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The Regulatory Effect on the Performance of Financial Analysts: Time Series from Two Different Legal Systems

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Abstract

The focus of this paper is the relationship between regulatory settings and financial analysts' performance, which is examined by studying the level of shareholder protection and the performance of financial analysts in two countries with different legal origins. By using a newly constructed index to measure shareholder protection, we are able to analyze how changes in shareholder protection over time can affect analysts' performance. By comparing two countries with different legal traditions (the United Kingdom (UK) and Sweden), we are also able to assess whether the underlying legal origin is an influential factor. The results show that increased shareholder protection improves forecast accuracy in both the UK and Sweden, supporting the idea that stronger shareholder protection regulations improve analysts' performance whether the legal context is rooted in common law or Scandinavian civil law tradition. The findings also indicate that strengthened shareholder protection decreases forecast dispersion in Sweden and forecast bias in the UK, further supporting the idea that stronger shareholder protection improves analysts' performance even though the results differed across legal contexts. We did, however, find a substitution effect in both countries: Strengthened shareholder protection makes analysts' services less valuable to investors, thus leading to a reduction in the number of analysts. Our main conclusion is that changes in shareholder protection affect the performance of analysts irrespective of the country's legal origin, i.e. common law or Scandinavian civil law. However, legal origin seems to have an impact on the magnitude of analysts' performance based on changes in shareholder protection.

Keywords: Shareholder protection; Financial analysts; Regulatory changes; Forecast accuracy; Legal origin

Introduction

Schipper [1] and Revsine et al. [2] argue that analysts are considered among the most influential users of financial reports and among the most important information intermediaries between firms and investors. In light of their information-processing ability and access to resources, they are typically viewed as sophisticated users of accounting information and less likely to misunderstand the implications of such information [1,3]. Managers are also less likely to issue fraudulent financial reports when analysts can inspect those reports. A consequence of this conception is market participants regard inefficient information processing by analysts as strong evidence of overall market inefficiency. This has led to a stream of research focusing on analysts and the importance of the regulatory settings when it comes to analysts' role, behavior and performance [4-12]. Several studies have used the level of legal protection of shareholders as a variable, and a number of these have shown that it has an impact on analysts' performance. This variable has also been connected to a discussion of a differentiation between countries based on their legal origingrounded in the legal origin theory advanced by La Porta, et al. [13]. Many researchers suggest that analysts in common-law countries play a more important role and perform better than analysts in civil-law countries. Their arguments are based on studies analyzing the relationship between different aspects of analysts' performance and a country's level of legal protection [4,5,14,15].

A common denominator in most prior studies highlighting the impact of shareholder protection is the use of either "Legal Enforcement" or the anti-director rights (LLSV) index from La Porta, et al. [13] as a proxy for the level of investor protection in a country and, in some cases, as a way to categorize a country as either a strong investor protection country or a weak investor protection country. Both Legal Enforcement and the LLSV are based on cross-sectional data, which makes them relevant for classifying countries. Previous studies using these indexes, however, are lacking in one important aspect because they do not take into consideration the fact that shareholder protection regulations change over time in most countries [16-21].The validity of the legal origin theory has also been questioned lately by several scholars and the idea that historical roots will exert powerful impact on today's market is far from obvious [22-26]

In this study we: 1) overcome the earlier shortcoming using a static index by using times series analyses of shareholder protection to investigate the relationship between the level of shareholder protection and analysts' performance, and 2) challenge the legal origin hypothesis by looking at two countries (the UK and Sweden) with a similar pattern of shareholder protection regulation development but different legal origins as expressed in the legal origin theory. Our main conclusion is that strengthened shareholder protection improves analysts' ability to reduce information asymmetry, a deduction based on significant results showing that strengthened shareholder protection improves forecast accuracy in both countries. We do, however, find some differences between the countries in terms of the effect of strengthened shareholder protection on analysts' performance. For Sweden increased shareholder protection decreased forecast dispersion, whereas in the UK it decreased forecast bias. An interpretation of this could be that strengthened shareholder protection has different impacts on analysts working within different legal traditions. In addition, we

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found a substitution effect in both Sweden and the UK: Strengthened shareholder protection makes analysts' services less valuable, leading to a reduction in the number of analysts following the firms. In other words, as analysts' performance increases due to stronger shareholder protection, their monitoring role, i.e. monitoring firms by interpreting public information and gathering private information, becomes less beneficial; thus, the substitution effect renders them less useful to investors. However, in light of the decrease in information asymmetry, it seems obvious that investors' need to use analysts' services would decline. Overall our results indicate that legal origin matters. Legal origin seems to have an impact on the magnitude of analysts' performance based on changes in shareholder protection. We find significantly different impact on changes in shareholder protection between UK and Sweden concerning analyst's performance.

This study makes notable contributions to the existing literature. First, it adds to the limited international research on financial analysts' role by using a newly constructed index to study changes in shareholder protection over time within a given context. This is an important contribution because earlier empirical studies in the field largely used the static anti-directors rights LLSV or the "Legal Enforcement" [13] index when examining analysts' forecasts over several years. Our study also contributes to more nuanced results when it comes to the impact of shareholder protection and the influence of a countries legal environment.

The remainder of this paper is organized as follows: First we present the theoretical foundations for our hypotheses and look at prior studies analyzing the relationship between shareholder protection indexes and analysts' behavior/performance. We next provide a background to the distinctions between the countries' legal contexts and follow this with a more thorough discussion of the common-law and the Scandinavian-law contexts and their characteristics and differentiations vis-à-vis legal and institutional settings, especially distinctions in the regulations concerning shareholder protection. We then explain the research design and methodology. This is followed by a presentation of the results and, finally, some concluding thoughts.

Earlier Research and Theory Development

Within accounting research there is significant focus on the importance that legal and institutional settings have for reducing information asymmetry. For example, changes in both legislation and the fundamental institutional environment have been shown to be linked to accounting quality. Several contributions within the international accounting literature show that accounting quality is higher in countries with a common-law origin than in countries with a code-law origin [17,18,20]. In one stream of research the difference has been linked to enforcement and its role for the users of accounting information. For example, Francis, et al. [27] and Hope [7] found that common-law countries have stronger enforcement of accounting standards than do code-law countries, and Hope [7] argues that strong enforcement of accounting standards encourages (or forces) managers to follow the accounting rules that are in place (thereby reducing analysts' "accounting uncertainty"). In addition, strong shareholder mechanisms both address and facilitate the possibility of litigation against managers and auditors [28]. Based on their examination of the impact of the mandatory introduction of International Financial Reporting Standards (IFRS) in Europe, Byard, et al. [29] support the notion that the legal system and the enforcement mechanisms in a given country affect the quality of the accounting reports that analysts use to generate forecasts. They found that analysts' forecast errors and forecast dispersion were affected only in countries that had both strong enforcement regimes and domestic accounting standards that differed significantly from IFRS as a starting point.

