Organization of Research Departments and Financial Analysts' Performance: Sector versus Country Specialization

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Abstract

European financial research departments have been re-organized over the last decade. Formerly structured along country lines, they have been refocused towards more industry-based structures. This evolution is surprising in light of academic results, which show that financial analysts located close to the firms they follow issue on average more accurate forecasts than more distant analysts. We compare the performance of financial analysts who focus on firms headquartered within one single country but active in different industry sectors ("country specialists") to the performance of financial analysts who follow firms active in one single sector but of different nationalities ("sector specialists"). We show that country-specialized analysts issue on average more accurate and timelier forecasts than sector-specialized analysts, which tends to reveal that country specialists benefit from an informational advantage over analysts specialized by sector. This result holds over the entire period ranging from 1994 to 2001, whatever the size or the level of international activities of the firms being evaluated. We investigate two potential sources of this informational advantage, namely proximity and the knowledge of country-specific factors. The former appears to be the most likely explanation of the better performance of country-specialized analysts.

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I. Introduction

Over the last decade, large European brokerage houses have reorganized their financial research departments. Formerly structured along country lines, they have been restructured towards more industry-based structures. If forecast accuracy is, as Kini et al. (2003) argue, the main driver of the way research departments are organized, the increasing globalization and integration of financial markets is supportive of the choice made by brokerage houses. Indeed, the presumed decreasing importance of country-specific relative to industry-specific factors makes it rational for financial analysis to be performed by industry sectors rather than by countries. Yet, this evolution is surprising in light of academic results, which underline the information advantages carried out by proximity and the knowledge of country-specific factors. Not mentioning results in the literature on home bias[1], Malloy (2003) shows that US financial analysts located close to the firms they evaluate issue on average more accurate forecasts than more distant analysts. Orpurt (2003) reaches similar conclusions for analysts following European firms. Barker (1998) interviews UK analysts and reports that the source of information they consider as the most important is the "direct contact with the company" they follow. Bolliger (2004) argues that the synergies gained by focusing on firms headquartered within a restricted number of countries may more than offset the synergies gained by following firms active in a restricted number of industry sectors.

Notwithstanding the academic evidence, brokerage houses may have decided to reorganize their research departments in search for better forecasts' accuracy. Mainly two arguments are usually put forward in professional circles to justify an industry-based approach. First, as a consequence of the increasing globalization and financial integration, stock returns and firms' earnings should respond more to sector- rather than country-specific factors. Kini et al. (2003) empirically observe this behavior. They show that the likelihood that analysts specialize by country (industry) increases as the relative importance of the country (industry) factor increases. Second, firms in different sectors are very different in nature. As a matter of fact, different approaches may be needed to value firms in different industries. Demirakos et al. (2003) look at the valuation methodologies used by UK financial analysts for 26 firms from the beverages, electronics, and pharmaceuticals industries. They remark that analysts tailor their valuation methodology to the industry in which the firm is active. Whereas the P/E

[1] see e.g. Brennan and Cao (1997), Coval and Moskowitz (2001), Grinblatt and Keloharju (2001), Hau (2001).

model is the dominant form of analysis in the traditional beverages industry, they report a greater frequency of use of Discounted Cash-Flow models in the two other ones. They further notice that, in the pharmaceuticals industry, analysis of strategic issues and R&D projects is the critical part of the valuation process. Only little consideration is devoted to accounting and financial analysis. In the beverages and electronics industries, the focus is different. It is the brand strength in the beverages industry and innovative skills and competence in technology for electronics firms.

This paper is the first to explicitly analyze and compare the performance of country-specialized and sector-specialized analysts. If performance was the major motivation for the witnessed reorganizations of research departments towards industry-based structures, one should observe financial analysts specialized within a single sector to issue more accurate forecasts than financial analysts specialized within a single country. To the contrary, academic results suggest that country-specialized analysts should benefit from an informational advantage due to proximity and / or a good knowledge of country-specific institutional factors. This should lead country-specialized analysts to outperform sector-specialized analysts. As such, our research relates to different strands of the financial and accounting literature.

First, knowing whether analysts specialized within a single sector and analysts specialized within a single country perform significantly differently add to the literature on the determinants of analysts' coverage. More specifically, showing that the former outperform the latter would give credit to the argumentation by Kini et al. (2003), according to which the organization of financial research departments is consistent with the objective of producing high quality research.

Second, to the extent that specialization is an important determinant of individual analysts' forecast accuracy, studies on financial analysts' performance, but also studies that test valuation and asset pricing models using earnings forecasts, may consider our results as the need to incorporate specialization as a proxy for information acquisition and / or production.

From a purely practical perspective, our research is of the prime concern for the financial analysis profession. If being organized by sectors rather than by countries was the most efficient way of doing research, brokerage houses could very well centralize their research

activities in a unique geographic place. Our research is also salient to asset managers who base their trading decisions on analysts' outputs. More importantly, put in combination with results showing that country-specific factors remain (at least) as influential as industry-specific factors and that international diversification is still (at least) as important as industry diversification, our results could have strong implications for the overall portfolio allocation process. Pointing out that country-specialized analysts perform better than industry-specialized analysts would really indicate that managers deserting the traditional top-down international approach for a global sector approach could very well be on the wrong track.

The paper proceeds as follows. Section II reviews the related academic literature. We develop our testable hypotheses in Section III. Section IV is devoted to the presentation of the methodology. It is split into three parts. The first part introduces the way we classify financial analysts as sector or country specialists. The second part briefly presents the analysts' performance measure used in this study. The third part is devoted to the regression-based model. Section V describes the data. Results are displayed in Section VI and we conclude in Section VII.

II. Review of Literature

Home bias refers to the empirical evidence that investors have a strong tendency to invest in domestic rather than foreign equities. Several authors have tried to understand why one observes this phenomenon. Different explanations have been proposed. First, home bias might be due to institutional factors such as taxes or capital controls; see e.g. French and Poterba (1991), Tesar and Werner (1995). Language and culture may also constitute examples of barriers to foreign investment. Second, home bias might be the consequence of investors' optimism for their home country's equity market; see e.g. French and Poterba (1991). Third, home bias might result from investors willing to hedge non-tradable goods or against inflation risk; see e.g. Cooper and Kaplanis (1994). Lately, deep attention has been brought on information asymmetries due to geography; see e.g. Brennan and Cao (1997), Coval and Moskowitz (2001), Grinblatt and Keloharju (2001), Hau (2001). According to this fourth possible explanation, local or geographically proximate market participants are assumed to be better informed than foreign or further located ones.

Orpurt (2003) makes use of analysts' earnings forecasts to explicitly test the validity of the "Geographic Information Asymmetry Hypothesis" (GIAH). He makes a distinction between earnings forecasts issued by analysts located within the same country as the firm for which the forecast is issued (local analysts) and forecasts released by analysts based abroad (foreign analysts). Orpurt hypothesizes that local analysts issue on average more accurate and timelier forecasts than foreign analysts. The assumption underlying his tests is that the informational advantage of local analysts, if any, should translate into better earnings forecasts, provided that analysts have incentives to make use of their information to release accurate and timely forecasts[2]. Even though Orpurt (2003)'s tests cannot be directly linked to the home bias puzzle, his cross-border decomposition between local and foreign analysts leads to results that support the GIAH. That is, local analysts issue on average more accurate and timelier forecasts than foreign analysts. Malloy (2003) also tests the GIAH. His approach is different though, as he focuses on U.S. analysts and uses latitude and longitude data to compute the distance between analysts and the firms they cover. His results are consistent with Orpurt (2003) in the sense that geographically proximate analysts seem to possess an informational advantage, which translates into the production of more accurate earnings forecasts.

In some sense, Malloy (2003) and Orpurt (2003)'s results are in line with a couple of studies on the determinants of financial analysts' performance. Barker (1998) interviews UK analysts and reports that the source of information analysts consider as the most important is the "direct contact with the company". In a paper on the properties of individual analysts' forecasts in Europe, Bolliger (2004) documents a decrease in analysts' forecast accuracy as analysts' portfolio geographic diversification increases. He also documents a negative relationship between forecast accuracy and industry diversification[3], but concludes that synergies gained by following only a few industries may be "more than offset by the difficulty to produce forecasts with portfolios containing firms from several European countries". According to him, this result might be "partly due to a better knowledge of the various local institutional contexts". In view of Malloy (2003) and Orpurt (2003)'s results presented above, it may also be a matter of proximity, as financial analysts who follow firms in several countries are, by definition, located further away from the firms they track. Clement (1999)

[2]Note that Orpurt's sample is restricted to the European market. Bolliger (2004) argues that European financial analysts do not have incentives to release "excellent" forecasts, but only "not too bad if they want to stay in the business".

[3] In Bolliger (2004), proxies for country and industry portfolios' "diversification" are respectively given by the number of countries and the number of industries for which analysts supply forecasts over a given fiscal year.

reports a strong negative association between forecast accuracy and the number of industries followed by analysts. His results indicate that, all else equal, an analyst who follows 8 industries (the 90th percentile value of his sample) is expected to suffer a forecast error that is 2.9% larger than an analyst who follows one single industry. Jacob et al. (1999) report similar results, whereas Mikhail et al. (1997) hardly find evidence of a relationship between industry specialization and forecasts' accuracy. Unfortunately, they all remain silent about the influence of the international dimension of analysts' portfolios.

The consequences of analysts' organization on their performance have received very little attention by academics. To our knowledge, Bolliger (2004) is the only one to explicitly mention this issue of country versus sector specialization. Instead, academic researchers have often relied on the relative importance of country and industry factors to advise how financial analysis departments should be organized. Magee (1974), among others, reports that industry-wide commonalities in earnings are large[4]. He further shows that these effects are large enough to be reflected in security prices and therefore remarks that "from the viewpoint of an investor or security analyst, such a result indicates that industry earnings outcomes have potential value for those who are able to forecast these outcomes accurately". As a consequence, it has often been argued by both academics and practitioners that financial analysis should be organized along industry lines. Indeed, analysts specialized in a given industry should benefit from their wider knowledge of the industry and issue on average more accurate forecasts than otherwise diversified analysts, provided that they are able to take advantage of this knowledge.

Also, both academics and practitioners often rely on results in the literature on the relative importance of industry and country factors in stock returns to advise the way financial research departments should be structured. Heston and Rouwenhorst (1994, 1995), Beckers et al. (1996), and Griffin and Karolyi (1998), among many others, study the impact of industry and country factors on stock returns. The central result of this stream of research is that both the nationality and the industry in which the firm is active are important determinants of stock returns. A more recent result, first reported by Cavaglia et al. (2000) and Baca et al. (2000), is that industry factors' influence grew over time and may be as powerful as country factors since the late 1990s. As a consequence of this last evidence, it has often been argued by

[4] See also Schmalensee (1985), Rumelt (1991), Powell (1996), McGahan and Porter (1997), and Hawawini, Subramanian, and Verdin (2003).

academics that financial research departments should be organized along industry lines, rather than by country as it was historically the case.

Nevertheless, we do not believe such a conclusion can be reached so straightforwardly. First, even if it is true that industry factors grew to be as important as country factors in the late 1990s, it is hard to tell whether this change is permanent or not. Brooks and Del Negro (2003) show that this evolution in the relative importance of industry and country factors is probably simply due to the strong impact on the results of the Information Technology "bubble". Moreover, Adjaouté and Danthine (2003) show that both industry and country factors follow cycles[5]; see also Catao and Timmermann (2003). Thus, the increasing influence of industry factors might be only temporary rather than permanent. Second, it has still never been shown, even with recent data, that industry factors have become irrefutably more powerful than country factors. Isakov and Sonney (2003) come up with the result that when one controls for the atypical behavior of Information Technology and Telecommunication stocks in the late 1990s, country factors remain as influential as industry factors. This result holds even with a sample restricted to the presumably strongly integrated European Monetary Union area, where one would expect country factors to be of minor importance. Third, and most importantly, the very fact that a factor shows to have a stronger impact on stock prices does not tell whether information acquisition and production are rendered more efficient and lead financial analysts to issue more accurate forecasts if one is to structure research departments according to this factor.

