (1.30)	0.08 (0.86)	-0.42 (0.46)	0.62 (0.61)	-3.13 (3.08***)	0.27 (0.27)	290 (290)
Shareholder's equity	0.03 (0.91)	0.312 (1.17)	-0.06 (0.25)	0.04 (0.96)	-0.19 (0.47)	-0.25 (0.54)	0.04 (0.96)	-0.19 (0.47)	-0.02 (0.13)	0.38 (1.79**)	0.27 (0.27)	290 (290)
Net income	-0.01 (0.04)	0.08 (0.30)	-0.13 (1.66**)	-0.01 (0.01)	-0.19 (1.63**)	-0.014 (0.10)	-0.01 (0.01)	-0.19 (1.63**)	0.03 (0.49)	0.08 (1.50*)	0.27 (0.27)	290 (290)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed effects	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry
R ²	0.31	0.96	0.78	0.25	0.78	0.27	0.25	0.78	0.96	0.67	0.27	0.27
Number of companies	329	323	326	290	286	290	290	286	467	471	290	290
Country:												
United Kingdom												
<i>Accounting-reconciliation variables:</i>												
Firm's assets	0.08 (0.71)	0.02 (0.02)	0.18 (0.22)	-0.188 (1.05)	0.62 (0.61)	-3.13 (3.08***)	-0.188 (1.05)	0.62 (0.61)	0.62 (0.61)	-3.13 (3.08***)	0.27 (0.27)	290 (290)
Shareholder's equity	-0.02 (0.27)	0.26 (0.34)	-0.72 (0.94)	0.01 (0.17)	-0.02 (0.13)	0.38 (1.79**)	0.01 (0.17)	-0.02 (0.13)	-0.02 (0.13)	0.38 (1.79**)	0.27 (0.27)	290 (290)
Net income	0.01 (0.02)	0.13 (1.30)	-0.05 (0.94)	-0.01 (0.88)	0.03 (0.49)	0.08 (1.50*)	-0.01 (0.88)	0.03 (0.49)	0.03 (0.49)	0.08 (1.50*)	0.27 (0.27)	290 (290)
Control variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed effects	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry	Industry
R ²	0.14	0.96	0.67	0.349	0.96	0.67	0.349	0.96	0.96	0.67	0.27	0.27
Number of companies	226	226	226	471	467	471	471	467	467	471	290	290

Notes: The following model is estimated:

$$Liq_costs_{t+1} = \beta_0 + \beta_1 Total_assets_t + \beta_2 Shareholder's_Eq_t + \beta_3 Net_income_t + Controls_t + \varepsilon,$$

where

(1) Three measures of liquidity costs are employed in the regression analysis: (a) "Zero return days" is the proportion of zero daily returns out of all trading days in a given year. (b) "Illiquidity" is the yearly median of the Amihud (2002) illiquidity measure (i.e., the weekly absolute price change in percent divided by trading volume). (c) "Bid-Ask Spread" is the yearly median quoted spread computed as the difference between the closing bid and ask prices for each day divided by the mid-point.

(2) Control variables are market size, share turnover and price volatility. In all regressions industry fixed effect is included. Regression coefficients and t-statistics, which is almost always across models and countries significant, are not tabulated.

(3) Accounting-reconciliation variables are computed as: Total assets (Shareholder's equity or Net income) under IFRS minus Total assets (Shareholder's equity or Net income) under domestic accounting, scaled by Total assets (Shareholder's equity or Net income) under domestic accounting.

All market variables are measured for a period that starts in month four and runs for one year relative to the company's fiscal-year end. The table reports OLS coefficient estimates and (in parentheses) t-statistics based on robust standard errors that are clustered by company. *T*-statistics (*z*-statistics) with ***, ** and * signify that the difference in means (medians) is significant at the 5%, 10% and 15% level.

Table 5. Overall IFRS effect on market liquidity costs: Sub-sample analysis

Effect:	United Kingdom			France		
	<i>Anticipation</i>	<i>IFRS</i>	<i>Adjustment</i>	<i>Anticipation</i>	<i>IFRS</i>	<i>Adjustment</i>
Companies with larger total assets under IFRS						
<i>Model 2: Dependent variables illiquidity measure</i>						
Total assets	-			-	-	-
Shareholder's equity	+			+		+
Net income	+	+	+		+	
<i>Model 3: Dependent variables bid-ask spread</i>						
Total assets		-	-			
Shareholder's equity					-	-
Net income						
Companies with larger net income under IFRS						
<i>Model 2: Dependent variables illiquidity measure</i>						
Total assets					-	-
Shareholder's equity		+	+			
Net income		+				
<i>Model 3: Dependent variables bid-ask spread</i>						
Total assets					-	-
Shareholder's equity		+				
Net income		+	+			+

Notes: The full sample in each country group is separated into two groups using the behavior of accounting restatements: (a) when total assets under IFRS are larger than total assets under domestic accounting, and (b) when net income under IFRS are larger than net income under domestic accounting. Results for France and UK, which often are significant across different estimation settings in sub-samples, are only tabulated. The sign and t-statistics significance are reported.

The IFRS effects are estimated as follows:

Anticipation effect:

$$Liq_costs_{t-1} = \beta_0 + \beta_1 Total_assets_t + \beta_2 Shareholder's_equity_t + \beta_3 Net_income_t + Controls_t + \varepsilon,$$

IFRS (05) effect:

$$Liq_costs_t = \beta_0 + \beta_1 Total_assets_t + \beta_2 Shareholder's_equity_t + \beta_3 Net_income_t + Controls_t + \varepsilon,$$

Adjustment effect:

$$Liq_costs_{t+1} = \beta_0 + \beta_1 Total_assets_t + \beta_2 Shareholder's_equity_t + \beta_3 Net_income_t + Controls_t + \varepsilon,$$

where dependent and independent variables are as defined in the notes to previous tables.

If shareholder's equity is used instead of total assets, the results do not differ significantly. Only the sign of regression coefficients that are significant at the 10% level are reported.

Chapter 3

B/M and distress measures under alternative accounting regimes

Abstract. Cross-listed firms follow and report under two accounting regimes that produces a pair of accounting ratios obtained under U.S. and respective domestic GAAP. This study uses difference in book-to-market and financial distress measures under the two accounting regimes and examines their association with subsequent stock returns. Using accounting reconciliations of Canadian companies, the largest group of foreign listed companies on the US stock exchange, the study examines the value-relevance of accounting differences and their effect on stock pricing models. Previous research on U.S.-Canada accounting differences is not conclusive about their information content. This paper re-examines reported reconciliations between Canadian and U.S. GAAP and concludes about their value-relevance.

3.1 Introduction

Canadian firms that list securities on U.S. stock exchanges are generally required to provide a reconciliation of their financial results measured using Canadian generally accepted accounting principles (*GAAP*) to U.S. GAAP. Previous research on U.S.-Canada accounting differences is not conclusive about their information content. Frost and Kinney (1996) find a significant association between security prices

and firm's reconciliation from U.S. to Canadian GAAP. Using a sample of 61 firms from 13 countries including Canada, Chan and Seow (1996) report stronger contemporaneous returns-earnings association using foreign GAAP earnings compared to U.S. GAAP. However, Barth and Clinch (1993) confirm that U.K. and Australian firms' reconciliations contained information useful in explaining stock returns, but that the reconciliations of Canadian issuers did not. Using a sample of 96 Canadian firms, Bandyopadhyay, Hanna and Richardson (1994) conclude that the reconciliations do not appear to be value-relevant, even though the magnitude of the GAAP differences is sometimes large relative to a firm's earnings or its market value of equity.

This paper re-examines the information content of reported reconciliations between Canadian and U.S. GAAP with a new empirical test. Previous research investigates the price and volume reaction, the association returns-earnings or the change in the bid-ask spread to conclude about value-relevance of accounting differences (e.g., Chan and Seow, 1996; Hora et al., 2004). This study contributes to the debate about information content of U.S.-Canada accounting reconciliations with a new approach to reported differences: it examines how accounting differences affect two important factors in explaining stock returns, namely financial distress measures and book-to-market (B/M) values of Canadian cross-listed firms. The study concludes that the difference in factors values obtained under Canadian and U.S. GAAP improves our knowledge when and why subsequent stock returns of Canadian firms vary.