These studies highlight the relationship between a market's regulatory setting and its efficiency and also emphasize analysts' performance as a measure of reducing information asymmetry. Thus, we have reason to expect that changes in regulation designed to strengthen investor protection will lead to greater reduced information asymmetry; furthermore, it seems reasonable to analyze countries with different legal origins.

Hypothesis

Analysts' performance can be assessed by looking at several different variables. In this paper we choose four variables related to the discussion about information asymmetry. In order to make a forecast, an analyst processes a lot of information from the firm; the degree of accuracy is therefore highly related to the degree of asymmetry of that information. Thus, forecast accuracy, which is the most used variable for measuring analysts' performance [3], is selected as our first performance variable. Since the literature also suggests that forecast dispersion could be seen as a measure of information asymmetry [30], forecast dispersion is our second variable. Earlier studies also suggest a positive relationship between our first variable, forecast accuracy, and the number of analysts following a firm [4,11]. Our third performance variable is therefore the number of analysts. Our fourth variable is forecast bias. Empirical studies suggest that analysts have an incentive to issue optimistic forecasts so as to improve their relationship with management; their motivation is to be in a position to obtain private information when the benefits of doing so are greatest, namely, when earnings are unpredictable [31]. Bias can therefore be seen as a conscious way through which analysts increase information asymmetry. Below we examine these variables more closely within the context of different legal origins and use them to generate four hypotheses that will enable us to assess analysts' performance both within each country and across the two.

Analysts' forecast accuracy: Several studies use analysts' forecast accuracy to examine analysts' performance and its relationship to the legal and institutional settings. For example, Barniv et al. [5], Basu et al. [32], Ashbaugh et al. [6], and Hope [7,8] offer evidence that the accuracy of analysts' earnings forecasts varies around the world and that such variation relates positively to disclosure practices and investor protection. Barniv et al. [5] found that analysts in common-law countries outperform their peers in civil-law countries and therefore suggest an association between legal and financial reporting environments and analysts´ forecast behaviour. Analysts may also have greater incentives to forecast accurately in well-developed capital markets (strong shareholder protection countries), where investors may exhibit greater demand for earnings forecasts [5]. Chang et al. [4] studied the extent and accuracy of analysts' activity across 47 countries around the world and found forecast accuracy to be lower in civil-law countries than in common-law countries. They also found differences between common-law and civil-law countries when it comes to both the presence of analysts and their performance.

In a sample of 22 countries, Hope [7] investigated the relationship

between analysts' earnings forecast accuracy and the extent of annual report disclosure as well as the relationship between forecast accuracy and the degree of enforcement of accounting standards. He suggests that in countries with strong shareholder protection, analysts perform better when accounting standards are routinely enforced and their predictions are more accurate. And, finally, Lang et al. [12] find that the relationship between firm value and the interaction of analyst coverage and concentrated ownership is more positive in countries with weak shareholder protection than in those with strong shareholder protection. What is especially interesting is that both Hope [7] and Lang et al. [12] emphasize shareholder protection as a means of differentiating countries and note that this differentiation has an effect on the quality of analysts' forecast performance.

In summary, previous studies suggest that institutional differences among countries in terms of shareholder protection may influence analysts' forecast accuracy. Therefore, we propose our first performance hypothesis as follows:

H 1: There is a positive relationship between analysts' earnings forecast accuracy and the level of shareholder protection.

Analysts' forecast dispersion: Forecast dispersion (measured as the standard deviation in analysts' forecasts), a signal of the extent of analysts' disagreement about a firm's upcoming earnings, can be used as a proxy for investor uncertainty prior to the release of key information [3]. According to Krishnaswami and Subramaniam [30], this dispersion is a measure of information asymmetry. They claim that when information asymmetry between a firm and its market is high, it is difficult for the market to evaluate or predict the firm's performance. Lang and Lundholm [33] provide evidence for the relationship between disclosure and decreased information asymmetry. Firms with more informative disclosure policies have a larger analyst following, more accurate earnings forecasts, less dispersion among those forecasts, and less volatility in forecast revisions. Firms that provide firm-specific information, in particular, have more accurate earnings forecasts and less forecast dispersion. Based on this we assume that if public information is analysts' primary source of facts and figures, there should be less dispersion because that information is available to all. We therefore state the following as our second hypothesis:

H 2: There is a negative relationship between the dispersion of analysts' earnings forecasts and the level of shareholder protection.

Number of analysts following a firm: Analyst services have both a demand and a supply side. On the one hand, expanded disclosure due to strengthened corporate governance, e.g., more refined segment disclosure, potentially enables analysts to create valuable new information and, hence, increases the demand for their services. On the other hand, disclosure could preempt analysts' ability to distribute managers' private information to investors, leading to a decline in demand for their services [8,34]. The net effect of these forces is theoretically ambiguous.

Lang et al. [33] argue on the basis of Bhushan's [35] model that the number of analysts following a firm depends on whether the analysts are *information intermediaries or information providers.* If they are information intermediaries, the principle flow of information goes from the firm through the analysts to the investors. An increase in information means that the analysts have more information to sell, thus leading to a higher demand for their services. In contrast, if analysts are seen as providers of information that competes with information given by firms directly to investors, increased information stemming from strengthened shareholder protection would be a substitute for analysts' services, leading to a decline in the number of analysts in a given context.

According to Knyazeva [36], the number of analysts following a firm may serve as a replacement for other corporate governance mechanisms. Empirical studies relating shareholder protection to the number of analysts seem to support this substitution effect. Chang et al. [4] found that the number of analysts is lower in common-law countries than in civil-law countries, which suggests that analyst coverage may be more important in countries with weak shareholder protection than in those with strong shareholder protection. Sun [11] also supports this notion of a substitution effect, arguing that analysts have a much more important role in countries with weak shareholder protection. In light of these more recent empirical studies, we test the following hypothesis:

H 3: There is a negative relationship between the number of analysts following a firm and the level of shareholder protection.

Analysts´ forecast bias: Another stream of literature seeks to describe explanations for relative optimism or pessimism among analysts. These explanations fall into two broad categories: 1) strategic optimism to improve relationships with management and 2) potential biases caused by incentives.

Empirical evidence shows that earnings forecasts tend to be biased. In the 1980s and '90s, analysts showed excessive optimism, a positive forecasting bias due perhaps to the available information [37]. Since 2000, there seems to have been a shift toward pessimism in the U.S. [38]. This shift can be explained by legislative changes that not only place limitations on the relationship between investment units and research units in investment banks, but also restrict the flow of private information from management to analysts. One might therefore reasonably expect strengthened shareholder protection to have the same impact on analysts' bias: a gradual change from positive to negative.