Therefore, we cannot, as previous studies suggest, rely on the relative influence of country and industry factors in earnings or stock returns to advocate the way financial analysis should be performed. Instead, there is a need to explicitly raise this question by examining the performance of financial analysts that, we argue, depends on the dimension according to which they are specialized. In what follows, we ask the question of whether to be specialized in a sector (country) gives analysts a comparative advantage that confers them the opportunity (the ability) to release more accurate forecasts than if they were specialized in a country (a sector).

[5] See Adjaouté and Danthine (2003), figure 4.15, p. 45.

III. Testable Hypotheses

The decision made by brokerage houses to reorganize their research departments along industry lines shed some doubt on the ability of country-specialized analysts to outperform sector-specialized analysts. Indeed, if as Kini et al. (2003) suggest, analysts' coverage is driven by the concern of producing high quality research, the synergies gained by specializing in a sector might very well offset the synergies gained by specializing in a country. Nonetheless, country-specialized analysts benefit from a potentially strong informational advantage due to them being located close to the firms for which they issue forecasts and / or from a good knowledge of the firm's home country-specific factors. Provided that they have incentives to issue accurate earnings forecasts, we believe this should lead country-specialized analysts to outperform sector-specialized analysts. Therefore, we state our first hypothesis as follows:

> *H1: informational advantages due to proximity and / or a good knowledge of country-specific institutional factors are source of informational advantages that lead country-specialized analysts to produce on average more accurate forecasts than sector-specialized analysts.*

In Europe, Orpurt (2003) reaches the conclusion that local financial analysts (i.e. analysts based in the same country as the firm for which they produce a forecast) issue on average more accurate forecasts than foreign financial analysts (i.e. analysts based abroad). Unfortunately, we cannot infer from the evidence that local analysts have an informational advantage over foreign analysts whether the source of this advantage is the analyst being located close to the firm or a better knowledge of the country's institutional factors. In fact, if most local analysts were specialized in firms headquartered within the country, their relative better performance might potentially result from information advantages due to both or either proximity and the knowledge of institutional factors.

In order to disentangle these two effects, we rely on the following reasoning. Both country and sector specialists, if they are located in the same country as the firm for which they issue the forecast (local analysts), should benefit, if it exists, from an informational advantage due to proximity. Foreign analysts, whatever type of specialization they are, should not benefit from this particular advantage. Moreover, country-specialized analysts, whenever they are

based locally or abroad, should benefit if it exists from an informational advantage related to a better knowledge of the country's institutional factors. Local sector-specialized analysts should also benefit from a good knowledge of their home country's institutional factors. Indeed, as these analysts live in the country, one may reasonably expect them to speak the home country's language and to be aware of the cultural and in other particularities of the country. These are very likely to be sources of a comparative advantage, since they certainly make contact easier and presumably "friendlier" between analysts and firms' executives. The following table summarizes the above discussion.

Analyst	Location	The analyst has an information advantage due to	
		PROXIMITY	COUNTRY FACTORS
Country specialist	Local	YES	YES
	Foreign	NO	YES
Sector specialist	Local	YES	YES
	Foreign	NO	NO

If, as Malloy (2003) and Orpurt (2003)'s results suggest, proximity is important, local country specialists should outperform foreign country specialists. If the knowledge of institutional factors is a source of informational advantage, foreign country-specialized analysts should outperform foreign sector-specialized analysts. Our next two hypotheses are therefore stated as follows:

> *H2: proximity is a determinant of forecast accuracy. Therefore, local country-specialized analysts perform significantly better than foreign country-specialized analysts.*

> *H3: a better than average knowledge of institutional factors is a determinant of forecast accuracy. Therefore, foreign country-specialized analysts perform significantly better than foreign sector-specialized analysts.*

Note that the result of H3 may be conditioned by country and sector specialists performing differently because of other reasons than proximity or the knowledge of institutional factors.

Confirming H2 is however crucial in order to confirm Malloy (2003) and Orpurt (2003)'s results.

IV. Methodology

A. Measures of the Degree of Analysts Specialization

We use two different measures to sort analysts according to their degree of sector and country specialization. Following Kini et al. (2003), a first and obvious classification is the following. An analyst is considered as a sector specialist if all forecasts issued by the analyst over a given fiscal year relate to firms active in a single sector and at least two countries. Over the same fiscal year, analysts who issue forecasts for firms that are all headquartered within a single country but at least two sectors are classified as country-specialized analysts. We refer to analysts who issue earnings forecasts for firms in a single sector within a single country as "absolute" specialists.

This first classification scheme is not entirely satisfactory. Since analysts need to be considered as sector (country) specialists if they follow a limited – though bigger than one – number of sectors (countries), we propose another measure. Mikhail et al. (1997) quantify "analyst's industry knowledge" as the ratio of the number of firms within this industry for which the analyst issues forecasts to the total number of firms for which the analyst releases forecasts. As a second way of classifying analysts as sector or country specialists, we propose a slightly different yet closely related measure. It is a concentration ratio based on the Herfindahl Index (HI), which is generally used as an indicator of the amount of competition among firms in an industry. For each analyst, we compute both a sector and a country HI. Each analyst's country (sector) HI is computed as the sum over all countries (sectors) of the ratio of the number of firms followed by the analyst within a given country (sector) to the total number of firms for which the analysts issued forecasts during the fiscal year. These are formally given by:

$$HI_{a,y}^{Country} = \sum_{c=1}^{C} \left(\frac{N_{c,a,y}}{N_{a,y}} \right)^2 \qquad [1]$$

$$HI_{a,y}^{Sector} = \sum_{s=1}^{S} \left(\frac{N_{s,a,y}}{N_{a,y}} \right)^2 \qquad [2]$$

$N_{c,a,y}$ ($N_{s,a,y}$) is the number of firms in country *c* (sector *s*) for which analyst *a* issued forecasts over fiscal year *y*. $N_{a,y}$ is the total number of firms followed by analyst *a* over fiscal year *y*. A country (sector) HI takes a value of 1 (i.e., its maximum value) when the analyst follows firms headquartered in one single country (active in one single sector). It goes towards zero as the analyst's portfolio diversification increases.

Each analyst is classified as a country (sector) specialist if her country (sector) HI is larger than 0.90[6] and her sector (country) HI is smaller than 0.90. Analysts whose country and sector HI are both above 0.90 are classified as "absolute" specialists. Note that the specialization measure proposed by Kini et al. (2003) is a particular case of our HI measure where the cutoff value is set to 1.

Figure 1 shows that, in fact, both specialization measures can be used to accurately translate the way financial analysts tend to organize their research. On this graph, each dot represents one given analyst, each characterized by her country and sector HIs. Approximately 70% of the 2936 dots lie either on the upper or the right-side lines of the graph. That is, more than two thirds of analysts are either absolute, country, or sector specialists in the sense that they follow firms in only one country or sector, or both. No other pattern seems to emerge from this figure. Both the measure proposed by Kini et al. (2003) and our HI measure seem therefore well suited to analyze analysts' specialization.

[Insert Figure 1]

Our Herfindahl measure further allows taking into account the fact that analysts who follow a restricted, though bigger than one, number of countries or sectors, but who devote most of their attention to firms within a single country or sector should also be considered as country or sector specialists. Indeed, if most of the firms followed by a given analyst are located within a single country (are active within a single sector), the analyst's country (sector) HI will be close to one.

B. Measure of Financial Analysts' Performance

In this section, we present our measure of financial analysts' performance. It is the classical accuracy measure obtained by computing analysts' forecast errors. Further in the text, we will introduce a second measure, namely the timeliness of earnings forecasts developed by Cooper et al. (2001). This timeliness measure will allow us to check for the robustness of our results. Indeed, forecast accuracy alone is not a sufficient statistic for measuring analysts' performance, as some analysts may herd on forecasts released by more skilled analysts.

Within each given fiscal year, we measure the accuracy of each single earnings forecast by the absolute value of the forecast error ($AFE_{a,j,t,y}$):

$$AFE_{a,j,t,y} = \left| EPS_{j,y} - F_{a,j,t,y} \right| \qquad [3]$$

$EPS_{j,y}$ is the actual earnings per share announced by firm *j* for fiscal year *y*, and $F_{a,j,t,y}$ is the last one year forecast of fiscal year *y* earnings of firm *j* released by analyst *a* at date *t*.

Orpurt (2003) argues that "forecasting difficulty can vary by firm and year due to strikes, innovations, regulations, accounting rule changes …". Therefore, we follow him and Clement (1999) in that we adjust our forecast accuracy measure to account for these average firm and year effects by de-meaning the forecast measure above. The resulting demeaned absolute forecast error ($DAFE_{a,j,t,y}$) is given by:

$$DAFE_{a,j,t,y} = AFE_{a,j,t,y} - \overline{AFE_{j,y}} \qquad [4]$$

$\overline{AFE_{j,y}}$ is the mean absolute forecast error calculated over all analysts' forecasts of firm *j*'s fiscal year *y* earnings. Further, to reduce heteroskedasticity due to the positive relation between $DAFE$ and the level of EPS, we reduce $DAFE$ by $\overline{AFE}$. Orpurt (2003) and

[6] Results remain unchanged with a 0.85 boundary.

Clement (1999) propose indeed to compute the percentage demeaned absolute forecast error ($PDAFE_{a,j,t,y}$):

$$PDAFE_{a,j,t,y} = \frac{DAFE_{a,j,t,y}}{\overline{AFE}_{j,y}} \qquad [5]$$

C. Regression Model and Control Variables

In order to test whether there is an advantage for individual financial analysts to specialize by country rather than by industry, or vice versa, we estimate the following regression model:

$$PDAFE_{a,j,t,y} = \beta_{ABS} ABS_{a,y} + \beta_{COS} COS_{a,y} + \beta_{SES} SES_{a,y} + \sum_{l=1}^{L} \gamma_l z_{a,j,l,t,y} + \varepsilon_{a,j,t,y} \qquad [6]$$

$PDAFE_{a,j,t,y}$ is the proportional demeaned absolute forecast error defined above. A negative value of $PDAFE$ represents a better than average performance, whereas a positive value signifies a worse than average performance. $COS_{a,y}$ is a dummy variable that is equal to one if analyst *a* is a country-specialized analyst over fiscal year *y* and zero otherwise. $SES_{a,y}$ is a dummy variable that is equal to one if analyst *a* is a sector-specialized analyst and zero otherwise. $ABS_{a,y}$ is a dummy variable that is equal to one if analyst *a* is an "absolute" specialist and zero otherwise. We include *L* control variables that are represented by the *z*s. These variables are important in order to control for ability and / or skills. Indeed, we want to make sure that a potential out performance of one analysts' specialization over the other is not due to more skilled analysts concentrating in one type of specialization. Some of the control variables we consider are those that have been shown to explain financial analysts' forecast accuracy; see e.g. O'Brien (1990), Stickel (1992), Mikhail et al. (1997), Clement (1999), Jacob et al. (1999), and Bolliger (2004). We also define other control variables that may have an impact on the performance of country- and sector-specialized individual analysts. Our *L* control variables are presented in Annex A.

V. Data and Overview Statistics

One year earnings per share (EPS) forecasts are extracted from the I/B/E/S International Historical Detail File database. The period under study extends from 1994 to 2001. We focus on the 15 major European markets. Namely, these are Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the UK. Our choice to restrict to European markets is dictated by the following considerations. First, the reorganization of financial research departments referred to so far is mainly a European phenomenon. Second, restricting to Europe provides us with a large enough cross-section of country- and sector-specialized analysts. To the contrary, most analysts following Japanese firms are country-specialized analysts[7]. Also, the inclusion of the US market, which would represent a large part of the sample, would make the comparison of both types of analysts less obvious as US analysts tend to specialize by sectors within the US.

The I/B/E/S Identification File is used to identify the country of origin of each firm included in the database. The industry in which each firm is active is given by the two-digit code provided by I/B/E/S. Eleven sectors are defined: Finance, Health Care, Consumer Non-Durables, Consumer Services, Consumer Durables, Energy, Transportation, Technology, Basic Industries, Capital Goods, and Public Utilities. We exclude from the sample firms for which I/B/E/S does not define a country and / or an industry. In the whole world sample, 166 firms are given two countries by I/B/E/S. We manually check their correct headquarters' location on Business.com and / or on their home websites. 53 of them are in fact headquartered in one the 15 European countries considered here and are therefore included in our sample.