Empirical studies of cross-country GAAP differences often do not address U.S.-Canada differences because of perceived similarities between GAAP in the two countries (Amir, Harris and Venuti, 1993; Lang, Raedy and Wilson, 2006). However, even a small difference in factors explaining subsequent returns, such as financial distress measures and B/M values, could provide valuable information for stock pricing decisions. Moreover, formal harmony between two accounting regimes does not imply marginal accounting differences in practice. Furthermore, the extent of regulatory and legal exposure can differ in practice even if the many of the safeguards which cross-listed firms face on the U.S. financial market are nominally the same (Siegel, 2005; Frost and Pownall, 1994). Empirical evidence confirms that Canadian firms can report significantly large differences in accounting income measured under Canadian

and U.S. GAAP. For instance, in 2004 *QLT Inc.*, a Canadian bio-pharmaceutical company, reported an accumulated deficit of \$173 million under U.S. accounting and of \$1.6 million under Canadian accounting. This difference significantly changes the two insolvency estimates obtained under the two accounting regimes using Altman's bankruptcy prediction model (1968). Using the Canadian financial statements, *QLT Inc.* does not seem to be financially distressed. However, the proxy for bankruptcy risk obtained under U.S. accounting has a negative sign, signaling financial distress risk. Not only insolvency estimates but also reported earnings differ under Canadian and U.S. accounting. *Optimal Robotics Corporation*, another Canadian firm cross-listed in the U.S., disclosed largely different earnings results under the two regimes. Its 2001 annual report contained a net profit of \$9.3 million under Canadian accounting and a loss of \$23.3 millions under U.S. accounting.

In this study, we examine how U.S.-Canada accounting differences affect explained variance in stock returns using a three-factor model and conclude whether investors could use the difference in factors value as an additional, value-relevant variable in their valuation models. Canadian firms, as a foreign listing, report under two accounting regimes: U.S. and Canadian GAAP. Reported reconciliations contains differences that often affect significantly accounting ratios, such as B/M , that investors examine before their portfolio allocation. Using a sample of 66 Canadian industrials listed in the U.S. and reported reconciliation for the period 2001-2004 (i.e., 2,567 observations), we first obtain the two B/M s and the two proxy values for financial distress (i.e., bankruptcy risk, Z), under Canadian and U.S. accounting regime. Later, we examine their information content in explaining average monthly returns using a three-factor model, as suggested by Dichev (1998). If reported reconciliations contain value-relevant information, then we would observe: (i) different marginal effects of the three factors in explaining returns when using Canadian or U.S. financial statements, and (ii) a significant, in statistical and economical terms, effect of the difference between the factor values obtained under the two regimes on stock returns (i.e., the difference between B/M , or the distress measure Z , under U.S. and Canadian accounting).

The remainder of the study is organized as follows. Section 2 discusses previous

research about value-relevance of accounting differences on the U.S. financial market. It also reviews literature about what drives compatibility of financial results prepared under different accounting regimes. Section 3 explains the research design, sample selection and empirical tests. Section 4 presents descriptive statistics and regression results. Section 5 concludes.

3.2 Literature survey and motivation

3.2.1 Capital market effects of accounting reconciliation disclosure

Since early 1990s, the controversy between the SEC and the New York Stock Exchange (NYSE) over the reporting requirements (20-F filings) for foreign issuers remains unresolved. The NYSE argues that SEC reporting requirements for non-U.S. firms put it at a competitive disadvantage in terms of the number of foreign listings relative to foreign stock exchange. However, SEC contends that it must protect U.S. investors from incomplete disclosure of foreign firms under their domestic accounting regimes.

This controversy has motivated a large number of empirical studies about information content of accounting reconciliations. An implicit assumption behind the requirement for 20-F disclosure is that the information prepared under home-country standards is inferior to the information disclosed by U.S. firms. Its validity has been questioned by many scholars and practitioners. For example, Baumol and Malkiel (1993) present evidence that overseas markets are as efficient as those in the U.S. and that the benefits of additional disclosure in accordance with U.S. GAAP are not certain. Chan and Seow (1996) demonstrate that the contemporaneous association between earnings and returns is stronger when using financial reporting under home-country GAAP rather than U.S. GAAP. They suggest that in translating the foreign earnings numbers to conform with U.S. GAAP, differences reflecting contextual factors may inadvertently be overlooked, resulting in a less meaningful set of earnings numbers. Amir et al. (1993) conclude that domestic financial statements and vol-

untary disclosure during the year provide necessary information to incorporate the differences associated with the application of alternative accounting standards prior the filing date. Choi and Levich (1991) conduct a survey which confirm that investors feel in possession of a mechanism to cope with accounting diversity, admitting that accounting differences an important factor affecting their market decisions.

Many scholars question empirical findings about superior information content of home-country standards. A large number of studies published in the last years examine the role of legal and regulatory framework and managerial incentives on quality of accounting information and argue that institutional factors drive compatibility of accounting information. For instance, Ball et al. (2000) emphasize that, in contrast to the U.S., non-U.S. firms often operate in stakeholder corporate governance environment where managerial incentives to report earnings of low quality are stronger. Therefore, the more extensive disclosure and the cost of complying with the SEC rules protect investors and prevent from listing firms that are not able to satisfy the stricter U.S. reporting requirements (Biddle and Saudagaran, 1989). Nevertheless, later research documents that the safeguards are not sufficiently strong and warn investors that financial reporting of foreign firms should be carefully considered. Not only litigations against cross-listed firms are not successful (Siegel, 2005) and compliance of foreign issuers with annual and interim reporting requirement is substantially low (Frost and Pownall, 1994), but also accounting information differs in quality. Using a sample of 181 firms from 34 countries, Lang et al. (2006) examine properties of their reconciled earnings matched against reported earnings of U.S. firms and suggest that their earnings are smoother compared to cash flows. Moreover, foreign firms listed in the U.S. have a greater tendency to use accruals to smooth cash flow volatility, report a higher proportion of small positive earnings, are less likely to recognize losses in a timely manner and report reconciled earnings and shareholders' equity data that are less highly correlated with share price, especially in cases of bad news.

Previous research suggests that disclosure of firms from countries with accounting systems similar to the U.S. system should have incremental information content. However, empirical results are not conclusive about U.S.-Canada accounting reconciliation and their value relevance. The magnitude of the GAAP differences is sometimes

large relative to a firm's earnings or its market value, but reconciled results do not appear to be informative for stock pricing (Bandyopadhyay et al., 1994). Nevertheless, comparative empirical findings suggest that the association between earnings and returns could be also stronger using Canadian GAAP compared to the U.S. GAAP, even though the business environment in Canada is close to that of the U.S. (Frost and Kinney, 1996; Chan and Seow, 1996). Moreover, current empirical studies examine accounting data and its association with share price. An implicit assumption is that financial results prepared under U.S. GAAP are more informative if they exhibit a higher association with share price or returns. This value-relevance test, however, does not conclude about the actual information content of reconciled earnings and shareholders' equity. This study contribute to the existing literature with empirical findings about the information content of U.S.-Canada reconciliations with a new empirical approach, as it estimates the effect of accounting differences on firm's characteristics that are significantly associated with market returns, namely book-to-market ratio and a proxy for financial distress based on accounting information.

3.2.2 Explaining returns under different accounting regimes: book-to-market and bankruptcy risk

Since the early 1990s, finance research, especially on capital asset management, is dominated by the three-factor model, developed by Fama and French (F/F factors). The two authors (1992) suggest that size and book-to-market value are two factors that capture significantly the cross-sectional variation in average stock returns. Several empirical studies examine whether financial distress is behind the two factors (Fama and French, 1993; Dichev, 1998). Although current findings about bankruptcy risk¹ as partially systematic are not conclusive, it is still the predominant explanation.

Finance scholars use the three F/F factors and suggest other factors that can additionally explain subsequent stock returns. Previous research on stock valuation models assumes that the accounting regime does not differ which might not be necessarily true in practice. Both book-to-market value and a proxy for financial distress contain accounting information that may vary significantly across countries together

with the accepted accounting methods. Large differences in total assets and reported earnings are likely when accounting regimes allow for different recognition and valuation methods. Therefore, financial analysts may reach different conclusions about financial prospects of a firm using financial statements prepared under different accounting.