Empirical studies before 2000 [31] argue that analysts have an increased incentive to issue optimistic forecasts to improve their relationship with management and thereby gain access to private information when the benefits of doing so are greatest (when earnings are unpredictable). Das et al. [31] found evidence consistent with this argument, noting that forecast error and measures of predictability are negatively correlated. However, Eames, Glover and Kennedy [39] replicated Francis and Philbrick's [27] study and found that the relationship between recommendation optimism and forecast optimism was reversed when actual earnings were included in the equation. Lim [40] argues that analysts may trade off positive bias for improved forecast accuracy resulting from access to better information. He finds, further, that both firm and analyst characteristics correspond to forecast optimism. Firm size and the number of analysts following a firm are negatively related to optimism, whereas target-specific uncertainty is positively related to optimism. In other words, the demand for private information is a proxy for optimism.

Balboa et al. [41] indicate that strong shareholder protection countries exhibit bias in stock recommendations due to the dispersed ownership, but not in earnings forecasts. In a context with shifting shareholder protection, we would first expect to see a higher demand for private information and thus a positive bias on the part of analysts, but as corporate governance rules strengthen we would anticipate a negative bias. However, these biases will mainly be expressed in stock recommendations. Since we are examining bias in earnings forecasts,

we therefore state our fourth, and last, hypothesis as follows:

H 4: There is a negative relationship between the bias of analysts' earnings forecasts and the level of shareholder protection.

Legal Context

We are using data from two countries - the United Kingdom (UK) and Sweden - representing two different legal origins according to the legal origin theory. In this theory national variation of corporate governance law has its roots in the historical origin of the legal system of each country. The differentiation between common and civil law is the initial basis for the theory. Common law originated in England in the Middle Ages and became the legal tradition of many countries around the world that were at one time colonies of the British Empire. One may therefore view the UK as the model country for the common-law tradition. Sweden, in contrast, belongs to the Scandinavian legal system, which derives from the civil-law tradition.

Codification of the legal system in Sweden occurred in the 19th century, influenced largely by the German legal tradition, and the early Companies Act was more or less a translation of the corresponding German legislation. The legal systems in Sweden and the other Scandinavian countries have since developed along similar paths and in a direction that departs in some ways from other legal systems. La Porta et al. [13] define the Scandinavian legal tradition as a specific civil-law tradition distinguishable from other civil-law traditions such as the German and French civil-law traditions. They contend that characteristic features of the Scandinavian legal system are very strong law enforcement and greater investor protection than in other civil-law systems. In the case of Sweden, they found a score of 3 out of 5 on the anti-director rights index and legal enforcement indexes that were amongst the highest in the world. The UK, by comparison, is characterized by very high shareholder protection (5 out of 5 on the anti-directors index) and relatively strong law enforcement[1] [13]. The main differences between the legal contexts of Sweden and the UK appear in the juridical processes involved in developing and enforcing the laws, as the Swedish system is based on codified law and the UK system on case law. Figure 1 shows the development of shareholder protection in the UK and Sweden over 19 years, based on the SPI-index (see section 4.3 for a detailed description). The figure pinpoints the problem of using a static index like the LLSV; for example, the level of shareholder protection in Sweden during the last several years is almost as high as the level for the UK in 1987. It is also important to bear in mind that using the "Legal Enforcement" variable from La Porta et al. [13], as Sun [11] did, resulted in Sweden showing stronger investor protection than the UK, i.e. achieving a score of 10.00 as compared to the UK's 9.22[2].

In Figure 1, shareholder protection strengthened considerably in both countries over the study period. One factor behind Sweden's development is the deregulation of Swedish financial markets that occurred in the mid-1980s. This deregulation was succeeded by changes in regulations affecting shareholder protection. In addition,

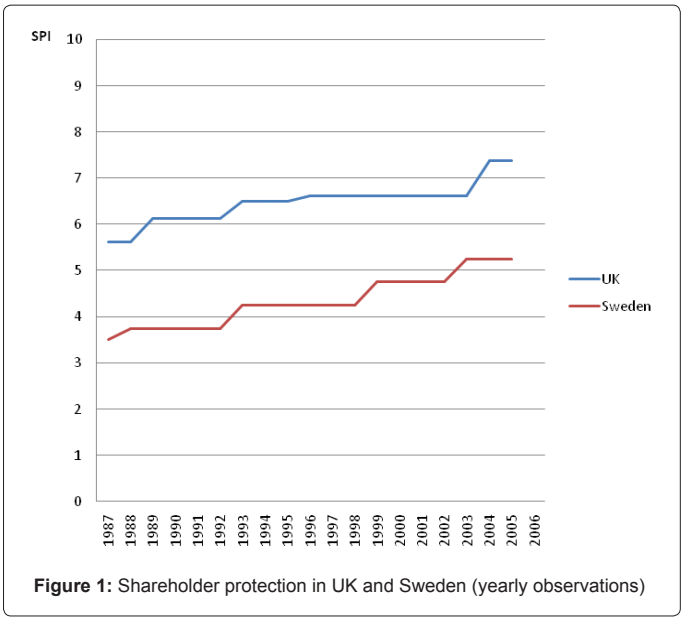

Figure 1: Shareholder protection in UK and Sweden (yearly observations)

Sweden's entry into the European Common Market necessitated changes to the Swedish Companies Act, with successive revisions taking effect in 1998 and 2006. The UK also experienced a changing legal framework during this time period, with new regulations for the financial services industry imposed in 2000 and a new Companies Act in 2006. In other areas such as accounting and auditing, the EU has issued new regulations, implying that today both Sweden and the UK apply International Standards for Financial Reporting (IFRS) as well as auditing (ISA). Similar efforts at harmonization have been carried out for issues related to the financial markets.

Another bundle of regulations developed and dispersed during the last 20 years relates to corporate governance codes. The idea of a code was initiated by the Cadbury Commission in the UK in 1992. The commission had been set up by the accountancy profession, the Financial Reporting Council and the London Stock Exchange as a response to financial scandals that took place during the 1980s [42-44]. Following the Cadbury Code was voluntary, but it became part of the listing requirement of the London Stock Exchange. Several other committees were subsequently established and issued related recommendations, notably the Greenbury Committee in 1995, the Hampel Committee in 1998, and the Turnbull Committee in 1999, when all of the recommendations were assembled into what became the Combined Code [42].