The I/B/E/S database reports earnings forecasts issued by both individual analysts and teams of analysts. As there is no additional information about how teams are structured, how many analysts they include, and what the analysts' specializations are, we discard them from the sample and focus on the performance of individual analysts[8]. Individual financial Analysts have to meet yet other criteria in order to be included in the sample. First, we delete analysts for whom I/B/E/S does not provide a code or a name. Second, analysts have to issue forecasts for at least three firms over the considered fiscal year.

[7] Over the period 1994-2001, there have been, each year, on average 206 country-specialized but only 2.125 sector-specialized analysts issuing forecasts of Japanese firms' earnings.

We restrict the sample to one year earnings per share forecasts issued before the actual earnings announcement date. Are eliminated from the sample all forecasts for which there is no data about actual earnings or for which the currency is unknown. Finally, we consider only forecasts issued for firms followed by at least three analysts. Table 1 summarizes the resulting dataset.

[Insert Table 1]

In the first part of the paper, we argued that, over the last decade, financial analysis departments had been refocused from country- towards industry-based structures. This argumentation was relying on casual observation and general impression of what seemed to occur in banks and brokerage houses over these last years. In figure 2, we draw the ratio of the number of country-specialized analysts to the number of sector-specialized analysts for each country in our sample. For each country, the ratio is computed at two different points in time. The first one is computed during fiscal year 1995 and the second is computed at the end of our sample period, namely fiscal year 2001.

[Insert Figure 2]

Figure 2 shows with more concrete figures that the trend towards more sector-oriented organizations seems to have effectively taken place. For every European country in our sample, the number of country-specialized analysts has decreased relatively to the number of sector-specialized analysts from 1995 to 2001. This effect is more pronounced for some countries than for others. French, German, Swiss, and Portuguese firms for instance were mainly followed by country specialists in 1995. Their respective ratios of 3.47, 2.77, 2.07, and 3.00 imply that during fiscal year 1995, French, German, Swiss, and Portuguese firms were on average followed by approximately three times more country-specialized than sector-specialized financial analysts. These ratio values dropped to 0.52, 0.78, 0.47, and 0.37. On average, there were approximately twice as many sector-specialized than country-specialized analysts following these four countries' firms in 2001.

[8] In order to do so, we delete all records for which the analyst name does not have a first name initial. We also delete all names that include / or & characters.

VI. Results

A. Forecast Accuracy: Tests of H1

Tests of analysts' forecast accuracy are based on equation [6]. We tried a number of specifications of this regression model with all or only subsets of the control variables. Our conclusions remain similar whatever the specification we estimate. In what follows, we report results from our most comprehensive model, which writes as follows:

$$\begin{aligned} PDAFE_{a,j,t,y} = {} & \beta_{ABS} DABS_{a,y} + \beta_{COS} DCOS_{a,y} + \beta_{SES} DSES_{a,y} + \gamma_1 DNBCO_a + \gamma_2 DNBSE_a \\ & + \gamma_3 DAGE_{a,j} + \gamma_4 DFCOMP_a + \gamma_5 DFEXP_{a,j} + \gamma_6 DGEXP_a \\ & + \gamma_7 DSPEXP_a + \gamma_8 DSPCHG_a + \gamma_9 DBSIZE_a + \gamma_{10} DFREQ_a + \varepsilon_{a,j,t,y} \end{aligned} \quad [7]$$

Greene (2003) shows that firm-year demeaning all variables is equivalent to estimating the model with firm and year fixed effects. Given our huge cross-section of data, we follow this approach. Therefore, all our variables are firm-year demeaned (D).

Table 2 panel A reports year-by-year coefficients estimated from equation [10]. Except for 2001, coefficients on the country specialists dummy are all negative; implying an average superior accuracy of financial analysts specialized by country. Moreover, this result is highly significant in five years out of seven (1% level in four years, 5% level in one year). Also, financial analysts specialized by sector show to be less accurate on average, as their related coefficients are positive in almost all years. Though, they are only marginally statistically significant.

Looking at the last but one column in table 2 panel A, one remarks that the difference between country and sector coefficients is highly significant in each year from 1994 to 2000. This underlines the relative better performance of country-specialized analysts over sector-specialized analysts. Here again, 2001 is the only exception, as the sector specialists' coefficient is smaller than the country specialists coefficient. None of them, nor the difference, is statistically significant, though.

[Insert Table 2]

Coefficients estimated from pooled regressions are shown in panels B and C of table 2. In panel B, we split the sample into two equal four-year sub periods. The first one runs from 1994 to 1997. The second one is from 1998 to 2001. Results in panel B confirm those reported in panel A. Country-specialized financial analysts issue on average clearly more accurate forecasts than sector-specialized financial analysts in both four-year sub periods. The last but one column indicates that the difference between country and sector specialist coefficients is statistically significant at a high confidence levels.

Panel C of table 2 reports results from the same regression equation estimated over the whole sample period. Once again, country specialists strongly outperform sector specialists. As before, the difference is not only statistically, but also economically significant, as country-specialized analysts' forecast errors are expected to be, on average, about 10% smaller than sector-specialized analysts' forecast errors.

Note also that all significant control variables are of the expected sign. As in all previous studies, the age of the forecast is by far the most influential variable. Its reported t-statistics is consistently above 15 over all years from 1994 to 2001. Brokerage houses' size coefficient is positive and highly significant, whereas forecast accuracy increases with firm experience. The most striking result comes from the two control variables on the number of countries and the number of sectors followed by financial analysts. As previously documented in the literature, forecast accuracy is inversely related to the number of sectors followed. We would also have expected a loss of accuracy as the number of countries increases. However, it seems that the synergies gained by covering a limited number of countries documented so far in the literature are entirely captured by country specialization. This result put emphasis on how important it is for analysts to concentrate on a very limited number of countries. It is also consistent with the hypothesis of the existence of an informational advantage due to either or both proximity and a good knowledge of country-specific factors.

Results so far may very well depend on each particular country or sector. Therefore, we re-estimate regression equation [7] independently for each country and each sector. Results appear in tables 3 and 4. Table 3 reports country-by-country regression results. It reveals that country specialists issue on average more accurate forecasts for firms in eleven out of fifteen countries. The accuracy difference between both types of analysts is statistically significant in

seven of these eleven countries. These are Belgium, Finland, France, Germany, Italy, Norway, and the UK. One would have expected large – and presumably more integrated – countries to be those in which country-specialized analysts had the more difficulties to take advantage of their country-specific comparative advantages. Data does not support this conjecture, as sector specialists issue on average more accurate forecasts than country-specialized analysts in Austria, Denmark, Portugal, and Sweden. However, in none of these four countries, the coefficient on sector specialists is statistically different from the coefficient on country specialists.

[Insert Table 3]

Results are of the same vain in table 4, which shows the coefficients estimated sector-by-sector. Country-specialized analysts perform better in nine out of eleven sectors. This relative better performance of country specialists is statistically significant in six sectors: basic industries, capital goods, consumer services, finance, public utilities, and transportation. For the two sectors in which sector specialists have a coefficient smaller than for country-specialized analysts (i.e., sector specialists would perform better than country specialists), the difference does not show to be significant. Indeed, the p-values for the consumer non-discretionary and the technology sectors are respectively 0.364 and 0.970.

[Insert Table 4]

Overall, these results indicate that a strong informational advantage of being specialized by country rather than by sector seems to be at play. Country-specialized individual analysts issue on average more accurate forecasts than sector-specialized individual analysts in seven out of the eight years of our sample period. This result is also highly significant in approximately half of the countries and the sectors considered in the sample. Moreover, sector-specialized analysts are never, in none of the countries or sectors, statistically better, in terms of accuracy, than country-specialized analysts. Further in the text, we investigate two potential sources of this information advantages.

B. Forecast Accuracy: Robustness Checks

Country-specialized financial analysts may concentrate on firms whose earnings are, for any reason, easier to forecast than earnings of firms mainly followed by sector-specialized analysts. As a first check, we re-estimate equation [7], restricting our sample to firms followed by at least one country- and one sector-specialized analyst. If the former really outperform the latter, one should observe no difference between the results reported above and results coming from this restricted sample. Also, we should not observe any difference if we did accurately control for firm-year differences. Table 5 gives evidence that our previous results do not suffer from this bias. Results are indeed extremely similar to those presented in table 2. Here again, the p-values for the difference between country specialist and sector specialist coefficients is highly significant in almost all years, due to the significantly better accuracy of country-specialized analysts. The only divergence with table 5 arises for 1997, where the difference of accuracy between country and sector specialists is now only marginally significant.

[Insert Table 5]

The comparative advantage of country specialists over sector specialists may depend on other characteristics of the firms under study. Table 6 reports results from regression equation [7] estimated independently over sub-samples defined according to firms' market capitalization, foreign sales, and foreign assets. Foreign sales and assets, and to a lesser extent market caps, are used as proxies for the level of firms' international activities. It is often argued that multinational should be insensitive – or at least less sensitive than more domestic firms – to their home country's specific factors. Nestlé for instance would not be considered as a Swiss entity. As a consequence, such firms should be followed by global sector-specialized analysts. If this argumentation was correct, one would expect to find a negative relationship between the relative accuracy of country versus sector specialists and the level of firms' international production or sales.

Panel A reports results related to quartiles based on market capitalizations. Q1 (High) refers to the 25% observations on highest market cap firms. Q4 (Low) refers to the smallest firms of the sample. Equation [7] is estimated separately for each quartile over the entire sample period ranging from 1994 to 2001. A pooled regression is also estimated and results are presented in the last row of the panel. Results in panel A are striking. The only one quartile in which financial analysts specialized by country do not significantly outperform sector-

specialized financial analysts is Q4, the quartile composed of the smallest cap firms. Nonetheless, even though this difference is not statistically significant, the coefficient on country specialization remains lower than the coefficient on sector specialization. Overall, the reading of this first panel suggests no relationship between firms' market cap and the relative performance of country versus sector analysts. Interpreting market capitalization as an indicator of the multi-nationality of a firm, one would have expected sector-specialized analysts to perform relatively better for high market cap firms. There is however no empirical support for this. Therefore, the general argumentation according to which financial analysts should concentrate on sectors rather than countries because of firms' increasing cross-border activities looks less correct as it may seem at a first sight. Actually, a possible explanation for the fact that country specialists do not significantly outperform sector specialists in the smallest caps quartile might be given by location. Indeed, sector specialists following small firms might be located within the same country or area. Then, if proximity and / or a good knowledge of country-specific factors were sources of information advantage, this would explain why we do not observe any statistically significant difference between country and sector specialists in the low market cap quartile.

[Insert Table 6]

Of course, market cap is far from a perfect measure of firm's international activity. Therefore, we consider two other variables as proxies of firms' multinational dimension. First, we compute for each firm the ratio of foreign sales to total sales. Each year, every firm is then classified in one of four quartiles based on the level of its foreign sales ratio. Regression equation [7] is then estimated independently for each of the four quartiles. Q1 (High) refers to firms with the highest foreign sales ratios (i.e., the most "international" firms). Q4 (Low) includes the most "domestic" firms of the sample. Results are reported in panel B of table 6. Here again, coefficients on country specialization are smaller than coefficients on sector specialization in every four foreign sales quartiles. This confirms again that country-specialized analysts issue on average more accurate forecasts than sector specialized financial analysts, whatever the level of international activity of the firms they follow. Even though this difference is statistically significant in only half of the sub-samples, no relationship is apparent between the level of foreign sales and country- versus sector- specialized analysts' forecast accuracy.

As a third measure of international activity, we compute the ratio of assets held abroad ("foreign assets") to total assets. As for the foreign sales measure, firms are ranked from highest levels of foreign assets (Q1) to lowest levels of foreign assets (Q4). Results are reported in panel C of table 6 and are similar to those prevailing in panel B (foreign sales). Here again, coefficients on country specialization are smaller than coefficients on sector specialization in each of the four foreign asset quartiles. Again, no relationship between international activity and county versus sector specialization emerges from the data.