Accounting regimes can be compared based on two measures: conservativeness of accounting methods, and timeliness of accounting income. Basu (1997) operationalizes accounting conservatism as the dominant approach in comparing how accounting methods differ². Firms make a conservative accounting choice when disclosing bad news on a more timely basis than good news (Basu, 1997). Current research elaborates about the specific difference between conservatism and timeliness of accounting income. In the late 1990s, asymmetrical timely recognition of gains and losses was described as conservatism (Basu, 1997). However, more recent research classifies conservatism as "income statement" and "balance sheet" conservatism (Ball et al., 2000).

Although timeliness of accounting income improves predictive properties of stock valuation models, the role of accounting conservatism is controversial. It is the financial market itself that demands conservative accounting choices. They protect investors making an excessively optimistic policy of a manager less credible. The two factors, B/M and insolvency prediction, might greatly differ with accounting conservatism. Other things equal, B/M would be lower for a firm following less conservative accounting methods. Conservative accounting would also underestimate profitable ventures incorporating their gains relatively late in time into the accounting income. Moreover, it would disregard projects with positive net present value until the associated future sales occur. Therefore, the financial statements would not capture expected gains and would overestimate the probability of financial distress. Nevertheless, conservative accounting can also improve analysts' forecasts about firm's future prospects, especially when using ratios scaled by total assets (See more about the relationship between conservative accounting and returns in Easton and Pae, 2004).

Differences between accounting regimes influence reported income, especially its discretionary accrual components. Current literature on the association between ac-

counting income, including accruals, and subsequent stock returns is not conclusive on whether investors comprehend the properties of reported earnings. The "anomaly" research argues that investors fail to reflect fully information contained in the accruals and cash flow components of current earnings until that information impacts future earnings (e.g. Sloan, 1996). Therefore, the abnormal returns are a sign of mispricing coming from a(n) (information) pricing bias. However, excess returns might be also a risk premium that compensates investors, as lower accruals quality is associated with greater information risk. Empirical research confirms rational asset-pricing framework in which accruals quality captures an information risk factor which is non-diversifiable. This explains how firms with poor accruals quality have higher costs of capital than do firms with good accruals quality (e.g., Francis et al., 2005).

3.3 Research design, sample selection and empirical tests

This study examines whether accounting regimes change our understanding about the factors explaining subsequent security returns. In 2004, fifty-five countries listed shares in the U.S. with an overall number of 1240 foreign companies. To control for differences across accounting regimes, only foreign issuers from the most represented country are sampled, Canada. Following previous research, the final selection of companies comprises only industrials, i.e. Standard Industrial Classification (SIC) codes 1 to 3999. Out of 129 industrials reporting under Canadian and U.S. regime, accounting and market information for 66 industrials in the period 2001-2004 was collected manually on a monthly basis, overall 2,567 firm-month observations. The final panel data satisfied four data-availability criteria: *(i)* the annual reports are available online from the SEC, SEDAR (the Canadian Security Administrator), or corporate websites, *(ii)* reconciliations from Canadian to U.S. accounting are disclosed in the annual reports, *(iii)* the information is sufficient to obtain the key balance sheet and income statements values under the two accounting regimes, and *(iv)* Datastream discloses share prices. Incomplete reconciliations were the primarily reason for the

final sample coverage and size.

Currently, there is no database containing financial statements under two accounting regimes. Foreign listings disseminate information about material differences between their domestic and U.S. accounting with the 20-F Form. It is not compulsory to provide the complete financial statements under both accounting regimes, and a few firms voluntarily disclosed this information. The study uses a manually collected data set comprising financial information prepared under both Canadian and U.S. accounting. The data collection procedure had the following steps: (i) obtaining the financial results under Canadian accounting, (ii) examining reconciliations from Canadian to U.S. accounting, (iii) detecting accounting items that differ under U.S. accounting, (iv) replacing respective items with the value under U.S. accounting, and (v) performing an accuracy check whether assets balance liabilities under U.S. accounting. The proxy for bankruptcy risk was obtained using Altman's model (1968). Numerous bankruptcy prediction models were suggested over years using different financial accounts and applying different estimation procedures. It is still arguable whether accounting-based bankruptcy prediction models could outperform insolvency estimates obtained with market information. Although accounting information limits by design, for many scholars, the accuracy of these predictions, the bankruptcy literature is still dominated by two accounting-based models suggested by Altman (1968) and Ohlson (1980). They are widely used in other research and in practice because of their good predictive properties up to five years prior to bankruptcy. Book-to-market (B/M) and bankruptcy scores (Z) were computed under Canadian and U.S. accounting. Market data was transformed to Canadian dollars using the annual exchange rates of the Board of Governors of the Federal Reserve System.

To ensure that accounting information, entering bankruptcy estimates, was available, returns are monthly beginning six months after the fiscal year-end. Previous research confirms that financial reports of distress companies are delayed (Ohlson, 1980). Public dissemination of annual reports is usually in the end of the fifth month after the fiscal year-end, even for non-distressed firms. Dichev (1998) uses a six-month lag period. To make the results comparable, this study follows his choice of a dissemination lag. Reported findings are not sensitive to the choice of delay period

as confirmed by robustness checks.

Following Dichev (1998), the statistical tests are Fama-MacBeth regressions. The cross-section variance in realized monthly returns is explained by a proxy for bankruptcy risk (Z), market value (MV), and book-to-market (B/M), using financial information under both Canadian and U.S. accounting, and controlling for firm- and year-specific effects. The study lacks portfolio results because of the limited number of firms that can be assigned into decile portfolios. Dichev (1998) reports not only regression results, but also links the bankruptcy measures with performance delistings. For the period 2001-2005, the SEC reported only three delistings of Canadian firms cross-listed in the U.S. The reason for these delistings was not a bankruptcy procedure. Therefore, it is not possible to compare the performance of Altman's model with actual stock delistings. Moreover, it is not possible to conclude about which of the two accounting regimes, Canadian or U.S. accounting, contains more accurate information in predicting financial distress risk.

The regression analysis was performed not only in the full sample but also in four sub-samples based on: (i) the stock exchange group (*NYSE/AMEX* versus *Nasdaq*), and (ii) the difference between B/M and Z factor values under the two accounting regimes (Z_{us} and B/M_{us} larger versus smaller than Z_c and B/M_c , respectively). The SEC discloses information about the stock exchange trading securities of a foreign issuer. Prior research considers the two stock exchanges significantly different not only in trading tools but also in traded securities. Since firms traded on the two stock exchange groups differ in capital structure, the exchange group controls for listing-specific differences. To examine whether firm characteristics drive accounting differences, the sample was divided into four sub-samples using the factor values obtained under the two accounting regimes. It might be that large differences between Canadian and U.S. accounting is specific to firms of larger size, or higher returns. The "sign" group comparison investigates if firm's management strategically decides about certain accounting methods and their impact on explanatory factors. Moreover, it serves as a robustness test.

Existing research suggests that disclosure prior to the 20-F filing date is likely to diminish the effect of reconciled financial information (e.g., Amir et al., 1993). Past

reconciliation records could improve investors' expectations about the B/M difference between the two regimes³. However, the proxy for bankruptcy risk under two accounting regimes can be obtained only after the release of the 20-F report. Therefore, investors primarily using commercial databases would examine only financial statements under domestic accounting.

3.4 Empirical results

3.4.1 Descriptive statistics

Table 1 contains descriptive statistics for the test variables. Section A illustrates the empirical distribution of the respective variables. Z denotes the estimate of bankruptcy risk which a model suggested by Altman (1968) provides⁴. Altman suggests that there are two critical values, 1.81 and 2.675, distinguishing firms with high risk of bankruptcy (Z lower than 1.81) from unstable firms ("gray" area between 1.81 and 2.675), and the others (Z higher than 2.675). Section B reports how the test variables change in these three groups. There are two variables, Z and B/M , which differ under the two accounting regimes. Section C illustrates what is the average firm profile when Z and B/M under U.S. accounting is larger, equal or smaller than the respective variable obtained with the Canadian financial statements.