The different committees provided responses to different problems, namely, accountability and control (Cadbury Commission), managers' remuneration (Greenbury Committee) and internal control (Turnbull Committee). However, the idea of corporate governance codes spread very quickly around the world [45,46]. In Sweden a governmental task group initiated a corporate governance code of conduct in the early 2000s in response to corporate scandals that occurred at the end of the 1990s. A code was implemented in 2004 and became a part of the listing criteria for the Stockholm Stock Exchange (SSE). Further development of the Code and its enforcement were put in the hands of a new organization, with a majority of members from the business society. In this way both the Swedish and the UK codes of conduct can be viewed as part of the self-regulation of the business.

In summary, the legal traditions of Sweden and the UK have

[1]The 10-point legal enforcement index showed Sweden at 10 for "efficiency of juridical system," "rule of the law," and "risk for corruption". For "risk for expropriation" the index was 9.40 and for "risk for contract repudiation" 9.58; the accounting standards were rated at 83. For the UK the indexes were 10 for "efficiency of judicial system," 8.57 for "rule of the law," 9.10 for "risk for corruption", 9.71 for "risk for expropriation", and 9.63 for "risk for contract repudiation"; the accounting standards were rated at 78 [13]

[2]The "Legal Enforcement" index is measured as the mean score across three legal variables: (1) the efficiency of the judicial system, (2) an assessment of the rule of law, and (3) the corruption index. All three variables range from 0–10.

different origins, and, based on the categorization of La Porta et al. [13], the UK has a higher anti-director rights index whereas Sweden has somewhat higher indexes of law enforcement. We also note that the different legal traditions imply differences in the juridical processes applied in the countries. Over the last 20 years, however, membership in the European Common Market has meant some similar regulatory changes for both countries. In addition, the UK has been leading in the development of corporate governance codes, which have spread to most of the world, including Sweden. Thus, despite their different legal traditions, recent developments in shareholder protection regulations have been similar in both Sweden and the UK.

Data and Sample

Data sources and sample construction

Analysts' forecast data were obtained from the Institutional Brokers Estimate System (I/B/E/S)[3] [47]. I/B/E/S [47] has data on Swedish and UK firms dating to 1987. For this study, we compiled sample firm years from all Swedish and UK firms listed on I/B/E/S [47] from 1987 to 2005, achieving a total sample of 95,020 forecasts for Earnings Per Share (EPS) in the UK and 14,175 forecasts for EPS in Sweden[4].

Analysts usually forecast the EPS of a particular fiscal year several times before the actual figures are released. The frequency of the forecasts differs depending on the analyst. I/B/E/S [47] collects forecast data from individual analysts around the world once a month and uses those data to calculate statistics such as the mean, median, standard deviation, etc. Only the final estimates are included in the monthly calculation. Thus, I/B/E/S [47] provides calculated statistics of analysts' forecasts of EPS once a month.

In this study, we use the final calculated mean of an analyst's forecasts of EPS before the actual EPS is released. For example, the forecast statistics of Ericsson B[5] for the fiscal year end December 31, 2005, were calculated once a month from May 2005 to March 2006. Hence, we use the mean forecast calculated in March 2005 as the forecast data for actual EPS on December 31, 2005. The mean forecast can therefore consist of several individual forecasts from analysts - some firms have around 50 analysts making predictions on their future EPS. Our final sample comprises 16,592 mean EPS forecasts in the UK and 2,827 mean EPS forecasts in Sweden.

Dependent variables, selection and measurement

In each of our models the dependent variable is based on a performance measurement noted earlier. Accordingly, we use four dependent variables to measure analysts' impact on information asymmetry: forecast accuracy, standard deviation of forecasts, number of analysts following the firm, and forecast bias. The data obtained from the I/B/E/S [47] Database are applied to these variables.

Following Lang and Lundholm [33], the first dependent variable, forecast accuracy, is calculated as the negative of the absolute value of the actual earnings minus the analyst's earnings forecast, scaled by the stock price at the beginning of the year, and forecasted EPSt is the mean analyst forecast of the earnings per share in period *t*.

$$Forecast\ Bias = \frac{-\left(Actual\ EPS_t - Forecasted\ EPS_t\right)}{Beginning\ of\ the\ fiscal\ year\ stock\ price}$$

The second dependent variable, standard deviation of forecasts, is the inter-analyst standard deviation of forecasts scaled by the stock price in the beginning of the year, also in line with Lang et al. [33]. The third dependent variable is the number of analysts who are following the company. This is determined simply by a count of analysts who are providing an earnings forecast for the company, again in line with Lang et al. [33].

We apply Francis et al. [27] method to measure the fourth dependent variable, forecast bias. This variable is calculated as the negative of the actual earnings minus the analyst's earnings forecast, scaled by stock price in the beginning of the year, and forecasted EPSt is the mean analyst forecast of the earnings per share in period t.

The forecast measures are scaled with the stock price to make cross-company comparisons possible. Forecast accuracy is defined as the negative of the scaled absolute forecast error. In other words, more accurate forecasts are represented by higher values, i.e. a lower forecast error. Forecast bias is defined as the negative of the scaled forecast error. In the event the analyst has overestimated the company's EPS, the result is a positive value, and in the event the analyst has underestimated the company's EPS, the result is a negative value.

The shareholder protection variable

The variables in our shareholder protection index (SPI) are chosen and defined in a way that aims to remedy several shortcomings of the LLSV. The differences concern notably the sources of the SPI. This index with a maximum value of 10 was developed by the Corporate Governance Research Program at the Centre for Business Research, University of Cambridge, UK and the dataset is fully accessible via www.cbr.cam.ac.uk. Armour et al. [22] include not only positive law, but also rules stemming from self-regulation, such as corporate governance and takeover codes, where they are binding for (listed) companies. The SPI also differs from the LLSV in that it is not based on binary variables, but allows for intermediary scores between 0 and 1 where appropriate. Moreover, the SPI, unlike the LLSV, is sensitive to "default rules" in the sense of rules that apply in certain circumstances depending on the involved actors' choices. Such laws, although not strictly binding, are not necessarily coded 0. The SPI also explicitly acknowledges the importance of coding for functionally equivalent instruments in different countries. Finally, it is constructed as a longitudinal measure for quantifying the legal SPI of a given country for each year [22,48,49].

Control variables, selection and measurement

The five control variables in this study were selected on the basis of prior research into factors that normally affect the accuracy of analysts' forecasts [33]. They are: market value, trading volume, earnings

[3] The benefit of using I/B/ES has been discussed by Ramnath, Rock, and Shane [3]. They find, contrary to Philbrick [27] that actual EPS data from Value Line and I/B/E/S [47] are comparable, but I/B/E/S consensus forecasts are more accurate and are a better proxy for the market's earnings expectations. The superiority of I/B/E/S [47] consensus forecasts can be traced to two attributes: 1) the ability to provide forecasts that are closer to the earnings announcement date (Value Line publishes only one forecast per quarter, while the I/B/E/S [47] consensus is updated monthly), and 2) the advantage of being able to aggregate across forecasts from multiple analysts (Value Line forecasts are issued by a single analyst, whereas the I/B/E/S consensus is based on forecasts contributed by multiple analysts). Bradshaw [54] uses First Call as his source for analyst data. First Call and I/B/E/S [47] differ in that First Call includes consensus data for a month only if the consensus was revised during the month. I/B/E/S [47] is more comprehensive in that it includes all months, including those with no changes in the consensus.