C. Forecast Accuracy: Proximity and Institutional Factors

In this section, we conduct tests of H2 and H3. Two potential sources of financial analysts' informational advantage are examined. First, "proximity" refers to whether analysts are located close to the firms they follow or not. According to the cross-border definition of proximity we draw on, analysts are classified either as local or foreign. They are considered as local whenever they are based in the same country as the firm for which they issue forecasts. They are classified as foreign when based abroad. Second, "institutional factors" refers to whether analysts are supposed to have a better than average knowledge of country-specific factors. In our (broad) definition of country-specific factors, we include language and culture. If a good knowledge of institutional factors is a determinant of analysts' forecast accuracy, analysts specialized in the country and analysts living in the country should benefit from this informational advantage.

Data on the geographical location of financial analysts are taken from Nelson Information's Directory of Investment Research. Unfortunately, we only have access to the 2004's edition. Assuming the majority of financial analysts do not frequently move from one country to another, we consider the 2003 data to be valid for the most recent period 1998-2001. Note also that the sample size is strongly reduced, as we were able to get the address of only approximately 30% of the analysts that reported earnings forecasts in the I/B/E/S database between 1998 and 2001[9]. Of course, this lack of data and the uncertainty about the actual location of financial analysts are major issues here.

[9] 1793 of the 6206 financial analysts who reported earnings forecasts in the I/B/E/S database over the period 1998 to 2001 could be found in the Nelson Information's Directory of Investment Research.

We define a dummy variable that equals one if the analyst is located in the same country as where the forecasted firm is headquartered and zero otherwise. Each specialization is then split into two parts, depending on whether analysts are based locally or abroad. We are left with six "specialization" types, namely local and foreign absolute specialists, local and foreign country specialists, and local and foreign sector specialists. The following regression is estimated:

$$\begin{aligned} PDAFE_{a,j,t,y} = {} & \beta_{ABS}^{L} DABS_{a,j,y}^{L} + \beta_{ABS}^{F} DABS_{a,j,y}^{F} \\ & + \beta_{COS}^{L} DCOS_{a,j,y}^{L} + \beta_{COS}^{F} DCOS_{a,j,y}^{F} \\ & + \beta_{SES}^{L} DSES_{a,j,y}^{L} + \beta_{SES}^{F} DSES_{a,j,y}^{F} \\ & + \gamma_1 DNBCO_a + \gamma_2 DNBSE_a + \gamma_3 DAGE_{a,j} + \gamma_4 DFCOMP_a \\ & + \gamma_5 DFEXP_{a,j} + \gamma_6 DGEXP_a + \gamma_7 DSPEXP_a + \gamma_8 DSPCHG_a \\ & + \gamma_9 DBSIZE_a + \gamma_{10} DFREQ_a + \varepsilon_{a,j,t,y} \end{aligned} \qquad [8]$$

The *L* (*F*) superscript stands for local (foreign). Therefore, $COS_{a,j,y}^{L}$ is a dummy variable that equals one if analyst *a* is a local country-specialized analyst for firm *j* during fiscal year *y* and zero otherwise. $COS_{a,j,y}^{F}$ is a dummy variable that equals one if the analyst is a foreign country-specialized analyst for firm *j*. $SES_{a,j,y}^{L}$, $SES_{a,j,y}^{F}$, $ABS_{a,j,y}^{L}$, and $ABS_{a,j,y}^{F}$ are similarly defined for local and foreign sector and absolute specialists. All other variables are the same as in previous tests.

Results for the pooled 1998-2001 period are presented in table 7. Coefficients (with t-statistics into parentheses) from our basis equation [7] are reported in the first column. Coefficients and t-statistics from equation [8] appear in the second column. The coefficients on the control variables are not reported but are of the same order of magnitude as previously. The last four columns report the p-values of the difference between coefficients of interest. The first column shows that, consistent with our previous results, sector-specialized analysts issue on average less accurate forecasts than country-specialized analysts. The difference is statistically significant, as indicated by the p-value reported in the last but two row of the first column. Results from equation [11] are consistent with the idea that either or both proximity and a good knowledge of country-specific factors are potential sources of an informational advantage. Indeed, local country-specialized analysts issue on average more accurate

forecasts than foreign sector-specialized analysts. This result is highly significant, with a p-value close to 1%, as indicated in the second row, last column of the table.

[Insert Table 7]

As stated in hypothesis H2, if proximity was an important source of informational advantage, one would expect local country specialists to outperform foreign country-specialized analysts. Table 7 indicates that this difference is (marginally) statistically significant, as well as of the expected sign. The p-value for the difference between local and foreign country specialists is 0.0750. This result implies that proximity is, at least part of, an explanation for the informational advantage of country specialists over sector specialists.

A good knowledge of the country-specific factors may also explain part of the relative better accuracy of country-specialized analysts. As stated in hypothesis H3, if this is indeed the case, one would expect foreign country specialists to perform significantly better than foreign sector specialists. Results are not supportive of such an explanation though. Both types of analysts do not show any difference in accuracy, as the p-value of this difference is 0.5279.

Overall, it seems that the main source of financial analysts' informational advantage is related to location. However, one has to be extremely careful with the interpretation of results presented in table 7. Indeed, our sample suffers from a large reduction in the sample size compared to our basis sample. The lack of power of our tests certainly results from this problem. Moreover, our sample may suffer from a bias due to analysts moving from country to country, but also to the characteristics of analysts present in the Nelson Information's Directory of Investment Research book.

D. Timeliness

The forecast accuracy measure considered up to this point cannot be used in isolation to measure financial analysts' performance. According to this accuracy measure, bad performer analysts could very easily be considered as skilled analysts if they were to herd on the forecasts released by accurate analysts. We therefore follow the timeliness measure developed by Cooper et al. (2001), in order to check whether the relative good performance of country-

specialized analysts documented so far is not due to country specialists herding on earnings forecasts released by skilled analysts.

Cooper et al. (2001) argue that forecast revisions by skilled analysts, which they call leader analysts, should be followed closely by forecasts made by other analysts, called follower analysts. There are mainly two reasons for this. First, skilled analysts have an incentive to release forecasts before competing analysts since part of their revenue is based on the trading volume generated by their research. Second, analysts' compensation is also based on the accuracy of their forecasts[10]. Less skilled or less informed analysts may therefore, as Cooper et al. (2001) suggest, wait for the release of forecasts made by skilled analysts to beneficiate from the superior information of the latter in order to increase the accuracy of their own forecasts. To the contrary, skilled analysts have no incentive to issue forecast revisions in response to forecasts released by other analysts. Therefore, Cooper et al. (2001) propose to proxy for financial analysts' performance by a measure of the timeliness of their earnings' forecasts. They develop the "Leader-to-follower ratio" test statistic (which they denote *LFR*)

$$LFR_{a,j,y} = \frac{T^0_{a,j,y}}{T^1_{a,j,y}} \qquad [9]$$

for analyst *a,* who releases forecasts on firm *j* over fiscal year *y*. This ratio is therefore firm-analyst specific. T^0 and T^1 are respectively the cumulative lead- and follow-times for the *K* forecasts made by analyst *a* on firm *j* over fiscal year *y*. They are formally defined as follows:

$$T^0_{a,j,y} = \sum_{k=1}^{K}\sum_{m=1}^{M} t^0_{a,j,m,k,y} \qquad [10]$$

$$T^1_{a,j,y} = \sum_{k=1}^{K}\sum_{m=1}^{M} t^1_{a,j,m,k,y} \qquad [11]$$

$t^0_{a,j,m,k,y}$ ($t^1_{a,j,m,k,y}$) denotes the number of days by which forecast *m* precedes (follows) the *k*-th forecast made by analyst *a* for firm *j*. *K* is the number of forecasts made by analyst *a* for firm *j* over fiscal year *y*. *M* is the number of forecasts made by other analysts that precede and

[10] Remark that while this assumption is well suited for the U.S. market, it might not necessarily be true in Europe.

follow the release of the *k*-th forecast of analyst *a*. LFR ratios are computed for each analyst and each firm for which they issue forecasts. Cooper et al. (2001) compute the average ratio across all the firms a particular analyst follows. They consider analysts having a ratio statistically significantly bigger than 1 as leader analysts and others as follower analysts. We choose not to impose this arbitrary threshold. Instead, we compare the median LFR levels across analysts' specializations. Moreover, as LFR distributions are highly skewed, we perform a non-parametric Wilcoxon-Mann-Whitney (WMW) rank sum test. Results are shown in table 8.

[Insert Table 8]

Focusing on the LFR difference between country-specialized and sector-specialized analysts, one finds comforting results. As with the accuracy measure, country-specialized analysts out perform sector-specialized analysts. The median country specialists' LFR is superior to sector specialists' LFR and the difference is statistically significant, with a p-value of 8.20%. Moreover, sector-specialized analysts seem to be the overall worst performers. The LFR difference between absolute and sector specialists is also in favor of the former and highly significant (p-value of 3.69%). They perform even worse than generalists, with a statistically smaller median LFR.

VII. Conclusion

Academic research shows that financial analysts located close to the firms they follow benefit from an informational advantage over further located ones; see e.g., Malloy (2003) and Orpurt (2003). Financial analysts themselves acknowledge that a crucial source of information is offered by the direct contact with the company. Also, there is wide evidence that county-specific influences remain influential, even in presumably strongly integrated areas such as the European Monetary Union. According to Bolliger (2004), this may explain why he finds the synergies gained by following a restricted number of sectors to be more than offset by the synergies gained by focusing on a limited number of countries. Moreover, Kini et al. (2003) argue that brokerage houses organize financial analysis in a way that allows them to produce high quality research.

In light of this evidence, the observed reorganization of financial research departments from country-based to more sector-oriented structures, which has taken place over the last decade, looks astonishing. We investigate whether this transformation of financial research departments was driven by performance considerations by comparing the accuracy and the timeliness of earnings forecasts issued by financial analysts specialized by countries and by sectors. We show that country-specialized financial analysts issue on average more accurate earnings forecasts than sector-specialized financial analysts. This result remains valid for most of the largest European financial markets and in most pan-European sectors. It also holds whatever the size or the level of international activities of the firms being evaluated. Moreover, it seems that the source of the country specialists' information advantage is principally related to proximity, rather than to a good knowledge of country-specific factors such as language or culture.

The implications of these results are twofold. First, they indicate that the progressive reorganization of financial analysis departments observed since the mid-nineties may be driven by other objectives than the willingness to boost up earnings' forecast accuracy. There are indeed other conceivable explanations. First of all, an organization structured along industry lines is likely to make information acquisition and production less costly, as it allows for instance to centralize financial analysis in a unique geographic place. Also, the portfolio allocation paradigm has evolved over time. As a result, marketing considerations may have induced analysts to specialize by industries in order to meet the needs of portfolio managers, who now seem to care more about industry, rather than international diversification[11].

Second, asset managers may interpret our results as a suggestion about how they should think of portfolio allocation. Academic papers still insist on the gains offered by international risk diversification. Research in the field of international diversification consistently shows that cross-country diversification remains as valuable as cross-sector diversification. Also, research on the relative importance of country and industry factors as determinants of stock returns still concludes that country factors remain at least as influent as sector factors. Our results emphasize the need to consider the traditional country-based approach to international portfolio management as a pertinent approach.

[11] See e.g. Galati and Tsatsaronis (2001).

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Annex A

$\overset{+}{AGE}$ (forecast age) is the number of days between the date at which analyst *a*'s last forecast for firm *j*'s earnings is issued and the date at which actual earnings per share are announced. Previous research shows an extremely significant negative association between accuracy and time to fiscal year end (i.e., a positive association between forecast errors and time to fiscal year end).

$\overset{+}{FCOMP}$ (firm complexity) is the number of firms for which the analyst has issued forecasts over the fiscal year. It is a proxy for "task complexity", provided that following a larger set of firms allows the analyst to devote less time and attention to each individual firm.

$\overset{-}{FREQ}$ (frequency) is the number of forecasts released by the analyst over the fiscal year. Jacob et al. (1999) find a positive association between accuracy and the number of forecasts released by the analyst. They argue that this variable is a proxy for analyst effort, or the incorporation of the latest available information into forecasts.

$\overset{+/-}{BSIZE}$ (broker size) is a dummy variable that equals one if the analyst works for one of the top size deciles brokerage houses. Brokerage house size is computed as the number of analysts employed during the fiscal year. Bolliger (2004) comes up with the counterintuitive result that, in Europe, forecast accuracy decreases with brokerage house size. We include brokerage house size as a control variable, without any a priori belief about which sign to expect[12].