The results can be compared to the findings reported by Dichev (1998) (also listed in Table 1). He examines whether a proxy for bankruptcy risk explains stock returns with a sample comprising all industrials traded on the U.S. financial market in the period 1980-1995. The empirical distribution of monthly returns (*Returns*) and market value (*MV*) largely resembles his findings. There is a slight difference as monthly returns are on average lower, whereas *MV* is on average larger, both compared to the other U.S. listings. Nevertheless, *Returns* and *MV* of Canadian industrials are not significantly different from the others listed in the U.S.

[Table 1 about here.]

The other two variables, Z and B/M , both differ under the two accounting regimes.

The distribution of the proxy for bankruptcy risk, Z , is shifted towards the lower values in comparison with the results by Dichev. The median Z estimate is about half of the value in the period 1980-1995, independently of the accounting regime followed. This finding has two possible explanations: (i) Z value decreases over time, or (ii) the sample comprises firms with high bankruptcy risk. Numerous studies, which use the Altman's bankruptcy prediction as a control variable, document that the mean and median value decrease over time. For instance, Erickson et al. (2006) show that the median value differs when there is a fraud accusation. However, its level is significantly lower in the period 1996-2003 (around 0.87), compared to the period covered by Dichev (1998), with median value of 3.56. Therefore, the time period explains the lower distress estimate values. The Z values might be lower also when the sample comprises Canadian issuers in financial distress. However, foreign companies are expected to meet certain listing requirements, and they are usually more profitable than a matching, not cross-listed, firm-pair. Moreover, in the period 2001-2005 the SEC reported only three delistings of Canadian issuers which are not only voluntary but also for a reason different than bankruptcy.

Whereas Z is lower, B/M is, on average, higher in comparison with Dichev's findings. It is difficult to conclude if that makes the sample specific, as both average and median B/M in Dichev (1998) are lower than B/Ms of Canadian industrials. However, prior studies investigating B/M effect on stock pricing suggest that average B/M changes significantly over time (See details about the distribution of B/M in 1968 and 2000, reported by Daniel and Titman, 2006). Moreover, B/M of S&P 500 firms in the late 1980s was not only lower but also less volatile compared with the late 1990s (Source: Datastream). Therefore, the time trend towards larger B/M ratios explains the existing difference when comparing findings across papers.

Altman (1968) suggests two critical values clustering three groups with significantly different financial distress estimates. It is still arguable whether the cut-off points should be adjusted when applied to different time periods. Furthermore, prior research raises the concern that country-specific characteristics, including accounting differences, influence the accuracy of these cut-off points for long-term bankruptcy forecasts. The current study ignores this discussion and illustrates how test vari-

ables differ not only by clusters but also at different level of financial distress. Later regression tests list results for different Z levels.

Firms with "high" risk of bankruptcy tend to be, on average, with negative *Returns*, lower *MV*, higher B/M , and a proxy for bankruptcy risk Z with a negative sign (Section B of Table 1). The U.S. accounting methods influence downwards the estimate of financial distress in comparison with the Canadian accounting (Z_{us} is lower than Z_c). However, the U.S. financial statements do not necessarily affect negatively financial prospects of a firm. Higher values of B/M also signify that a firm might be financially distressed. Although B/M_{us} is larger than B/M_c for the "high" and "low" bankruptcy risk group, it is not for the "gray" area. *Returns* have the largest variance in the cluster with high bankruptcy risk compared to the other two clusters, independently of the accounting regime followed. This does not surprise as a popular measure of risk is the volatility of returns. The variance in B/M is also higher for this group, whereas the variance in *MV* does not change with the insolvency measure. The variance in Z is lower for the "gray" area, as, by design, it considers the firm observations in the range 1.81 - 2.675. Z does not vary differently in the "high" and "low" bankruptcy risk group. The descriptive statistics by risk group suggest that the results are not biased towards more distressed firms, since there are extreme observations on both sides of the Z distribution.

Section C of Table 1 discloses how the test variables differ when B/M obtained with the U.S. financial results is larger, equivalent, or smaller than B/M_c (i.e., "sign" group). On average, *Returns*, *MV*, Z and B/M do not differ significantly when B/M_c is smaller or larger than B/M_{us} . The only difference which this comparison reveals is that the variance in *Returns* differs largely across groups. It is highest when B/M computed with the U.S. financial results is lower than its respective Canadian value (standard deviation in this case is almost double compared to the case when B/M_{us} is larger than B/M_c). Therefore, at this stage it is difficult to conclude if managers strategically decide to follow different accounting methods that change significantly Z and B/M values under the two regimes. Moreover, if there is a choice, it does not depend on firm size, as there is no association between B/M difference under the two regimes and *MV*.

Table 2 presents the correlation between *Returns*, *MV*, *Z* and *B/M* in the sample of Canadian industrials. It contains the Pearson correlation using the Canadian accounting results (lower half of matrixes) together with the same statistics obtained under U.S. accounting (upper half). This comparison reveals if different conclusions about the association between any two variables are possible when using financial results prepared under two accounting regimes. The table not only compares the accounting regimes, but also illustrates how strong is respective correlation across groups. The *t-test* confirms if the mean difference across groups, compared based on the four variables, is statistically different at the 5% level. The results do not change when medians instead of means are used.

[Table 2 about here.]

In general, there is a negative association between *B/M* and the other three variables. The correlation between *Returns*, *MV* and *Z* is positive, likewise is the association between *Z* and *MV* (except of the three cases with a sign reversal). There are three cases when the correlation sign reverses: from a positive, computed with the Canadian financial results, to a negative correlation, when obtained with the variables under the U.S. accounting regime. One can reach different conclusions about the association between *Returns*, *MV* and *Z* for NYSE/AMEX firms when using financial statements under different regimes. Two of the three sign reversals are in this stock exchange group. The correlation between *MV* and Z_{us} in this group is -0.112, whereas it is 0.11 when Z_c replaces Z_{us} . This is the largest difference in the sample across the correlations computed with financial results under the two regimes (the difference is predominantly less than 0.05, in absolute terms).

The distress conjecture suggests that higher risk of bankruptcy is rewarded with higher returns. Using only the correlation sign, the findings of Table 2 do not completely support this conjecture. Firms with higher returns tend to be on average with higher *MV*, lower risk of bankruptcy (larger *Z*) and smaller *B/M*. Larger values of *B/M* and *Z* are associated with financial distress. As *Returns* are positively associated with *Z* and negatively associated with B/M^5 , it is difficult to confirm that the average firm rewards investors for the financial risk.

Table 2 contains also the *t-test* of whether the mean difference, for instance, in *Returns*, Z_{us} and Z_c , across groups is statistically different. The t-statistics confirm that Canadian industrials have on average the same realized monthly stock *Returns*, independently of the U.S. stock exchange they cross-listed their shares. Moreover, monthly returns are not different if using firm clusters based on the accounting difference in Z or B/M . In contrast, the firm size in the six clusters differs significantly at the 5% level, as (i) NYSE and AMEX stock exchanges list firms of larger size compared to Nasdaq, and (ii) larger Z_{us} and B/M_{us} also are positively associated with larger MV . Additionally, firms with larger B/M_{us} have on average lower financial distress estimate. However, it is statistically different only when using the Canadian financial statements. If clusters distinguish more from less insolvent firms (Section C), then the t-statistics obtained under U.S. accounting only is significant at the 5% level. Canadian industrials listed on NYSE/AMEX stock exchanges have on average significantly lower B/M compared to Nasdaq. Extreme observations for Nasdaq firms explain this result. The stock exchange groups are also statistically different compared on median B/M , although in that case B/M is larger for NYSE/AMEX listings.

3.4.2 Regression results

The descriptive statistics reveal that the difference between Z_{us} and Z_c , or B/M_{us} and B/M_c , is generally not very large. However, the regression test can only confirm if this difference contains valuable information in explaining subsequent stock returns. Returns are first explained by MV , Z and B/M , using only Canadian or U.S. financial results. Then the differences between the B/Ms and Zs factor values obtained under the two accounting regimes are included as an explanatory variable (Note that the correlation between the differences and other independent variables is not large and does not lead to multi-collinearity problems). Fixed-effect and first-difference estimation models suggest statistical and economic significance of accounting differences. All estimates are obtained after controlling for difference across time. Robustness test confirms the value-relevance of the accounting difference.