[4] The sample includes both active and inactive firms for which analysts have made forecasts during the study period. Analysts make forecasts far from all listed firms what does this mean? For example, for our study period I/B/E/S [47] has forecast data for 468 firms listed on Stockholm Stock Exchange (SSE) and 1,925 firms listed on London Stock Exchange. These firms comprise our sample.

[5] In Sweden it is common to have dual-class shares with different voting rights. For example, an owner of an A-share in Ericsson has ten times more votes than an owner of a B-share.

surprise, loss, and standard deviation of return on equity (std ROE).

Market value is the company's market value at the beginning of the fiscal year. Trading volume refers to the company's daily trading volume in the first month of the fiscal year. Earnings surprise, which is the variation in a firm's results from one year to another, is calculated as the absolute value of a given year's earnings per share minus the previous year's earnings per share, scaled by the share price at the beginning of the fiscal year. EPS_t is the earnings per share in period $_t$ (a given year), and EPS_t-1 is the earnings per share in period $_t$-1 (the previous year).

$$Earnings\ Surprise = \frac{\left|EPS_t - EPS_{t-1}\right|}{Beginning\ of\ fiscal\ year\ stock\ price}$$

According to Lang et al. [33], earnings surprise controls for the fact that forecast characteristics are likely to be affected by major events, such as a firm's introduction of a new product. In these circumstances realized earnings are most apt to deviate from expected earnings, and there are likely to be significant revisions in analysts' forecasts.

Loss is a dummy variable that takes the value of 1 if the company reported a loss and zero otherwise. Standard deviation of return on equity is the standard deviation of the company's return on equity over the previous three years.

Models

Because we have a time-series shareholder protection index, we are able to examine how shareholder protection affects analysts over time in the UK and Sweden, both separately and collectively. We have two models for testing each performance hypothesis. Models 1 and D1 test the first performance hypothesis to determine if a positive relationship exists between analysts' forecast accuracy and the SPI index. Model 1 regresses forecast accuracy on each country's individual SPI value and the control variables, as shown in the following model:

$$ForecastAccuracy_{it} = \alpha + \beta_1 SPI_t + \beta_2 MarketValue_{it} + \beta_3 TradingVolume_{it} + \beta_4 Loss_{it} + \beta_5 EarningsSurprise_{it} + \beta_6 StdDevROE_{it} + \varepsilon_{it} \quad (1)$$

In Model D1, below, we insert the country as a dummy variable to test the sample as well as compare the effects of legal origin.

$$ForecastAccuracy_{it} = \alpha + \beta_1 SPI_t + \beta_2 MarketValue_{it} + \beta_3 TradingVolume_{it} + \beta_4 Loss_{it} + \beta_5 EarningsSurprise_{it} + \beta_6 StdDevROE_{it} + \beta_7 Land_t + \beta_8 D*SPI_{it} + \beta_9 D*MarketValue_{it} + \beta_{10} TradingVolume + \beta_{11} D*Loss_{it} + \beta_{12} D*EarningsSurprise_{it} + \beta_{13} D*StdDevRov\ \varepsilon_{it} \quad (D1)$$

The model pairs set out below follow the same principle. Models 2 and D2 test the second hypothesis and determine if there is a negative relationship between the shareholder protection and forecast dispersion by regressing the standard deviation of forecasts on the SPI value and the control variables.

$$ForecastDispertion_{it} = \alpha + \beta_1 SPI_t + \beta_2 MarketValue_{it} + \beta_3 TradingVolume_{it} + \beta_4 Loss_{it} + \beta_5 EarningsSurprise_{it} + \beta_6 StdDevROE_{it} + \varepsilon_{it} \quad (2)$$

$$ForecastDispertion_{it} = \alpha + \beta_1 SPI_t + \beta_2 MarketValue_{it} + \beta_3 TradingVolume_{it} + \beta_4 Loss_{it} + \beta_5 EarningsSurprise_{it} + \beta_6 StdDevROE_{it} + \beta_7 Land_t + \beta_8 D*SPI_{it} + \beta_9 D*MarketValue_{it} + \beta_{10} TradingVolume + \beta_{11} D*Loss_{it} + \beta_{12} D*EarningsSurprise_{it} + \beta_{13} D*StdDevROE\varepsilon_{it} \quad (D2)$$

Models 3 and D3 test the third hypothesis to determine if whether a relationship exists between shareholder protection and the number of analysts following a firm. These models regress the number of analysts on the SPI index value and the control variables.

$$Number\ of\ Analysts_{it} = \alpha + \beta_1 SPI_t + \beta_2 MarketValue_{it} + \beta_3 TradingVolume_{it} + \beta_4 Loss_{it} + \beta_5 EarningsSurprise_{it} + \beta_6 StdDevROE_{it} + \varepsilon_{it} \quad (3)$$

$$Number\ of\ Analysts_{it} = \alpha + \beta_1 SPI_t + \beta_2 MarketValue_{it} + \beta_3 TradingVolume_{it} + \beta_4 Loss_{it} + \beta_5 EarningsSurprise_{it} + \beta_6 StdDevROE_{it} + \beta_7 Land_t + \beta_8 D*SPI_{it} + \beta_9 D*MarketValue_{it} + \beta_{10} TradingVolume + \beta_{11} D*Loss_{it} + \beta_{12} D*EarningsSurprise_{it} + \beta_{13} D*StdDevROE\ \varepsilon_{it} \quad (D3)$$

The fourth and final models test the final hypothesis by regressing forecast bias on the SPI value and the control variables to determine if a relationship exists between shareholder protection and forecast bias.

$$Forecast\ Bias_{it} = \alpha + \beta_1 SPI_t + \beta_2 MarketValue_{it} + \beta_3 TradingVolume_{it} + \beta_4 Loss_{it} + \beta_5 EarningsSurprise_{it} + \beta_6 StdDevROE_{it} + \varepsilon_{it} \quad (4)$$

$$Forecast\ Bias_{it} = \alpha + \beta_1 SPI_t + \beta_2 MarketValue_{it} + \beta_3 TradingVolume_{it} + \beta_4 Loss_{it} + \beta_5 EarningsSurprise_{it} + \beta_6 StdDevROE_{it} + \beta_7 Land_t + \beta_8 D*SPI_{it} + \beta_9 D*MarketValue_{it} + \beta_{10} TradingVolume + \beta_{11} D*Loss_{it} + \beta_{12} D*EarningsSurprise_{it} + \beta_{13} D*StdDevROE\ \varepsilon_{it} \quad (D4)$$

Our study uses unbalanced panel data in which both cross-sectional and time-series dependence are present. To address these forms of dependence, a number of advances have been made in the econometrics literature there the use of cluster-robust standard errors is an important one. It is common practice in many studies to use cluster-robust standard errors, with clustering either along a cross-sectional dimension (e.g., analyst, firm, industry, or country) or along a time-series dimension [50]. All our regression analyses use cluster-robust standard errors to avoid overstating t-statistics due to multiple observations of the same firm (different fiscal years) within the dataset [50,51].