$\overset{-}{FEXP}$ (firm experience) is the number of years the analyst has been issuing forecasts of a particular firm's earnings. It is used as a surrogate for ability and skills. There are at least two reasons why one should expect a positive relationship between accuracy and experience. First, analysts' ability and skills should improve with experience as a result of "learning-by-doing". Second, more experienced analysts should have a better access to private information through better access to management.

$\overset{-}{GEXP}$ (general experience) is the number of years the analyst has been in the database. It is also used as a proxy for ability and skills, for the same reasons as above (i.e. firm experience).

$\overset{+}{SPCHG}$ (specialization change) is a dummy variable that equals one if the analyst was in another specialization group during the previous fiscal year. Financial analysts who change specialization may need some time to adapt to this novel position. Therefore, we include this control variable to take into account the fact that analysts who are shifting from a specialization to another may issue relatively less accurate forecasts over the first year spend in their new specialization.

$\overset{-}{SPEXP}$ (specialization experience) is the number of successive years the analyst has been classified in her current specialization. Accuracy may increase as the analyst learns about the particular country or sector he is specialized in. As for firm and general experience, this control variable is used as a surrogate for ability and skills.

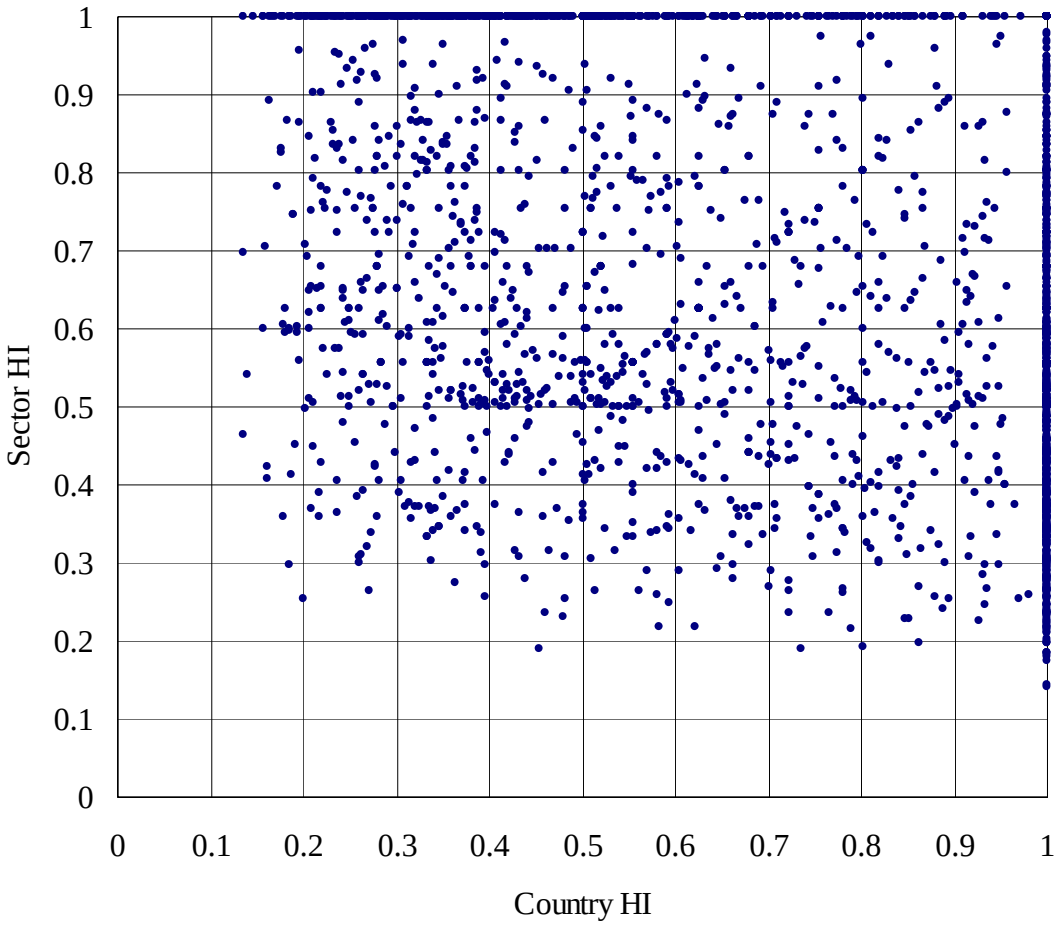
$\overset{+}{NBCO}$ (number of countries) is the number of countries followed by the analyst. Previous research shows the number of countries followed by analysts to be negatively related to accuracy. In order to make sure a potential better performance of one type of specialization is really due to information advantages resulting from being specialized in a country and / or a sector, we control for the number of countries the analyst is in charge of.

$\overset{+}{NBSE}$ (number of sectors) is the number of sectors followed by the analyst. This control variable is used for the same reason as above (i.e., number of countries).

[12] See Bolliger (2004) for a detailed discussion about the relationship between analysts' forecast accuracy and brokerage houses' size.

Figure 1

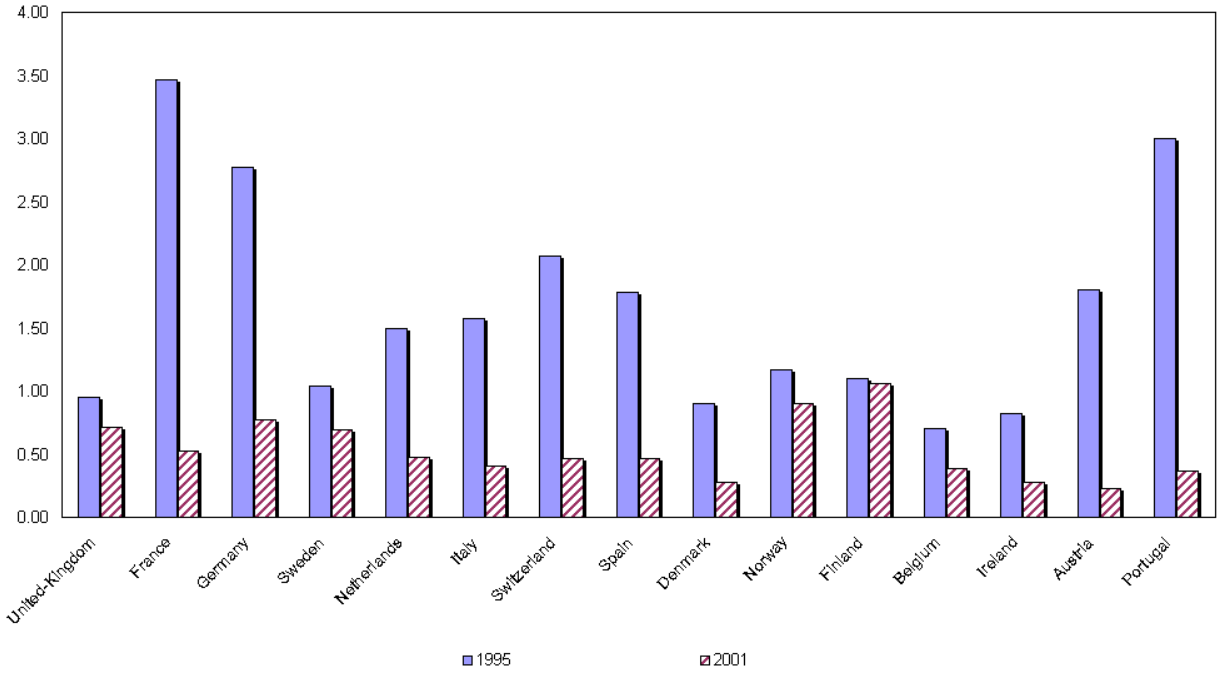
Analysts' Specialization During Fiscal Year 2001



This figure is a picture of financial analysts' organization based on our Herfindahl Index (HI) measure. Each dot represents one of the 2936 individual analysts who issued one year earnings per share forecasts for European firms during year 2001. The horizontal axis reports analysts' country HIs. The vertical axis reports analysts' sector HIs. A value of the country (sector) HI close to 1 indicates a strong concentration (i.e. specialization) of the analyst's portfolio in firms of one single country (sector). A value of the country (sector) HI close to zero characterizes a highly diversified portfolio in terms of countries (sectors).

Figure 2

Evolution of the ratio of the number of country-specialized to the number of sector-specialized analysts from 1995 to 2001



This figure reports, for each of the 15 European countries in the sample, the ratio of the number of country-specialized to the number of sector-specialized analysts. The value of the ratio is indicated on the vertical axis. A ratio of one indicates that there are as many country specialists as sector specialists following firms in a given country. A ratio bigger (smaller) than one implies that there are more country (sector) specialists than sector (country) specialists who follow firms in this country. The solid bars correspond to the ratio computed in 1995. The dashed bars correspond to the ratio computed in 2001.

Table 1: Summary Statistics

This table reports summary statistics on the number of firms, forecasts, and analysts included in our sample. We report the total number of firms, as well as the number of firms followed by each specialization of analysts. The sum over firms followed by absolute specialists, country specialists, sector specialists, and generalists does not add to the total number of firms, since a given firm is usually followed by more than one type of analysts' specialization. The total number of released forecasts is split according to whether they have been issued by an absolute, a country, a sector specialist, or a generalist. Also, the total number of analysts in our sample is the sum of the number of analysts in each of the four specialization groups. In panel A, these statistics are reported country-by-country. In panel B, they are reported sector-by-sector. Year-by-year statistics appear in panel C.

	Nb Of Firms followed By				Total Nb Firms	Nb Of Forecasts Issued By				Total Nb Forecasts	Nb Of Analysts				Total Nb Analysts
	Absolute Special.	Country Special.	Sector Special.	General.		Absolute Special.	Country Special.	Sector Special.	General.		Absolute Special.	Country Special.	Sector Special.	General.	
Panel A: Summary Statistics Per Country															
Austria	5	34	16	26	36	8	242	89	203	542	4	33	62	109	208
Belgium	21	90	29	63	92	68	2256	348	576	3248	15	123	196	198	532
Denmark	60	115	57	102	116	258	1442	486	1336	3522	40	93	165	264	562
Finland	56	127	42	77	127	140	2639	463	1183	4425	24	151	156	319	650
France	252	493	212	349	498	2609	19011	2588	4908	29116	232	685	615	885	2417
Germany	172	351	146	288	361	1148	7900	1668	3213	13929	188	510	451	731	1880
Ireland	29	64	23	58	65	212	555	170	441	1378	26	60	76	102	264
Italy	74	154	59	87	157	793	3116	855	882	5646	78	186	271	362	897
Netherlands	90	193	87	155	195	498	9252	1139	1713	12602	79	343	416	520	1358
Norway	62	115	50	90	119	364	1975	476	848	3663	49	156	180	232	617
Portugal	16	56	22	39	57	105	906	212	312	1535	16	94	81	126	317
Spain	80	130	69	110	133	427	4283	793	1414	6917	67	199	260	388	914
Sweden	109	199	92	177	205	430	3166	1039	2553	7188	80	244	289	476	1089
Switzerland	74	172	61	110	173	467	4774	932	930	7103	56	211	327	345	939
UK	656	945	455	629	984	6650	13242	3329	4717	27938	539	640	566	730	2475
Total	1756	3238	1420	2360	3318	14177	74759	14587	25229	128752	1493	3728	4111	5787	15119
Panel B: Summary Statistics Per Sector															
Basic Ind.	125	276	125	203	277	649	7778	1777	3156	13360	118	1599	161	616	2494
Cap. Goods	309	638	222	452	640	1140	18485	972	5348	25945	185	2194	130	862	3371
Cons. Discr.	16	83	15	51	83	56	2668	83	1260	4067	20	693	20	266	999
Cons. Non-D.	172	327	126	220	329	1100	8446	1057	2231	12834	139	1364	102	439	2044
Cons. Serv.	337	641	265	493	656	3109	15432	1832	4353	24726	300	2200	192	866	3558
Energy	34	75	46	69	76	178	2078	723	1332	4311	29	510	78	246	863
Finance	422	473	333	293	507	6569	6681	6202	1294	20746	516	1025	349	303	2193
Health Care	97	148	106	124	156	474	3209	935	1657	6275	81	737	128	317	1263
Public Util.	53	117	79	106	121	339	2969	722	1987	6017	59	828	129	442	1458
Technology	134	357	65	263	369	282	4754	158	1636	6830	78	1029	66	495	1668
Transport.	57	103	38	86	104	281	2259	126	975	3641	43	619	26	194	882
Total	1756	3238	1420	2360	3318	14177	74759	14587	25229	128752	1435	3533	1233	1813	8014
Panel C: Summary Statistics Per Year															
1994	167	650	215	352	672	317	3797	453	850	5417	57	393	61	98	609
1995	384	1070	301	648	1105	869	7219	751	1830	10669	152	743	112	238	1245
1996	590	1505	371	798	1558	1607	10462	1109	2246	15424	253	1064	150	265	1732
1997	710	1772	496	898	1831	2301	12862	1629	2350	19142	349	1338	206	283	2176
1998	768	1922	548	1001	1982	2406	13271	1877	2733	20287	391	1416	264	344	2415
1999	837	1886	659	1178	1962	2437	11155	2441	4291	20324	422	1348	374	572	2716
2000	752	1742	735	1221	1843	2146	8854	2724	4776	18500	403	1232	487	686	2808
2001	767	1646	818	1328	1780	2094	7139	3603	6153	18989	386	1085	582	883	2936
Total						14177	74759	14587	25229	128752					