Regression results: Canadian compared to U.S. accounting regime

Table 3 contains the regression results when factors obtained under Canadian or U.S. financial statements explain monthly returns. The full sample is partitioned by the level of financial distress into ten sub-samples. A comparison between them reveals how the marginal effect changes across different bankruptcy risk groups. Furthermore, it illustrates how consistent are reported findings across these groups. Moreover, the sub-sampling shows the dynamic side of the estimates obtained under the two accounting regimes.

[Table 3 about here.]

There are two significant differences across accounting regimes: (i) the distress factor does not contribute significantly to the variance (in returns) explained under Canadian accounting, and (ii) the marginal effect of this factor is estimated to be much larger under U.S. compared to Canadian accounting. The three factors are statistically significant at the 5% level, using the estimates obtained under U.S. financial statements. In contrast, Z under Canadian accounting regime does not explain significantly realized returns (Z_c has a regression coefficient statistically significant at the 10% level in only four out of the ten sub-samples). Furthermore, the explanatory role of Z differs significantly across accounting regimes. After controlling for size and B/M , Z_c is not statistically different. Moreover, the marginal role of Z is significantly larger (i.e., more than doubled) when estimated with the U.S. financial results. The difference across accounting regimes in B/M is not that large.

Independently of the accounting regimes followed, *Returns* are positively associated with B/M and MV . However, the findings are not consistent with the distress conjecture. Higher risk is not necessarily rewarded by higher returns assuming that both Z and B/M proxy correctly financial distress for the Canadian industrials. Monthly returns increase together with financial distress risk that is higher larger B/M and Z . However, large firms tend to be more financially stable compared to small firms. The positive coefficient sign of MV suggests the opposite which contradicts the distress conjecture. An interesting finding is the consistently increasing, over

financial distress, marginal effects of Z and B/M . This result suggests that returns of distressed firms react more to an unit change in book-to-market, or bankruptcy risk, compared to financially stable firms.

Regression results: new explanatory variables

Table 4 and 5 present fixed-effect and first-difference regression results. The two factors, B/M and financial distress, have highly correlated values under the two accounting regimes. This does not allow us to estimate a model where the two B/Ms and Zs explain simultaneously cross-sectional variance in returns (i.e., multilinearity problem). Nevertheless, it is still possible to distinguish the marginal effect of the two factor values. The difference between the factor values obtained under the two accounting regimes is significantly less correlated with other variables (Section D of Table 2 contains the correlation between the difference and the other test variables). Therefore, we can estimate whether accounting reconciliations are informative with a statistical test free of multi-collinearity problems.

[Table 4 about here.]

The fixed-effect estimates confirm that the association between financial distress factor and stock returns is negative and significant, in statistical and economical terms. Other things constant, returns would be 10% lower when the distress factor increases 0.032. The marginal impact of B/M is significant but also positive. One would observe a 10% increase in returns when B/M is larger with 0.027⁶. The firm size has the largest, in magnitude, marginal effect on returns. It is not only positive, but also significant across different sub-samples.

The estimation procedure allows us to compare the marginal effects of the two factors under the two accounting regimes. B/M and size being constant, the marginal effects of both distress measures ($Z_{us}effect$ and $Z_{c}effect$) is negative. Moreover, the bankruptcy risk estimate obtained under U.S. accounting has a larger impact on stock returns (in absolute terms, $Z_{us}effect$ is larger than $Z_{c}effect$). Other things equal, returns would decrease with 10% when Z increases: with 0.122 under U.S.

accounting, or 0.09 under Canadian accounting (full-sample estimates). The distress effect is significant in the full sample, for Nasdaq sub-sample, and for firms with larger distress estimate under Canadian accounting.

The B/M factor is positively associated with returns, although it is insignificant in many sub-samples. In general, it has a larger, absolute effect when obtained under Canadian accounting. Its marginal effect is significant for NYSE/AMEX firms: monthly returns are expected to be larger with 1% when B/M increases with 0.15 under U.S. accounting, or 0.17 under Canadian accounting, other things constant. The B/M effect has a larger, in economic terms, impact in the sub-sample where firms have larger distress estimated under U.S. accounting. We can observe 1% larger returns when B/M_{us} increases with 0.025, or B/M_c - with 0.017.

Table 4 contains the regression results using the fixed-effect estimation procedure (i.e., the intercept in the regression differs by firm). Table 5 reports the regression estimates using the first-difference approach (i.e., without a dummy variable for each firm). The first-difference estimates are unbiased, and often preferred before the fixed-effect estimates. The coefficients capture the time dimension of the marginal effects on returns⁷.

[Table 5 about here.]

The first-difference estimates confirm the findings of the fixed-effect estimation procedure. There is a significant, negative association between returns and the distress factor under the two accounting regimes. The B/M effect is estimated to be also significant, in statistical and economic terms. There are two main differences across estimation procedures: (i) the significance of the B/M and distress effects differ across sub-samples, and (ii) the two procedures give different estimates about the relative economic significance of the $Z_{*effect}$ and $B/M_{*effect}$ under the two accounting regimes. If the distress factor obtained under U.S. accounting decreases between two periods with 0.037, then one would expect an increase in returns of 10%. This factor has a lower economic significance under Canadian accounting. The same increase in returns of 10% would be observable if the distress factor Z_c decreases

with 0.258 (full-sample estimates). The first-difference procedure estimates the B/M effect as significant. However, it is less economically significant compared to the findings using the fixed-effect procedure. Furthermore, the B/M factor under Canadian accounting has a larger effect on returns.

The fixed-effect procedure estimates the both B/M and financial distress effect as significant for the firms with larger Z -factor values under U.S. accounting (in comparison with Canadian accounting). The first-difference procedure, however, confirms a significant effect of the both $Z_{*effect}$ and $B/M_{*effect}$ under the two accounting regimes for the sub-sample in which firms have larger B/M under U.S. accounting. Within this sub-sample, other things constant, a decrease between the two period of 0.013 in Z_{us} would be associated with an increase of 1% in stock returns (for Z_c the change would need to be 0.034). To observe this change in returns, B/M has to increase with 0.35 under U.S. and 0.32 under Canadian accounting.

3.5 Conclusions

This paper re-examines the information content of reported reconciliations between Canadian and U.S. GAAP and concludes about their value-relevance. The accounting differences affect two important factors in explaining stock returns, namely financial distress measures and book-to-market (B/M) values of Canadian cross-listed firms. The difference in factors values obtained under Canadian and U.S. GAAP explain better subsequent stock returns which can improve valuation of Canadian cross-listed firms.

Previous research suggests that the lack of incremental information content in the quantitative reconciliations may be a function of the ability of financial analysts to successfully perform pro forma reconciliations, thus pre-empting a disclosure effect. Moreover, market participants may use a coping mechanism to interpret foreign GAAP earnings and thereby, predict U.S. GAAP earnings by utilizing other sources of information before the release of accounting reconciliations with the 20-F form. This study suggests that there might be sources of accounting differences which are value-relevant and more difficult to predict with prior financial information or cop-

ing mechanisms. Financial distress measures contain accounting information beyond earnings and shareholder's equity that can affect significantly bankruptcy estimates obtained under alternative GAAPs. Only with the release of 20-F form, financial analysts can estimate how likely could be a bankruptcy procedure using a model based on accounting information (e.g., Altman's bankruptcy prediction model). This explains how it is possible to find a factor (i.e., the difference between the financial distress estimated under U.S. and Canadian GAAP) based on public information that is significant in explaining stock returns.

A more detailed analysis of the accounting reconciliations and their impact on ratios included in bankruptcy prediction models can reveal which are specifically the regulatory differences between U.S. and Canadian GAAP that lead to value-relevance. Further research can also conclude whether the cut-off points that distinguish healthy from distress firms should be the same under the two accounting regimes. Moreover, it remains an empirical question if the difference in book-to-market and financial distress measures obtained under U.S. and Canadian accounting regime can open a possibility for arbitrage. This study suggests that the debate about U.S.-Canada accounting differences is not outdated and a number of interesting questions still need an answer.

Endnotes

¹ The terms "bankruptcy risk", "insolvency" and "financial distress" have a different meaning. However, for the purpose of this study they are used as interchangeable.