Note in the models above, analyst following is not used as an explanatory variable. In reality, the number of analysts following a firm is likely to vary with a number of factors. Consistent with this presumption, significant variation in analyst following has been found in both within [33] and across-country studies [32] causing endogenous problem. This is especially important when analyst following is used as a conditioning variable to test whether the role of legal origin varies with the information environment. Since we do not use the variable as such we do not test for endogeneity problem. Also there could be an endogenous relationship between several performance variables and analyst coverage. This endogenous relationship may exist because analysts are more likely to select companies with high earnings quality than companies with low earnings quality. By not using analyst following in the same model as the performance variable (market value, trading volume, earnings surprise, loss, and standard deviation of return on equity) we might mitigate this endogeneity problem. However while prior evidence shows that both analyst following and the properties of the analysts' forecast are affected by shareholder protection, the results should be interpreted with care as most research in this area has not taken into account the potentially endogenous nature of a firm's shareholder protection and analyst following.

Results

Table 1 gives an overview of the sample, showing the number of forecasts and forecast accuracy by year over the sample period. The two other performance variables, forecast dispersions and forecast bias, are omitted due to lack of space. The table also shows the average number of forecasts per firm, the average forecast accuracy, and the standard deviation of forecast accuracy. The second and the fourth column in Table 1 show the number of mean forecast for UK and Sweden. The trend in the two countries is similar with a peak of forecast during the dot-com bubble in the late 1990^{th,} indicating that the market for financial analysts was the greatest during that period. However, the decline in forecast in Sweden since that period is sharper than UK

	UK		Sweden		UK		Sweden	
Year	Number of mean forecasts	Avg # forecasts per firm	Number of mean forecasts	Forecasts per firm	Accuracy mean	Accuracy std	Accuracy mean	Accuracy std
1987	636	5.50	70	1.93	-0.037	0.234	-0.071	0.128
1988	781	6.34	75	1.67	-0.026	0.083	-0.059	0.095
1989	879	6.43	78	1.90	-0.028	0.120	-0.040	0.060
1990	803	5.92	76	2.33	-0.033	0.082	-0.040	0.045
1991	743	5.75	76	3.53	-0.063	0.160	-0.122	0.176
1992	786	6.34	92	5.13	-0.092	0.792	-0.154	0.187
1993	813	6.77	128	4.16	-0.093	0.431	-0.411	1.340
1994	835	6.82	126	5.08	-0.029	0.115	-0.068	0.092
1995	868	6.66	156	5.74	-0.027	0.074	-0.054	0.083
1996	895	6.20	198	5.85	-0.026	0.076	-0.073	0.100
1997	1 018	6.11	198	6.48	-0.026	0.101	-0.055	0.071
1998	1 077	5.55	227	5.51	-0.028	0.069	-0.041	0.061
1999	1 080	6.21	227	6.64	-0.046	0.125	-0.089	0.195
2000	1012	6.05	256	5.60	-0.047	0.163	-0.069	0.112
2001	935	2.72	230	5.22	-0.044	0.111	-0.090	0.206
2002	920	4.18	170	4.28	-0.060	0.309	-0.117	0.291
2003	822	4.59	162	4.00	-0.075	0.226	-0.097	0.159
2004	808	5.09	143	5.73	-0.048	0.234	-0.077	0.346
2005	881	5.80	139	5.35	-0.059	0.876	-0.074	0.384
87-05	16 592	5.72	2.827	5.01	-0.046	0.324	-0.094	0.359

Table 1: Descriptive statistics 1987-2005

probably due to relatively more dot-com firms in Sweden than UK. Column three and five show the average forecast per firm in each country over the sample period. The average number of forecasts per firm is similar for each country over the sample period, 5.72 in the UK and 5.01 in Sweden, meaning that on average slightly more than five analysts are following a firm. The trend between the two countries exhibits here some differences.

The average forecast per firm is much more stable in UK with an average around little bit less than six forecasts per firm over the entire sample period but with a sharp decline just after the dot-com period. The average forecast per firm in Sweden has during the same period been much more volatile, varying from 1.93 to 6.64 forecast per firm in average. These latter numbers are indicating that financial houses changes their coverage of specific firms more easily in Sweden than UK. The last four columns show forecast accuracy and accuracy standard deviation for the two countries. The overall standard deviation of forecast accuracy for each country is also similar, 0.324 for the UK and 0.359 for Sweden. However, the forecast accuracy mean is much lower in the UK (-0.046) than in Sweden (-0.094), indicating that analysts in the UK perform better than analysts in Sweden. It is worth noting that forecast accuracy in Sweden was very low in 1993, when the country experienced bank and real estate crises. Over the sample period the trend in accuracy mean and accuracy standard deviation are similar for the two countries with variation in the two numbers from one year to another which can be due to the business cycle which we control for in our models with for example earnings surprise and standard deviation of ROE.

Table 2 and 3 present descriptive Statistics Pertaining to the Dependent, SPI and control variables in the four models for Sweden and the UK, respectively. These tables show that the mean firm in Sweden has an analyst forecast error that is 9.4 percent (4.6 percent in the UK) of its share price, a standard deviation of forecasts (forecast dispersion) equal to 2 percent of its share price (2 percent in the UK as well), 5.01 analysts following it (5.72 in the UK), and a forecast bias of 0.1 percent (1.4 percent in the UK). The mean sample firm has market value of SEK 6.4 billion (GBP 1.8 billion), and the mean of its average daily trading volume is 12 million shares (in the UK 50 million shares). Around 20 percent of the sample firm years show negative earnings (9 percent in the UK), and the earning surprise is 9 percent of the share price (7 percent in the UK).