Table 2: Year-By-Year Forecast Accuracy Regressions

This table reports the estimated coefficients from equation [7]. The whole sample is considered. All coefficients have been multiplied by 100. Heteroscedastic consistent White t-statistics appear below their related coefficients. Statistical significance at the 1%, 5%, and 10% levels are respectively indicated with ***, **, and *. Panel A presents results for each individual year. Panel B presents pooled regression coefficients estimated over two distinct sub-periods: 1994 to 1997 and 1998 to 2001. Panels C presents pooled regression coefficients estimated over the total eight year sample period: 1994 to 2001. Analysts' specialization is defined according to the Herfindahl index measure developed in section IV. Thus, an analyst is considered as a country (sector) specialist if her country (sector) HI is above 0.90 and her sector (country) HI is smaller than 0.90. Absolute specialists have both HIs bigger than 0.90. All control variables are as defined in section IV. Wald F-tests for the difference between country specialization and sector specialization coefficients appear in the last but one column. They are shown into a parenthesis if sector is smaller than country specialization coefficient (i.e., if sector-specialized analysts perform better than country-specialized analysts).

	Absolute Special.	Country Special.	Sector Special.	DNBCO	DNBSE	DAGE	DFCOMP	DFEXP	DGEXP	DSPEXP	DSPCHG	DBSIZE	DFREQ	Wald F-Stat	Adj-R^2	Nb Obs.
Panel A: Year-By-Year Regression Coefficients																
1994	-14.47 **	-12.57 ***	-0.76	-2.18 **	0.70	0.26 ***	-0.70	1.82	1.79 *	-1.62	-3.46	1.97	0.64	0.0463	0.07	5417
	(-2.32)	(-2.93)	(-0.14)	(-2.28)	(0.98)	(15.44)	(-0.8)	(1.37)	(1.74)	(-0.93)	(-0.83)	(0.95)	(0.73)			
1995	-6.69	-9.35 ***	5.49	-1.24 *	0.85	0.26 ***	-0.16	-1.49 *	1.39 **	-1.56	-4.72	5.81 ***	0.15	0.0015	0.05	10669
	(-1.56)	(-3)	(1.37)	(-1.68)	(1.62)	(20.26)	(-0.16)	(-1.69)	(2.28)	(-1.59)	(-1.44)	(3.49)	(0.15)			
1996	-5.92	-10.87 ***	5.87 *	-0.60	0.77	0.25 ***	0.50	-1.60 **	-0.10	0.04	-2.78	0.62	-0.35	0.0000	0.06	15424
	(-1.62)	(-3.87)	(1.71)	(-1.05)	(1.63)	(24.25)	(0.44)	(-2.34)	(-0.19)	(0.06)	(-1.2)	(0.44)	(-0.31)			
1997	0.97	-0.59	4.99 **	-0.25	-0.16	0.10 ***	-3.19	-0.58	0.69 **	-0.04	1.42	-0.70	3.26	0.0361	0.02	19142
	(0.38)	(-0.3)	(2.21)	(-0.61)	(-0.52)	(15.21)	(-0.96)	(-1.38)	(2)	(-0.09)	(0.79)	(-0.73)	(0.98)			
1998	1.68	-2.40	5.38 **	-0.56	0.70 *	0.15 ***	-0.92	-1.67 ***	0.38	-0.14	-0.36	-0.24	0.86	0.0096	0.03	20287
	(0.6)	(-1.12)	(2.05)	(-1.24)	(1.75)	(20.23)	(-1.44)	(-3.39)	(0.87)	(-0.27)	(-0.2)	(-0.21)	(1.36)			
1999	-6.45 *	-8.61 ***	4.40	2.19 ***	2.16 ***	0.17 ***	-3.71	-0.91	-0.35	-0.14	5.14 **	17.47 ***	3.54	0.0007	0.03	20324
	(-1.91)	(-3.14)	(1.28)	(2.9)	(3.9)	(17.97)	(-1.11)	(-1.43)	(-0.61)	(-0.2)	(2.08)	(11.7)	(1.06)			
2000	-6.43 **	-4.99 **	4.20	-0.72	0.97	0.16 ***	2.13 ***	-1.69 ***	0.46	-0.16	-2.93	14.40 ***	-2.22 ***	0.0033	0.03	18500
	(-2.02)	(-2.15)	(1.5)	(-1.23)	(1.6)	(20.17)	(2.58)	(-3.34)	(1.08)	(-0.3)	(-1.46)	(9.92)	(-2.75)			
2001	0.16	2.24	-1.52	1.23 **	0.22	0.27 ***	0.04	-1.87 ***	0.50	0.05	-0.29	6.58 ***	0.05	(0.1750)	0.06	18989
	(0.05)	(1.04)	(-0.67)	(2.2)	(0.35)	(29.67)	(0.02)	(-3.68)	(1.27)	(0.1)	(-0.16)	(4.93)	(0.02)			
Panel B: Pooled Sub-Sample Regression Coefficients																
Pooled 94-97	-3.69 ***	-7.18 ***	5.08 ***	-0.73 **	0.55 **	0.19 ***	-0.18	-0.74 **	0.67 ***	-0.48	-1.00	1.26 *	0.23	0.0000	0.04	50652
	(-3.08)	(-5.16)	(3.03)	(-2.46)	(2.34)	(37.68)	(-0.3)	(-2.16)	(2.59)	(-1.29)	(-0.8)	(1.79)	(0.4)			
Pooled 98-01	-4.19 **	-3.82 ***	2.58 *	0.53 *	1.15 ***	0.18 ***	0.01	-1.52 ***	0.39 *	-0.20	0.39	9.58 ***	-0.09	0.0000	0.03	78100
	(-2.29)	(-3.22)	(1.87)	(1.84)	(4.36)	(43.35)	(0.02)	(-5.6)	(1.71)	(-0.69)	(0.38)	(14.16)	(-0.18)			
Panel C: Pooled Regression Coefficients																
Pooled	-3.02 *	-5.19 ***	3.32 ***	0.02	0.86 ***	0.19 ***	-0.11	-1.30 ***	0.46 ***	-0.33	-0.23	6.29 ***	0.10	0.0000	0.04	128752
	(-1.95)	(-5.68)	(3.03)	(0.11)	(4.91)	(56.79)	(-0.3)	(-6)	(2.62)	(-1.46)	(-0.28)	(12.76)	(0.27)			

Table 3: Country-By-Country Forecast Accuracy Regressions

This table reports the estimated coefficients from equation [7] estimated country-by-country. The whole sample is considered. All coefficients have been multiplied by 100. Heteroscedastic consistent White t-statistics appear below their related coefficients. Statistical significance at the 1%, 5%, and 10% levels are respectively indicated with ***, **, and *. Analysts' specialization is defined according to the Herfindahl index measure developed in section IV. Thus, an analyst is considered as a country (sector) specialist if her country (sector) HI is above 0.90 and her sector (country) HI is smaller than 0.90. Absolute specialists have both HIs bigger than 0.90. All control variables are as defined in section IV. Wald F-tests for the difference between country specialization and sector specialization coefficients appear in the last but one column. They are shown into a parenthesis if sector is smaller than country specialization coefficient (i.e., if sector-specialized analysts perform better than country-specialized analysts).

	Absolute Special.	Country Special.	Sector Special.	DNBCO	DNBSE	DAGE	DFCOMP	DFEXP	DGEXP	DSPEXP	DSPCHG	DBSIZE	DFREQ	Wald F-Stat	Adj-R^2	Nb Obs.
Austria	-47.71 **	9.64	-14.46	-1.10	-0.48	0.12 *	-7.19	-8.61 *	1.47	6.81	41.19 **	11.90	6.47	(0.1382)	0.02	542
	(-1.98)	(0.74)	(-1.09)	(-0.46)	(-0.2)	(1.8)	(-0.62)	(-1.95)	(0.5)	(1.41)	(2.13)	(1.29)	(0.57)			
Belgium	1.21	-13.82 **	9.27	0.05	0.62	0.08 ***	-14.79	-1.71	-0.32	2.59 *	7.47	-3.08	14.68	0.0012	0.01	3248
	(0.12)	(-2.42)	(1.42)	(0.04)	(0.69)	(4.46)	(-1.44)	(-1.18)	(-0.27)	(1.74)	(1.42)	(-1.08)	(1.43)			
Denmark	-1.28	3.03	0.29	1.79	-0.02	0.17 ***	3.66	-1.85	2.30 *	-1.57	2.21	1.86	-3.45	(0.6513)	0.04	3522
	(-0.22)	(0.87)	(0.05)	(1.63)	(-0.02)	(9.54)	(1.06)	(-1.26)	(1.85)	(-1)	(0.53)	(0.7)	(-1)			
Finland	-21.00 **	-16.96 ***	4.18	-1.37	-0.49	0.28 ***	-0.75	-1.74	-1.65	1.60	-1.21	1.73	1.15	0.0005	0.10	4425
	(-2.32)	(-3.9)	(0.83)	(-1.38)	(-0.57)	(15.82)	(-0.46)	(-1.4)	(-1.46)	(1.3)	(-0.25)	(0.73)	(0.71)			
France	-9.05 ***	-10.20 ***	3.62	-0.88	1.06 ***	0.16 ***	0.85	-1.09 **	0.81 **	-1.21 ***	-0.39	6.95 ***	-0.70	0.0000	0.03	29116
	(-3.19)	(-4.4)	(1.32)	(-1.54)	(2.73)	(23.55)	(1.43)	(-2.5)	(2.32)	(-2.67)	(-0.22)	(7.19)	(-1.2)			
Germany	3.26	-5.36 **	1.94	-0.05	1.11 *	0.15 ***	0.99	-0.60	0.26	0.54	-2.26	5.51 ***	-1.07	0.0314	0.02	13929
	(0.87)	(-2.05)	(0.69)	(-0.08)	(1.88)	(14.88)	(0.49)	(-0.96)	(0.6)	(0.72)	(-1.08)	(3.77)	(-0.54)			
Ireland	-10.75	5.14	16.11 *	0.39	-0.13	0.19 ***	-21.00	-2.03	0.09	-2.21	-0.09	16.36 ***	21.68	0.2573	0.07	1378
	(-1.15)	(0.91)	(1.65)	(0.21)	(-0.08)	(6.63)	(-1.01)	(-1.12)	(0.07)	(-1.28)	(-0.01)	(2.83)	(1.05)			
Italy	-17.20 ***	-17.06 ***	-2.45	-2.15 **	1.11	0.10 ***	-5.08 *	0.53	-1.16	-1.01	-4.98	18.59 ***	4.69	0.0270	0.02	5646
	(-2.61)	(-3.02)	(-0.46)	(-2.17)	(1.5)	(5.9)	(-1.73)	(0.44)	(-1.53)	(-0.9)	(-1)	(7.68)	(1.6)			
Netherlands	-13.58 ***	3.92	10.34 **	0.96	-0.16	0.21 ***	0.19	-2.00 **	1.07	0.07	2.35	6.54 ***	-0.12	0.1991	0.04	12602
	(-2.81)	(1.03)	(2.54)	(1.15)	(-0.34)	(18.91)	(0.23)	(-2.52)	(1.3)	(0.08)	(0.69)	(3.79)	(-0.15)			
Norway	-15.52 **	-15.98 ***	1.30	-2.08 **	0.04	0.29 ***	-7.55	-1.87	0.34	1.32	4.14	5.42 *	7.42	0.0055	0.10	3663
	(-2.17)	(-3.36)	(0.23)	(-2.01)	(0.03)	(16.19)	(-1.23)	(-1.32)	(0.28)	(0.83)	(0.87)	(1.91)	(1.2)			
Portugal	50.28 ***	12.67	-6.12	-2.13	2.76	0.09 ***	13.29 *	-5.54 *	3.73	4.27	16.65 *	50.94 ***	-12.25	(0.1798)	0.07	1535
	(2.62)	(1.5)	(-0.51)	(-1.14)	(1.15)	(2.63)	(1.66)	(-1.73)	(1.36)	(1.14)	(1.96)	(5.95)	(-1.57)			
Spain	-10.52 *	-6.29	-3.62	1.30	1.13	0.12 ***	1.73	-1.72	2.66 **	-1.21	-6.41	18.71 ***	-2.07	0.6811	0.03	6917
	(-1.81)	(-1.3)	(-0.65)	(1.56)	(1.19)	(8.54)	(0.81)	(-1.35)	(2.18)	(-0.96)	(-1.49)	(7.92)	(-0.97)			
Sweden	1.58	-4.08	-7.51 *	2.08 **	1.64 *	0.28 ***	-0.55	-0.72	-0.55	-0.50	5.39 *	-2.29	0.32	(0.4559)	0.04	7188
	(0.3)	(-1.45)	(-1.87)	(2.55)	(1.82)	(20.18)	(-0.15)	(-0.76)	(-0.73)	(-0.5)	(1.71)	(-1.1)	(0.09)			
Switzerland	2.14	1.59	4.56	0.97	1.19	0.21 ***	1.89	-1.83 *	2.21 **	-1.20	-6.17	9.77 ***	-2.03	0.6208	0.04	7103
	(0.34)	(0.33)	(0.9)	(0.85)	(1.19)	(13.31)	(0.3)	(-1.83)	(2.38)	(-1.12)	(-1.59)	(4.11)	(-0.33)			
UK	0.67	-1.82	7.23 ***	-0.55	0.88 **	0.20 ***	-1.94 **	-1.49 ***	-0.30	-0.13	-0.75	-2.14 *	1.80 **	0.0002	0.04	27938
	(0.3)	(-0.96)	(3.25)	(-1.24)	(2.03)	(29.82)	(-2.4)	(-3.75)	(-0.96)	(-0.31)	(-0.5)	(-1.92)	(2.25)			