² Conservative accounting stands for accepted accounting methods and practices which keep the book value of net assets relatively low. For instance, LIFO valuation method for inventory is conservative, if inventory costs have risen in the past. Inventories can be valued on the LIFO basis under U.S. GAAP, but this practice is prohibited under IFRS. Canadian GAAP allows LIFO accounting, but it is more common for Canadian companies to use FIFO, or current costs of inventories (See, e.g., Nobes, 2001 for a complete review of national accounting rules in 53 countries).

³ This might be possible, if it is not the first-filler reconciliation, the accounting regime followed does not change between periods, or the trend of change is predictable. Additionally, it is a necessary condition that the firm chooses the same accounting methods over time. It is most likely that only the direction but not the magnitude of this difference would be predicted correctly.

⁴ Altman's (1968) model is: $Z = 1.2(\text{working capital}/\text{total assets}) + 1.4(\text{retained earnings}/\text{total assets}) + 3.3(\text{earnings before interest and taxes}/\text{total assets}) + 0.6(\text{market value of equity}/\text{book value of total liabilities}) + (\text{sales}/\text{total assets})$.

⁵ Dichev (1998) also reports correlation between the same four variables. In contrast to the findings of this study, he documents correlation signs consistent with the distress conjecture: positive between *Returns* and *B/M* and negative between *Returns* and *Z*. However, he confirms with the regression results that bankruptcy risk is not necessarily rewarded by higher risk.

⁶ The calculations are based on the regression coefficients obtained with the full sample where the two differences are included (i.e., second regression in Table 4).

⁷ The fixed-effect estimates are obtained when returns are regressed against the factor values, i.e. both the independent and dependent variables are in levels. The first-difference regression has as a dependent variable the *change* in returns from period $t - 1$ to period t . Both independent and dependent variables are the first difference across time. Although the two estimation procedures are usually compared,

their results and interpretation differ. The fixed-effect procedure uses level values (e.g., returns of 1%, or 5%), whereas the first-difference procedure disregards this information and examines the change in time (e.g., returns increase from period $t - 1$ to period t with 1%, or 5%).

References

- Altman, E. 1968. "Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy." *Journal of Finance*, vol. 22: 589-610.
- Amir, E., T. Harris, and E. Venuti. 1993. "A Comparison of the Value-Relevance of U.S. Versus Non-U.S. GAAP Accounting Measures Using Form 20-F Reconciliations." *Journal of Accounting Research*, vol. 31: 230-264.
- Ball, R., A. Robin, and J. Wu. 2000. "Accounting Standards, the Institutional Environment and Issuer Incentives: Effect on Accounting Conservatism in China." *Asia Pacific Journal of Accounting and Economics*, vol. 7: 71-96.
- Bandyopadhyay, S., J. Hanna, and G. Richardson. 1994. "Capital Market Effects of US-Canada GAAP Difference." *Journal of Accounting Research*, vol. 32: 262-277.
- Barth, M., and G. Clinch. 1996. "International Accounting Differences and Their Relation To Share Price Evidence From U.K., Australian, and Canadian Firms." *Contemporary Accounting Research*, vol. 13, no. 1: 135-170.
- Baumol, W., and B. Malkiel. 1993. Redundant Regulation of Foreign Security Trading and U.S. Competitiveness. *Journal of Applied Corporate Finance*, vol. 5: 19-27.
- Basu, S. 1997. "The Conservatism Principle and Asymmetric Timeliness of Earnings." *Journal of Accounting and Economics*, vol. 24: 3-37.
- Biddle, G., and S. Saudagaran. 1989. "The Effects of Financial Disclosure Levels on Firms' Choices Among Alternative Foreign Stock Exchange Listings." *Journal of International Financial Management and Accounting*, vol. 1: 55-87.
- Chan, J., and G. Seow. 1996. "The Association Between Stock Returns and Foreign GAAP Earnings Versus Adjusted to U.S. GAAP." *Journal of Accounting and Economics*, vol. 21: 139-158.
- Choi, F., and R. Levich. 1991. "International Accounting Diversity: Does It Affect Market Participants?" *Financial Analysts Journal*, vol. 47, no. 4: 73-82.

Daniel, K., and S. Titman. 2006. "Market Reaction to Tangible and Intangible Information." *Journal of Finance*, vol. 61, no. 4: 1604-1643.

Dichev, I. 1998. "Is the Risk of Bankruptcy a Systematic Risk?" *Journal of Finance*, vol. 53: 1113-1148.

Easton, P., and J. Pae. 2004. "Accounting Conservatism and the Relation Between Returns and Accounting Data." *Review of Accounting Studies*, vol. 9: 495-521.

Erickson, M., M. Hanlon, and E. Maydew. 2006. "Is There a Link between Executive Equity Incentives and Accounting Fraud?" *Journal of Accounting Research*, vol. 44, no. 1: 113-143.

Fama, E., and K. French. 1992. "The Cross-section of Expected Stock Returns." *Journal of Finance*, vol. 47: 427-465.

Fama, E., and K. French. 1993. "Common Risk Factors in the Returns on Stocks and Bonds." *Journal of Financial Economics*, vol. 33: 3-52.

Francis, J., R. LaFond, P. Olsson and K. Schipper. 2005. "The Market Pricing of Accruals Quality." *Journal of Accounting and Economics*, 39, 295-327.

Frost, C., and W. Kinney. 1996. "Disclosure Choices of Foreign Registrants in the United States." *Journal of Accounting Research*, vol. 34: 67-84.

Frost, C., and G. Pownall. 1994. "Accounting Disclosure Practices in the United States and the United Kingdom." *Journal of Accounting Research*, vol. 32, no. 1: 75-102.

Hora, J., R. Tondkar, and R. McEwen. 2003. "Does Trading Volume Detect Information Content in Earnings Reconciliations of Foreign Firms?" *Journal of International Accounting, Auditing and Taxation*, vol. 13: 71-87.

Lang, M., J. Raedy, and W. Wilson. 2006. "Earnings Management and Cross Listing: Are Reconciled Earnings Comparable to US Earnings?" *Journal of Accounting and Economics*, vol. 42: 255-283.

Nobes, C. 2001 Ed., GAAP 2001 - A Survey of National Accounting Rules Benchmarked Against International Accounting Standards. IFAD.

Ohlson, J. 1980. "Financial Ratios and the Probabilistic Prediction of Bankruptcy." *Journal of Accounting Research*, vol. 18: 109-131.

Siegel, J. 2005. "Can Foreign Firms Bond Themselves Effectively by Renting U.S. Securities Laws?" *Journal of Financial Economics*, vol. 75: 319-359.

Sloan, R. 1996. "Do Stock Prices Fully Reflect Information in Accruals and Cash Flows

about Future Earnings?" *Accounting Review*, vol. 71, no. 3: 289-315.