The tables also show the Pearson correlations between the variables. Our main independent variable of interest, Shareholder protection, correlates significantly and positively with forecast accuracy and the number of analysts and negatively with forecast dispersion and forecast bias in Sweden (Table 2), with the first three correlations significant? at 0.001 and forecast bias at 0.05. However, the coefficients are quite low, indicating weak relations with our four dependent variables. The strong significance combined with weak correlations indicates that the relationship between shareholder protection and the performance of analysts in Sweden clearly exist but the impact of shareholder protection is not overwhelming: lower forecast error, less forecast dispersion, a higher number of analysts, and less bias. In the UK (Table 3), however, the only dependent variable significantly correlated with shareholder protection is the number of analysts, and the relationship is negatively with a very low coefficient (0.04) which indicates but not fully convincing relation between shareholder protection and the number of analyst. To sum up, the bivariate analysis concerning the relationship between our main variable of interest and our four dependent variables do not indicate a strong relationship in neither of our two countries.

For our control variables the bivariate analyses in Table 2 and 3 shows that both forecast accuracy and forecast dispersion are highly correlated with earnings surprise both in Sweden and in the UK. This suggests that analysts are less accurate, meaning that there is more dispersion and volatility in their forecasts, when the company's earnings have undergone a significant change from the previous year. The number of analysts is, of course, most highly correlated with market value and trading volume, as there are more analysts following larger firms. Forecast bias, in both UK and Sweden, is most highly correlated with the dummy variable loss, suggesting that analysts display less bias

Variable	Mean	S.D	1	2	3	4	5	6	7	8	9	10
1 Forecast accuracy	-.094	.32	1.00									
2 Forecast dispersion	.02	0.07	-.51***									
3 Number of analysts	5.01	6.391	-.18***	-.04*								
4 Forecast bias	.001	0.33	.07***	-.08***	-.03							
5 Shareholder protection	4.67	.87678	.14***	-.16***	.19***	-.04*						
6 Market value (million SEK)	6,446	28,465	.30***	-.24***	.72***	.08***	.14***					
7 Trading volume (thousands)	12,442	51,533	.15***	-.05**	.61***	.07***	.23***	.66***				
8 Loss	.19	.395	-.37***	.23***	-.10***	-.45***	.03	-.25***	-.10***			
9 Earnings surprise	.089	.21	-.50***	.46***	-.12***	-.04*	-.13***	-.26***	-.11***	.26***		
10 Std ROE	18.49	55.92	-.41***	.26***	-.19***	-.11***	.06***	-.33***	-.05**	.37***	.25***	1.00

Pearson correlations
Note *p<.05;**p<.01;***p<.001

Table 2: Correlation Matrix – Sweden

Variable	Mean	S.D	1	2	3	4	5	6	7	8	9	10
1 Forecast accuracy	-.046	.32	1.00									
2 Forecast dispersion	0.02	0.07	-.30***									
3 Number of analysts	5.72	6.391	.05***	-.03**								
4 Forecast bias	.014	0.33	-.81***	.27***	-.02*							
5 Shareholder protection	6.65	.3972	-.01	-.00	-.04***	-.00						
6 Market value (million GBP)	1793	6996	.02*	-.01	.36***	.00	.05***					
7 Trading volume (thousands)	49.985	295.959	.01	-.01	.24***	.00	.02*	.64***				
8 Loss	.09	.292	-.21***	.06***	-.16***	-.18***	.11***	-.05***	-.04***			
9 Earnings surprise	.067	.21	-.64***	.82***	-.05***	.46***	.00	-.02*	-.01	.16***		
10 Std ROE	.23	1.67	-.04***	.07***	-.05***	.00	.03***	-.01	-.00	.12***	.06***	1.00

Pearson correlations
Note *p<.05;**p<.01;***p<.001

Table 3: Correlation Matrix - UK

for firms with negative earnings. From the tables can be seen that the control variables seems to impact the four dependent variables in a similar manner in the two countries.

The regression results for analysts' performance are reported in Table 4. Panel A in Table 4 shows the results for the two countries individually while Panel B provides the results for the interaction variables for the entire sample. In other words, Panel A provides the results for Model 1 to Model 4, whereas Panel B shows the results for interaction variables in Model D1 to Model D4. Models 1 and D1 show the estimated strength of the positive relationship between forecast accuracy and shareholder protection that was predicted by Hypothesis 1. Models 2 and D2 indicate the estimated strength of the negative relationship between analysts' forecast dispersion and shareholder protection predicted by Hypothesis 2. In models 3 and D3 we see the estimated magnitude of the association between shareholder protection and the number of analysts following a firm, as predicted by Hypothesis 3. Finally, models 4 and D4 provide the estimated strength of the link between analysts' forecast bias and shareholder protection, as predicted by Hypothesis 4. Moreover, multicollinearity diagnostic statistics (variance inflation factor, VIF) confirm that no multicollinearity problem is affecting the variables assumed to be determinants in the first four models.

Moreover the F-statics show that models D1 to D4 are highly significant and R-squared values (we report both within and between R-squared values for models D1 to D4) for most of the 12 models are reasonable high.

The results in Table 4 for Model 1 show that the coefficient of shareholder protection is positive and significant for both Sweden (t=4.36, p<.001) and the UK (t=2.47, p<.05). Hypothesis 1 is therefore supported by the fact that stronger shareholder protection seems to improve analysts' forecast accuracy in both countries individually. Nor did we find any statistical evidence suggesting that shareholder protection affects forecast accuracy differently depending on the legal context (Panel B Table 4, variable D*SPI). Also, the coefficient of earnings surprise is very high in Model 1 for Sweden, which indicates that the variation in earnings of the firms that the analysts follow strongly affects their forecast error. In the UK firms' profit/loss affects forecast accuracy. Model 2 supports Hypothesis 2 by showing a negative and significant coefficient of shareholder protection (t=-3.97, p<.001) and forecast dispersion in Sweden. Although this relationship was found not to be significant in the UK, it was significant for the sample overall (not shown in the table). Results for Sweden as well for the entire sample also indicate that in an environment with stronger shareholder protection there is less uncertainty among analysts about a firm's future earnings, which could be another way of saying that information asymmetry decreases when shareholder protection