Table 4: Sector-By-Sector Forecast Accuracy Regressions

This table reports the estimated coefficients from equation [7] estimated sector-by-sector. The whole sample is considered. All coefficients have been multiplied by 100. Heteroscedastic consistent White t-statistics appear below their related coefficients. Statistical significance at the 1%, 5%, and 10% levels are respectively indicated with ***, **, and *. Analysts' specialization is defined according to the Herfindahl index measure developed in section IV. Thus, an analyst is considered as a country (sector) specialist if her country (sector) HI is above 0.90 and her sector (country) HI is smaller than 0.90. Absolute specialists have both HIs bigger than 0.90. All control variables are as defined in section IV. Wald F-tests for the difference between country specialization and sector specialization coefficients appear in the last but one column. They are shown into a parenthesis if sector is smaller than country specialization coefficient (i.e., if sector-specialized analysts perform better than country-specialized analysts).

	Absolute Special.	Country Special.	Sector Special.	DNBCO	DNBSE	DAGE	DFCOMP	DFEXP	DGEXP	DSPEXP	DSPCHG	DBSIZE	DFREQ	Wald F-Stat	Adj-R^2	Nb Obs.
Basic Ind.	-7.92 *	-8.44 ***	4.94 *	-0.94	-0.08	0.27 ***	3.75 ***	-2.05 ***	0.71	-0.46	1.24	0.60	-3.51 ***	0.00027	0.07	13360
	(-1.77)	(-3.07)	(1.73)	(-1.59)	(-0.14)	(25.32)	(3.49)	(-3.21)	(1.27)	(-0.66)	(0.47)	(0.38)	(-3.29)			
Cap. Goods	-2.26	-1.02	4.93	2.16 ***	0.75 **	0.18 ***	-0.16	-0.39	0.97 **	-1.85 ***	-0.90	5.44 ***	0.18	0.0917	0.04	25945
	(-0.7)	(-0.46)	(1.47)	(3.59)	(2.03)	(25.4)	(-0.21)	(-0.77)	(2.34)	(-3.44)	(-0.49)	(5.1)	(0.23)			
Cons. D.	20.90	-0.64	8.53	1.03	0.23	0.21 ***	1.62	-1.38	0.99	-0.18	-1.82	-0.78	-1.40	0.40057	0.05	4067
	(1.1)	(-0.11)	(0.84)	(0.59)	(0.24)	(12.81)	(0.81)	(-1.31)	(1.09)	(-0.16)	(-0.35)	(-0.33)	(-0.71)			
Cons. N.D.	-12.42 ***	-5.17	-1.24	-0.30	0.89	0.18 ***	-2.19	-2.30 ***	-0.14	-0.01	0.49	7.67 ***	2.11	(0.3644)	0.03	12834
	(-3.08)	(-1.63)	(-0.33)	(-0.32)	(1.64)	(18.3)	(-1.25)	(-3.54)	(-0.27)	(-0.01)	(0.18)	(4.99)	(1.22)			
Cons. Serv.	3.20	-0.94	10.31 ***	1.77 ***	0.81 **	0.15 ***	-0.20	-1.07 **	0.54	-0.52	-2.71	9.37 ***	0.19	0.0005	0.03	24726
	(1.18)	(-0.41)	(3.43)	(2.74)	(2.13)	(20.32)	(-0.26)	(-2.25)	(1.44)	(-1.08)	(-1.45)	(8.27)	(0.24)			
Energy	-6.89	-5.73	3.07	-1.10	1.32	0.23 ***	4.34 **	0.11	-1.35	2.62 **	9.53 **	9.20 ***	-4.45 **	0.1640	0.05	4311
	(-0.79)	(-1.13)	(0.62)	(-1.38)	(1.24)	(11.96)	(2.46)	(0.09)	(-1.55)	(2.21)	(2.02)	(3.2)	(-2.54)			
Finance	-9.32 ***	-10.41 ***	-2.82	-0.22	0.95 *	0.16 ***	-1.61	-1.99 ***	0.40	1.25 *	3.18 *	6.58 ***	1.42	0.0025	0.03	20746
	(-2.87)	(-3.5)	(-0.89)	(-0.52)	(1.85)	(19.84)	(-1.45)	(-3.46)	(0.77)	(1.96)	(1.68)	(5.09)	(1.29)			
Health Care	-2.34	-5.07	-3.30	0.54	1.10	0.17 ***	-2.70	-1.17	-0.33	-2.13 *	-0.96	3.98	2.75	0.7306	0.02	6275
	(-0.38)	(-1.08)	(-0.81)	(0.46)	(1.16)	(10.21)	(-0.83)	(-1.12)	(-0.44)	(-1.79)	(-0.26)	(1.59)	(0.84)			
Public Util.	0.55	-7.10 **	6.51	-1.44 *	0.27	0.15 ***	-1.76	-2.23 **	1.69 *	-0.34	-10.40 ***	12.24 ***	2.05 *	0.0166	0.03	6017
	(0.09)	(-1.96)	(1.43)	(-1.94)	(0.3)	(10.14)	(-1.45)	(-2.07)	(1.89)	(-0.37)	(-3.2)	(5.32)	(1.72)			
Techno.	-1.30	-2.11	-2.47	0.91	1.55 **	0.27 ***	2.43 *	-1.71 *	0.24	0.02	-1.17	2.48	-2.46 *	(0.9692)	0.07	6830
	(-0.23)	(-0.6)	(-0.27)	(0.73)	(2.11)	(18.48)	(1.66)	(-1.75)	(0.33)	(0.02)	(-0.36)	(1.27)	(-1.71)			
Transport.	8.21	-5.08	21.70 **	-0.08	0.45	0.17 ***	3.65 *	-0.94	0.27	1.69	5.08	2.22	-3.59 *	0.00616	0.03	3641
	(1.18)	(-1.06)	(2.34)	(-0.06)	(0.45)	(9.61)	(1.86)	(-0.79)	(0.32)	(1.44)	(1.2)	(0.8)	(-1.85)			

Table 5: Year-By-Year Forecast Accuracy Regressions – Firms Followed By Both Country And Sector Specialists

This table reports the estimated coefficients from equation [7]. The sample is restricted to firms followed by at least one sector- and one country-specialized analyst. All coefficients have been multiplied by 100. Heteroscedastic consistent White t-statistics appear below their related coefficients. Statistical significance at the 1%, 5%, and 10% levels are respectively indicated with ***, **, and *. Panel A presents results for each individual year. Panel B presents pooled regression coefficients estimated over two distinct sub-periods: 1994 to 1997 and 1998 to 2001. Panels C presents pooled regression coefficients estimated over the total eight year sample period: 1994 to 2001. Analysts' specialization is defined according to the Herfindahl index measure developed in section IV. Thus, an analyst is considered as a country (sector) specialist if her country (sector) HI is above 0.90 and her sector (country) HI is smaller than 0.90. Absolute specialists have both HIs bigger than 0.90. All control variables are as defined in section IV. Wald F-tests for the difference between country specialization and sector specialization coefficients appear in the last but one column. They are shown into a parenthesis if sector is smaller than country specialization coefficient (i.e., if sector-specialized analysts perform better than country-specialized analysts).