Table 1. Descriptive Statistics for the Test Variables^a

Section A: Full sample ^b									
	Dichev (1998)	<i>Mean</i>	<i>StdD</i>		<i>P5</i>	<i>P25</i>	<i>P50</i>	<i>P75</i>	<i>P95</i>
<i>Returns</i>	0.91	0.83	21.64		-23.11	-8.00	-0.07	6.73	29.00
<i>MV</i>	4.07	5.73	2.44		1.70	3.79	5.63	7.63	9.75
<i>Z_{us}</i>	5.31	2.20	4.14		-5.06	0.85	1.89	3.46	10.03
<i>Z_c</i>		2.34	4.36		-4.23	1.02	1.95	3.48	10.51
<i>B/M_{us}</i>	0.76	2.72	5.35		0.15	0.58	1.33	2.70	9.58
<i>B/M_c</i>		2.79	5.59		0.19	0.61	1.36	2.72	9.24
Section B: Sample partitioned by financial distress ^c									
	High risk of bankruptcy			"Gray" area			Low risk of bankruptcy		
	<i>Mean</i>	<i>StdD</i>	<i>P50</i>	<i>Mean</i>	<i>StdD</i>	<i>P50</i>	<i>Mean</i>	<i>StdD</i>	<i>P50</i>
<i>Returns</i>	-0.28	26.52	-1.49	0.56	17.06	-0.12	2.16	16.51	0.01
<i>MV</i>	4.96	2.52	4.45	5.90	1.95	6.03	6.46	2.19	6.40
<i>Z_{us}</i>	-0.73	3.02	0.63	2.22	0.25	2.20	6.01	3.34	4.89
<i>Z_c</i>	-0.45	3.09	0.87	2.26	0.26	2.29	6.31	3.58	5.15
<i>B/M_{us}</i>	3.87	7.01	2.07	3.81	5.33	1.79	1.10	1.60	0.58
<i>B/M_c</i>	4.02	7.42	2.14	3.80	5.29	1.78	1.11	1.59	0.60
Section C: Sample partitioned by the difference in <i>B/M</i> ^c									
	<i>B/M_{us} > B/M_c</i>			<i>B/M_{us} ≡ B/M_c</i>			<i>B/M_{us} < B/M_c</i>		
	<i>Mean</i>	<i>StdD</i>	<i>P50</i>	<i>Mean</i>	<i>StdD</i>	<i>P50</i>	<i>Mean</i>	<i>StdD</i>	<i>P50</i>
<i>Returns</i>	0.73	15.58	0.00	0.84	20.54	-0.20	0.89	25.20	-0.13
<i>MV</i>	6.65	2.25	6.50	4.19	1.99	4.19	5.96	2.40	6.09
<i>Z_{us}</i>	2.03	3.11	2.21	2.19	5.46	2.25	2.31	3.88	1.54
<i>Z_c</i>	2.32	2.69	2.44	1.78	6.39	2.18	2.64	3.82	1.67
<i>B/M_{us}</i>	3.32	4.94	1.61	1.74	2.71	1.05	2.87	6.47	1.36
<i>B/M_c</i>	3.28	4.90	1.59	1.74	2.71	1.05	3.05	6.91	1.45

Notes: ^a *Returns* are monthly returns for Canadian industrials listed on U.S. stock exchanges. *MV* is log of monthly-end price multiplied by the number of ordinary shares in issue. The two test variables, *Z* and *B/M*, are different under different accounting regimes. *Z* is the measure of bankruptcy risk from Altman (1968). Higher values of *Z* stand for lower probability of bankruptcy. *B/M* is book value of total assets divided by monthly-end price multiplied by the number of ordinary shares in issue. *StdD* is the standard deviation, while P5, P25, P50, P75 and P95 are the 5th, 25th, 50th, 75th and 95th percentiles of the respective distributions. The sample comprises of 2,567 firm-month observations.

^b Section A contains the descriptive statistics for the full sample. Altman suggests that there are critical values, 1.81 and 2.675, which distinguish firms with high risk of bankruptcy (*Z* lower than 1.81) from undetermined ("gray" area between 1.81 and 2.675) and the others (*Z* - higher than 2.675).

^c Section B presents the summary statistics for the three *Z*-groups. Section C illustrates how the test variables differ when B/M_{us} is larger, equal or smaller than B/M_c .

Table 2. Pearson Correlation Matrix of the Test Variables

Section A. Sample partitioned by stock exchange ^a										
NYSE/AMEX					NASDAQ				<i>t</i> -test	
	<i>Return</i>	<i>MV</i>	<i>Z_{us}</i>	<i>B/M_{us}</i>	<i>Return</i>	<i>MV</i>	<i>Z_{us}</i>	<i>B/M_{us}</i>	Canadian	U.S.
<i>Return</i>	1	0.128	-0.040	-0.145	1	0.047	0.036	-0.068	(0.312)	
<i>MV</i>	0.128	1	-0.112	-0.308	0.047	1	0.481	-0.153	(-46.908)	
<i>Z_c</i>	0.005	0.110	1	-0.235	0.048	0.422	1	-0.150	(-1.511)	(-5.16)
<i>B/M_c</i>	-0.152	-0.319	-0.116	1	-0.068	-0.160	-0.176	1	(6.677)	(6.72)
Section B. Sample partitioned by the difference in <i>B/M</i> ^b										
<i>B/M_{us}</i> > <i>B/M_c</i>					<i>B/M_{us}</i> < <i>B/M_c</i>				<i>t</i> -test	
	<i>Return</i>	<i>MV</i>	<i>Z_{us}</i>	<i>B/M_{us}</i>	<i>Return</i>	<i>MV</i>	<i>Z_{us}</i>	<i>B/M_{us}</i>	Canadian	U.S.
<i>Return</i>	1	0.126	0.058	-0.122	1	0.002	-0.007	-0.073	-0.152	
<i>MV</i>	0.126	1	0.188	-0.311	0.002	1	0.254	-0.267	(6.289)	
<i>Z_c</i>	0.045	0.172	1	-0.034	0.032	0.142	1	-0.255	(-1.985)	(-1.72)
<i>B/M_c</i>	-0.121	-0.311	-0.094	1	-0.072	-0.273	-0.278	1	(0.804)	(1.65*)
Section C. Sample partitioned by the difference in <i>Z</i> ^b										
<i>Z_{us}</i> > <i>Z_c</i>					<i>Z_{us}</i> < <i>Z_c</i>				<i>t</i> -test	
	<i>Return</i>	<i>MV</i>	<i>Z_{us}</i>	<i>B/M_{us}</i>	<i>Return</i>	<i>MV</i>	<i>Z_{us}</i>	<i>B/M_{us}</i>	Canadian	U.S.
<i>Return</i>	1	0.059	0.029	-0.100	1	0.029	0.012	-0.060	(-0.003)	
<i>MV</i>	0.059	1	0.117	-0.200	0.029	1	0.360	-0.247	(-5.864)	
<i>Z_c</i>	0.047	0.214	1	-0.208	0.028	0.267	1	-0.247	(1.351)	(-6.96)
<i>B/M_c</i>	-0.100	-0.198	-0.106	1	-0.060	-0.251	-0.222	1	(0.080)	(-0.05)
Section D. Correlation matrix for variables obtained under the two regimes ^b										
	<i>Z_c</i>	<i>Z_{us}</i>	ΔZ_c	ΔZ_{us}	<i>DifZ</i>					
<i>Z_c</i>	1									
<i>Z_{us}</i>	0.844	1								
ΔZ_c	0.041	0.025	1							
ΔZ_{us}	0.031	0.008	0.976	1						
<i>DifZ</i>	-0.361	0.195	-0.031	-0.043	1					
	<i>B/M_c</i>	<i>B/M_{us}</i>	$\Delta B/M_c$	$\Delta B/M_{us}$	<i>DifBM</i>					
<i>B/M_c</i>	1									
<i>B/M_{us}</i>	0.999	1								
$\Delta B/M_c$	0.244	0.241	1							
$\Delta B/M_{us}$	0.242	0.240	0.999	1						
<i>DifB/M</i>	-0.696	-0.661	-0.209	-0.202	1					

Notes: ^a *Returns* are monthly returns for Canadian industrials listed on U.S. stock exchanges. *MV* is log of monthly-end price multiplied by the number of ordinary shares in issue. Higher values of *Z* stand for lower probability of bankruptcy. *B/M* is book value of total assets divided by monthly-end price multiplied by the number of ordinary shares in issue. The two variable, *Z* and *B/M*, are different under the two accounting regimes. The lower half of the matrix contains the Pearson correlation using *B/M* and *Z* under Canadian accounting regimes, whereas the upper half - using the two variables obtained with the accounting results prepared under U.S. GAAP. This statistics is presented by stock exchange (Section A).

^b The correlation is computed when *B/M* or *Z* differ under the two accounting regimes (Sections B and C). The t-statistics illustrates if the mean difference between respective groups is statistically significant at the 5% level (the t-value with * is different at the 10% level). Section D reports the correlation between between *Z* and *B/M* factor values obtained under the two accounting regimes.