Variable	Forecast accuracy Model 1		Forecast dispersion Model 2		Number of analysts Model 3		Forecast bias Model 4	
	Sweden	UK	Sweden	UK	Sweden	UK	Sweden	UK
Panel A:								
Shareholder protection	0.017***	0.016*	-0.010***	0.002	-0.548*	-3.917***	-0.006	-0.027***
Market value	(4.36)	(2.47)	(-3.97)	(1.37)	(-2.22)	(-19.12)	(-1.11)	(-4.88)
	0.000	0.000	0.000	0.000	0.043***	0.000***	0.000	0.000
Trading volume	(0.02)	(0.83)	(-1.70)	(-0.60)	(3.28)	(4.07)	(-0.71)	(1.49)
	0.000*	-0.000	0.000	0.000	0.039***	0.000	0.000	0.000
Loss	(2.20)	(-0.50)	(0.35)	(0.71)	(6.38)	(-0.03)	(-0.23)	(-0.95)
	-0.020	-0.114*	0.027**	0.006	-1.638***	-3.411***	-0.220***	0.121*
	(-0.52)	(-2.15)	(2.99)	(0.29)	(-3.64)	(-12.84)	(-5.34)	(2.43)
Earnings surprise	-0.441***	-0.374	0.089	0.214*	-1.748*	-0.514*	0.120	0.276***
	(-6.49)	(-1.39)	(1.42)	(2.37)	(-2.42)	(-2.45)	(0.80)	(1.10)
Std ROE	-0.004	-0.002	0.001*	0.002	-.022**	-0.125	0.003	-0.005
	(-1.63)	(-0.96)	(2.21)	(1.85)	(-3.12)	(-0.87)	(1.32)	(-1.46)
Constant	-0.079***	-0.115*	0.053***	-0.012	8.637***	33.990***	0.027	0.166***
	(-4.15)	(-2.43)	(4.38)	(-0.99)	(6.00)	(24.08)	(0.89)	(4.24)
N	2,053	6,999	2,053	5,997	2,053	6,999	2,053	6,999
R-squared	0.20	0.341	0.14	0.466	0.36	0.224	0.09	0.196
Maximum VIF	1.75	1.83	1.73	1.83	1.75	1.83	1.75	1.83
Mean VIF	1.29	1.30	1.32	1.31	1.29	1.30	1.29	1.30
Panel B								
	Model D1		Model D2		Model D3		Model D4	
D*SPI	0.001		-0.012***		3.370***		0.021**	
	(0.16)		(-4.43)		(15.21)		(2.40)	
D*MV	-0.000		0.000		-0.000***		-0.000	
	(-0.84)		(0.32)		(-5.96)		(-1.64)	
D*VO	0.000		0.000		0.000***		-0.000	
	(2.21)		(0.34)		(3.73)		(-0.11)	
D*PL	0.094		0.022		1.773***		-0.342***	
	(1.35)		(1.05)		(5.24)		(-5.10)	
D*ES	-0.067		-0.125		-1.233**		-0.156	
	(-0.21)		(-1.17)		(-2.21)		(-0.51)	
D*ROE	-0.002		-0.002		0.103		0.007	
	(-0.51)		(-1.30)		(0.75)		(1.8)	
F-statistics	424.15***		405.79***		57.80***		142.04***	
R-squared (within)	0.31		0.41		0.26		0.17	
R-squared (between)	0.41		0.28		0.08		0.16	

Note *p<.05;**p<.01;*** p<.001

Table 4: Multiple Regressions for Effects of Shareholder Protection on Analysts' Performance

increases. Model D2 (variable D*SPI) shows significant difference between the two legal contexts in terms of the effect of shareholder protection on forecast dispersion, which can be interpreted as there is significantly less uncertainty among analysts in Sweden about a firm's future earnings than UK with stronger shareholder protection.

Model 3 in Table 4 shows that shareholder protection is negatively associated with the number of analysts following firms in each country (Sweden: t=-2.22, p<.05; UK: t=-19.12, p<.001), and this result holds for the entire sample. As suggested by Model 3 in Panel A and D3 in Panel B, the need for analysts is less when shareholders have more protection. Moreover, the variable D*SPI is significant (t=15.21, p<.001), indicating that strengthened shareholder protection has a greater substitution effect in UK than in the Sweden. This finding supports the substitution effect described in earlier studies and thus supports Hypothesis 3. It also suggests that there is reason to assume that this substitution effect is influenced by legal origin. Model 3 shows, as well, that in both countries market value is significantly and positively associated with the number of analysts, whereas loss and earnings surprise have significant negative associations. These results indicate that the market for analysts depends on several factors. When shareholder protection is strengthened, the market for analysts' services declines; however, that market increases with firms' market value. Also, the demand for analysts increases when there is more variability in earnings or profitability.

As shown in Model 4, the shareholder protection variable does not have a significant impact on forecast bias in Sweden. It does, however, in the UK (t=-4.88, p<.001) and for the sample as a whole. The D*SPI variable indicates significant difference between the two countries, meaning that forecast bias decreases with strengthened shareholder protection in the UK and overall, and there is significantly greater effect in UK than Sweden.

Conclusion

Our overall aim in this study was to analyze the relationship between regulatory settings and financial analysts' performance. We did this by investigating whether strengthened shareholder protection has any effect on analysts' performance and if this potential effect differs between countries with different legal traditions. Using four performance measures, we found support for the positive effect of increased shareholder protection on analysts' performance, which is in line with earlier studies [4,9]. We found that in both the UK and Sweden forecast error decreases with stronger shareholder protection; forecast dispersion also decreases in Sweden and forecast bias in the UK. In line with these results showing improved analyst performance, the demand for analysts' service decreased in both countries during the sample period. Our analyses also show that over the aggregate sample, all four performance measures were improved by strengthened shareholder protection. The investigation into whether strengthened shareholder protection has a greater impact on analysts' performance within a specific legal environment doesn't show uniform results, but gives some support of a stronger effect of changes in UK than Sweden. We found, for example that there a significant stronger effect in UK for number of analysts following firms and forecast bias but the opposite when it comes to forecast dispersion. There was no significant difference between the countries concerning forecast accuracy. However, overall we conclude that it seems that legal origin matters but affects the performance differently. Improvement in shareholder protection has greater impact on forecast dispersion in Sweden than UK, while improvement in shareholder protection has greater impact on the number of analysts and forecast bias in UK than in Sweden. In short, the interaction between the impact of shareholder protection and the type of legal environment in which the country functions, often assumed as important in prior studies can be supported by our study.

This study makes notable contributions to the existing literature. First, it adds to the limited international research on financial analysts' role by using a newly constructed index to study changes in shareholder protection over time within a given context. This is an important contribution because earlier empirical studies in the field largely used the static anti-directors rights LLSV or the "Legal Enforcement" [33] index when examining analysts' forecasts over several years. Those indexes do not take into account the fact that shareholder protection has dramatically changed in many countries during the past 10–15 years [20,52,53].

Our study also contribute to a more nuanced results concerning the interaction between the impact of shareholder protection and the type of legal environment in which the country functions.

The study also highlights the relationship between institutional changes and analysts' role. The findings are especially important for policy makers since they show the effects of institutional changes on information asymmetry. Furthermore, the study is important for market participants such as investors in that it emphasizes the effectiveness of analysts' role.

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