Table 3. Regression results: B/M and Z under different GAAPs

	U.S. GAAP						Canadian GAAP						No. obs
	$b_1(Z)$	t_{b1}	$b_2(B/M)$	t_{b2}	$b_3(MV)$	t_{b3}	$b_1(Z)$	t_{b1}	$b_2(B/M)$	t_{b2}	$b_3(MV)$	t_{b3}	
Full sample	-0.37	(-2.02)	0.34	(2.43)	9.06	(7.61)	-0.20	(-1.08)	0.31	(2.29)	8.63	(2.29)	2567
For $Z \leq$													
1.9	-1.57	(-2.49)	0.96	(4.47)			-0.57	(-0.98)	0.80	(3.98)			1287
1.7	-1.63	(-2.43)	1.00	(4.31)			-0.59	(-0.95)	0.82	(3.70)			1144
1.5	-1.75	(-2.41)	1.05	(4.22)			-0.69	(-1.05)	0.87	(3.74)			995
1.3	-2.08	(-2.70)	1.14	(4.28)			-1.07	(-1.49)	1.00	(3.96)			877
1.1	-2.58	(-3.11)	1.23	(3.94)			-1.38	(-1.75*)	1.10	(3.65)			737
0.9	-2.50	(-2.81)	1.25	(3.76)			-1.40	(-1.66*)	1.08	(3.40)			652
0.7	-2.71	(-2.87)	1.29	(3.64)			-1.40	(-1.60)	1.07	(3.00)			606
0.5	-2.83	(-2.88)	1.38	(3.68)			-1.36	(-1.48)	1.11	(3.05)			551
0.3	-3.12	(-3.02)	1.41	(3.66)			-1.59	(-1.67*)	1.15	(3.10)			521
0.1	-3.20	(-2.99)	1.42	(3.57)			-1.64	(-1.67*)	1.18	(3.09)			495

Notes: The model estimated with a fixed-effect panel-data regression, controlling for the year effect with dummy variables, is as follows:

$$Return_s = b_0 + b_1^*Z_s + b_2^*B/M_s + b_3^*MV + Control_{time} + e,$$

where s differs across the two accounting regimes.

The regression coefficients for the full sample and 20 sub-samples are reported. Z values lower than 1.81 distinguish firms in financial distress from others, as suggested by Altman. For robustness test, the table includes different cut-off points. The t-statistics in *italics* is statistically significant at the 5% level, whereas the t-values with * are significant at the 10% level. The number of observations per each sub-sample is listed separately.

Table 4. Regression results: fixed-effect estimations

	Regression results					Calculations		
	$b_1(Z_{us})$	$b_2(B/M_{us})$	$b_3(MV)$	$b_4(DiffZ)$	$b_5(DiffB/M)$	$Z_{us}effect$	$Z_c effect$	$B/M_{c}effect$
Full sample	-0.34 (-1.77)	0.38 (2.61)	9.32 (7.41)	-0.88 (-1.90)		-1.22	-0.88	0.38
	-0.32 (-1.68*)	0.27 (1.37)	9.16 (7.20)	-0.90 (-1.92*)	-1.88 (-0.80)	-1.22	-0.90	-1.60 -1.88
NYSE/AMEX	-0.19 (-0.63)	-1.58 (-2.01)	3.42 (1.66*)	-0.28 (-0.57)	17.04 (1.83*)	-0.47	-0.28	15.45
Nasdaq	-0.57 (-2.19)	0.38 (1.56**)	10.73 (6.19)	-2.21 (-2.45*)	-1.81 (-0.65)	-2.78	-2.21	-1.43 -1.81
$Z_{us} \succ Z_c$	-0.16 (-0.34)	0.14 (0.40)	8.99 (3.41)	-1.82 (-1.70*)	-5.90 (-0.47)	-1.98	-1.82	-5.76 -5.90
$Z_{us} \prec Z_c$	-0.99 (-3.33)	0.88 (2.63)	13.71 (6.97)	-2.48 (-2.66)	1.65 (0.49)	-3.46	-2.48	2.53
$B/M_{us} \succ B/M_c$	0.98 (1.72*)	-0.22 (-0.73)	6.62 (3.40)	-0.47 (-0.44)	-15.16 (-1.01)	0.50	-0.47	-15.38 -15.16
$B/M_{us} \prec B/M_c$	-0.07 (-0.18)	0.12 (0.31)	8.12 (3.72)	-0.50 (-0.82)	-3.08 (-0.69)	-0.57	-0.50	-2.96 -3.08

Notes: The fixed-effect regression coefficients are obtained as follows:

$$\text{Returns} = b_0 + b_1 * Z_{us} + b_2 * B/M_{us} + b_3 * MV + b_4 * DifZ + b_5 * DifB/M + \text{Control}_{time} + e_{,,}$$

where the underscript *us* stands for financial distress (*Z*) and book-to-market (*B/M*) factor under U.S. accounting. *DifZ* is the difference between distress factor values obtained under the two accounting regimes, i.e., Z_{us} minus Z_c . *DifB/M* is the difference between book-to-market values obtained under the two accounting regimes, i.e., B/M_{us} minus B/M_c . The t-statistics in *italics* is statistically significant at the 5% level, with with * - at the 10% level, and with ** - at the 15% level. The $Z_{*effect}$ and $B/M_{*effect}$ are calculated as follows: $Z_{us}effect - b_1$ added to b_4 , $Z_c effect - b_4$, $B/M_{us}effect - b_2$ added to b_5 , and $B/M_c effect - b_5$. The effect values **in bold** are statistically, individually or jointly, significant at the 5% level.

Table 5. Regression results: first-difference estimates

	Regression results						Calculations			
	$b_1(\Delta Z_{us})$	$b_2(\Delta B/M_{us})$	$b_3(\Delta MV)$	$b_4(\Delta DifZ)$	$b_5(\Delta difB/M)$	$AdjR^2$	$Z_{us\ effect}$	$Z_{c\ effect}$	$B/M_{us\ effect}$	$B/M_{c\ effect}$
Full sample	2.33 (4.26)	0.67 (2.26)	76.12 (22.85)	-2.53 (-1.53**)		0.31	-0.21	-2.53	0.67	
	2.26 (4.12)	1.35 (2.99)	77.77 (22.86)		11.67 (1.96)	0.31	2.26		13.02	11.67
	2.21 (4.02)	1.34 (2.98)	77.54 (22.77)	-2.58 (-1.55**)	11.79 (1.98)	0.31	-0.37	-2.58	13.13	11.79
NYSE/AMEX	0.85 (0.72)	1.11 (0.62)	90.53 (12.55)	-4.65 (-1.27)	-64.71 (-2.42)	0.41	-3.80	-4.65	-63.60	-64.71
Nasdaq	2.51 (3.70)	1.47 (2.72)	74.74 (17.25)	-2.02 (-0.98)	15.08 (2.11)	0.29	0.49	-2.02	16.55	15.08
$Z_{us} > Z_c$	3.70 (3.99)	0.22 (0.30)	59.42 (10.16)	1.99 (0.58)	-30.25 (-1.56**)	0.31	5.69	1.99	-30.04	-30.25
$Z_{us} < Z_c$	1.11 (1.52**)	1.28 (2.11)	89.59 (20.34)	-3.07 (-1.58**)	8.57 (1.16)	0.31	-1.95	-3.07	9.85	8.57
$B/M_{us} > B/M_c$	0.73 (0.77)	0.11 (0.12)	95.09 (16.66)	2.52 (0.89)	-9.08 (-0.48)	0.45	3.25	2.52	-8.98	-9.08
$B/M_{us} < B/M_c$	2.09 (1.96)	2.87 (3.88)	76.77 (14.77)	-3.43 (-1.49**)	32.57 (3.45)	0.26	-1.33	-3.43	35.44	32.57

Notes: The first-difference regression coefficients are obtained as follows:

$$\Delta Returns = b_0 + b_1^* \Delta Z_{us} + b_2^* \Delta B/M_{us} + b_3^* \Delta MV + b_4^* \Delta DifZ + b_5^* \Delta DifB/M + Control_{time} + e,,$$

where the underscript *us* stands for financial distress (*Z*) and book-to-market (*B/M*) factor under U.S. accounting. $\Delta DifZ$ is the first-difference between distress factor values obtained under the two accounting regimes, i.e., $\Delta(Z_{us}$ less $Z_c)$. $\Delta DifB/M$ is the first difference between book-to-market values obtained under the two accounting regimes, i.e., $\Delta B/M_{us}$ less $\Delta B/M_c$. The t-statistics in *italics* is statistically significant at the 5% level, with with * - at the 10% level, and with ** - at the 15% level. The $Z_{*effect}$ and $B/M_{*effect}$ are calculated as follows: $Z_{us}effect - b_1$ added to b_4 , $Z_c effect - b_4$, $B/M_{us}effect - b_2$ added to b_5 , and $B/M_c effect - b_5$. The effect values **in bold** are statistically, individually or jointly, significant at the 5% level.