	Absolute Special.	Country Special.	Sector Special.	DNBCO	DNBSE	DAGE	DFCOMP	DFEXP	DGEXP	DSPEXP	DSPCHG	DBSIZE	DFREQ	Wald F-Stat	Adj-R^2	Nb Obs.
Panel A: Year-By-Year Regression Coefficients																
1994	-15.17 *	-7.01	4.57	-2.76 **	0.16	0.26 ***	-8.22	1.19	0.57	-1.01	-7.33	1.32	8.82	0.1140	0.08	1839
	(-1.76)	(-1.06)	(0.64)	(-1.99)	(0.17)	(9.63)	(-1.14)	(0.56)	(0.3)	(-0.34)	(-1.08)	(0.35)	(1.22)			
1995	-12.27 *	-12.58 **	2.86	-1.22	1.14	0.29 ***	-5.95	-1.43	1.94	-5.17 ***	-7.98	1.98	5.83	0.0158	0.07	3430
	(-1.79)	(-2.34)	(0.54)	(-1.15)	(1.34)	(13.66)	(-1.57)	(-0.92)	(1.64)	(-3.03)	(-1.44)	(0.68)	(1.55)			
1996	-14.06 **	-16.39 ***	-0.40	-1.26	0.30	0.30 ***	0.63	-2.29 **	-0.15	-0.82	-6.99 *	1.03	-0.50	0.0015	0.08	5049
	(-2.46)	(-3.61)	(-0.09)	(-1.63)	(0.44)	(16.39)	(0.38)	(-2.05)	(-0.16)	(-0.61)	(-1.81)	(0.42)	(-0.31)			
1997	-4.55	-5.05 *	2.90	-1.21 **	-0.21	0.09 ***	2.64	-0.93	1.21 **	-0.55	0.15	-1.59	-2.36	0.0148	0.02	7138
	(-1.26)	(-1.68)	(1.05)	(-2.26)	(-0.46)	(8.94)	(1.22)	(-1.48)	(2.26)	(-0.78)	(0.06)	(-0.92)	(-1.08)			
1998	0.66	-5.85 **	5.33 *	-1.17 **	0.75	0.16 ***	-1.66	-2.18 ***	0.36	0.59	-2.40	0.36	1.73	0.0011	0.03	9128
	(0.18)	(-2.01)	(1.82)	(-2.04)	(1.45)	(14.41)	(-0.89)	(-3.27)	(0.63)	(0.84)	(-0.99)	(0.21)	(0.94)			
1999	-6.40	-12.45 ***	4.49	2.24 **	2.61 ***	0.16 ***	4.92	-0.57	-1.24	1.24	7.58 **	21.62 ***	-5.81	0.0003	0.03	9397
	(-1.3)	(-2.88)	(1.08)	(2.23)	(3.27)	(10.63)	(1.05)	(-0.58)	(-1.55)	(1.18)	(2.09)	(8.98)	(-1.23)			
2000	-8.28 *	-8.01 **	2.82	-1.36 *	1.41	0.17 ***	6.36 **	-1.74 **	0.47	-0.67	-3.40	18.73 ***	-6.65 ***	0.0056	0.03	9149
	(-1.86)	(-2.27)	(0.82)	(-1.77)	(1.57)	(13.93)	(2.49)	(-2.4)	(0.77)	(-0.88)	(-1.19)	(8.62)	(-2.62)			
2001	-1.20	3.60	-0.36	1.29	0.06	0.23 ***	-5.13	-1.98 ***	0.63	1.07	2.22	6.36 ***	5.21	(0.2907)	0.04	9668
	(-0.29)	(1.05)	(-0.13)	(1.62)	(0.06)	(18.25)	(-1.6)	(-2.76)	(1.17)	(1.37)	(0.87)	(3.16)	(1.64)			
Panel B: Pooled Sub-Sample Regression Coefficients																
Pooled 94-97	-5.75 ***	-10.75 ***	2.39	-1.36 ***	0.36	0.21 ***	-0.39	-1.15 **	0.99 **	-1.41 **	-3.96 **	-0.21	0.55	0.0000	0.05	17456
	(-3.33)	(-4.85)	(1.12)	(-3.37)	(1.07)	(24.18)	(-0.28)	(-2.14)	(2.26)	(-2.31)	(-2.03)	(-0.17)	(0.4)			
Pooled 98-01	-10.17 ***	-6.21 ***	2.99 *	0.22	1.42 ***	0.18 ***	-0.29	-1.67 ***	0.23	0.42	0.86	11.91 ***	-0.02	0.0000	0.03	37342
	(-3.76)	(-3.45)	(1.79)	(0.56)	(3.83)	(27.93)	(-0.21)	(-4.24)	(0.75)	(1.02)	(0.59)	(11.36)	(-0.01)			
Panel C: Pooled Regression Coefficients																
Pooled	-3.65 *	-7.73 ***	2.89 **	-0.38	1.03 ***	0.18 ***	-0.51	-1.61 ***	0.40	0.02	-0.43	8.07 ***	0.35	0.0000	0.03	54798
	(-1.68)	(-5.43)	(2.14)	(-1.34)	(4.09)	(35.97)	(-0.51)	(-4.91)	(1.53)	(0.06)	(-0.36)	(9.97)	(0.35)			

Table 6: Forecast Accuracy Regressions – Market Cap, Foreign Sales, And Foreign Assets

This table reports the estimated coefficients from equation [10] over the period 1994-2001 . Quartiles are based on market capitalisations (panel A), the ratio of foreign sales to total sales (panel B), and the ratio of foreign assets to total assets (panel C). All coefficients have been multiplied by 100. Heteroscedastic consistent White t-statistics appear below their related coefficients. Statistical significance at the 1%, 5%, and 10% levels are respectively indicated with ***, **, and *. Analysts' specialization is defined according to the Herfindahl index measure developed in section IV. Thus, an analyst is considered as a country (sector) specialist if her country (sector) HI is above 0.90 and her sector (country) HI is smaller than 0.90. Absolute specialists have both HIs bigger than 0.90. All control variables are as defined in section IV. Wald F-tests for the difference between country specialization and sector specialization coefficients appear in the last but one column. They are shown into a parenthesis if sector is smaller than country specialization coefficient (i.e., if sector-specialized analysts perform better than country-specialized analysts).

	Absolute Special.	Country Special.	Sector Special.	DNBCO	DNBSE	DAGE	DFCOMP	DFEXP	DGEXP	DSPEXP	DSPCHG	DBSIZE	DFREQ	Wald F-Stat	Adj-R^2	Nb Obs.
Panel A: Market Capitalisations																
Q1 (High)	-2.91	-6.70 ***	6.01 ***	-0.90 **	1.26 ***	0.16 ***	-0.81	-1.52 ***	0.42	0.34	-0.51	7.17 ***	0.76	0.0000	0.02	23495
	(-1.04)	(-3.16)	(2.82)	(-2.24)	(2.67)	(20.12)	(-0.99)	(-3.07)	(1.02)	(0.64)	(-0.27)	(5.88)	(0.95)			
Q2	-6.51 **	-7.56 ***	-0.59	0.34	1.56 ***	0.16 ***	-0.13	-1.74 ***	1.55 ***	-0.79	-2.94	9.17 ***	-0.01	0.0132	0.03	23458
	(-2.33)	(-3.43)	(-0.25)	(0.69)	(3.4)	(20.55)	(-0.16)	(-3.36)	(3.68)	(-1.44)	(-1.58)	(7.34)	(-0.01)			
Q3	-3.86	-3.14	3.15	0.21	0.73 *	0.21 ***	0.11	-0.63	-0.38	-0.03	0.45	6.81 ***	-0.05	0.0325	0.05	23441
	(-1.42)	(-1.51)	(1.17)	(0.38)	(1.84)	(28.01)	(0.11)	(-1.34)	(-1.08)	(-0.06)	(0.25)	(5.95)	(-0.06)			
Q4 (Low)	1.33	1.47	5.10	1.72 **	0.88 **	0.24 ***	0.02	-1.00 **	-0.47	-0.14	2.95	4.85 ***	-0.05	0.3509	0.06	23216
	(0.44)	(0.63)	(1.39)	(2.13)	(2.4)	(31.7)	(0.02)	(-1.99)	(-1.16)	(-0.29)	(1.52)	(4.62)	(-0.05)			
Pooled	-4.01 ***	-4.90 ***	3.32 ***	-0.03	1.05 ***	0.19 ***	-0.22	-1.21 ***	0.34 *	-0.22	-0.48	7.15 ***	0.18	0.0000	0.04	93610
	(-2.82)	(-4.58)	(2.63)	(-0.12)	(4.99)	(48.77)	(-0.48)	(-4.83)	(1.7)	(-0.83)	(-0.51)	(12.26)	(0.39)			
Panel B: Foreign Sales																
Q1 (High)	-3.37	-3.04	0.07	0.62	0.44	0.23 ***	1.66	-1.51 **	0.95 *	-0.65	0.46	6.35 ***	-1.59	0.3423	0.05	18458
	(-0.85)	(-1.31)	(0.03)	(1.04)	(0.92)	(25.6)	(1.57)	(-2.51)	(1.92)	(-1.02)	(0.2)	(4.75)	(-1.52)			
Q2	-3.97	-6.94 ***	4.54	-0.91	1.11 **	0.18 ***	-0.71	-0.47	0.54	-1.04 *	-2.74	3.88 ***	0.78	0.0004	0.03	18508
	(-1.09)	(-2.96)	(1.63)	(-1.56)	(2.41)	(21.12)	(-0.73)	(-0.95)	(1.37)	(-1.91)	(-1.34)	(3.09)	(0.8)			
Q3	-9.32 ***	-4.12 *	5.96 **	-0.45	0.59	0.21 ***	3.14 ***	-0.92	0.28	-0.77	-0.76	8.69 ***	-3.07 ***	0.0023	0.04	18480
	(-2.92)	(-1.71)	(2.1)	(-0.82)	(1.25)	(24.31)	(3.56)	(-1.57)	(0.58)	(-1.27)	(-0.35)	(6.57)	(-3.5)			
Q4 (Low)	-3.37	-2.87	1.43	0.24	1.35 ***	0.18 ***	-2.04 **	-1.58 ***	-0.35	0.87	0.45	9.45 ***	1.90 **	0.2008	0.03	18263
	(-1.1)	(-1.11)	(0.46)	(0.42)	(2.82)	(19.86)	(-2.38)	(-2.9)	(-0.82)	(1.54)	(0.22)	(7.01)	(2.25)			
Pooled	-4.91 ***	-4.25 ***	3.07 **	-0.11	0.87 ***	0.20 ***	0.14	-1.08 ***	0.38 *	-0.42	-0.72	7.09 ***	-0.13	0.0000	0.04	73709
	(-2.97)	(-3.55)	(2.13)	(-0.38)	(3.72)	(45.5)	(0.29)	(-3.89)	(1.68)	(-1.44)	(-0.68)	(10.79)	(-0.27)			
Panel C: Foreign Assets																
Q1 (High)	-0.55	1.40	7.57 *	0.38	0.91	0.19 ***	0.83	-2.22 **	1.60 **	-1.73 *	-3.33	8.87 ***	-0.87	0.1848	0.03	7313
	(-0.1)	(0.39)	(1.86)	(0.45)	(1.1)	(13.52)	(0.56)	(-2.56)	(2.23)	(-1.87)	(-0.96)	(3.88)	(-0.59)			
Q2	-2.29	-3.86	9.64 **	0.08	2.03 **	0.21 ***	-1.46	-1.75 **	1.45 **	-0.62	-2.73	1.91	1.30	0.0042	0.04	7199
	(-0.49)	(-1.09)	(2.42)	(0.1)	(2.33)	(15.62)	(-0.48)	(-2.09)	(2.27)	(-0.65)	(-0.88)	(0.87)	(0.43)			
Q3	0.63	1.24	3.83	0.77	0.45	0.23 ***	-1.99	-1.72 **	-0.68	0.57	-2.43	1.36	2.02	0.5693	0.05	7201
	(0.15)	(0.33)	(0.95)	(0.9)	(0.56)	(16.72)	(-1.1)	(-2.25)	(-1.1)	(0.64)	(-0.82)	(0.63)	(1.13)			
Q4 (Low)	-0.01	-3.80	-0.52	0.25	1.95 **	0.18 ***	-3.32 **	-1.32	-0.69	-0.02	-0.38	8.69 ***	3.16 **	0.5191	0.03	6911
	(0)	(-0.86)	(-0.11)	(0.22)	(2.33)	(12.41)	(-2.24)	(-1.54)	(-1.06)	(-0.02)	(-0.12)	(3.87)	(2.15)			
Pooled	0.06	-1.01	5.92 ***	0.38	1.37 ***	0.20 ***	-1.68 *	-1.71 ***	0.51	-0.54	-2.36	5.21 ***	1.60 *	0.0035	0.04	28624
	(0.02)	(-0.53)	(2.82)	(0.85)	(3.31)	(29.09)	(-1.84)	(-4.11)	(1.54)	(-1.18)	(-1.47)	(4.7)	(1.76)			

Table 7: Forecast Accuracy Regressions – Location And Country Institutional Factors

This table reports the estimated coefficients from equation [10]. Financial analysts are considered as local if they are based within the same country as the firm for which they issue the forecast. They are considered as foreign if they are based abroad. All coefficients have been multiplied by 100. Heteroscedastic consistent White t-statistics appear below their related coefficients. Statistical significance at the 1%, 5%, and 10% levels are respectively indicated with ***, **, and *. Analysts' specialization is defined according to the Herfindahl index measure developed in section IV. Thus, an analyst is considered as a country (sector) specialist if her country (sector) HI is above 0.90 and her sector (country) HI is smaller than 0.90. Absolute specialists have both HIs bigger than 0.90. All control variables are as defined in section IV. Wald F-tests for the difference between the different coefficients are shown in the right-hand side of the table.

	Pooled 98-01		Wald F-Stat			
	Equation [10]	Equation [11]	Loc. C. Special.	For. C. Special.	Loc. S. Special.	For. S. Special.
Country Special.	-2.93 (-1.36)					
Loc. C. Special.		-1.01 (-0.62)	---	0.0750	0.3340	0.0170
For. C. Special.		3.15 (1.51)	0.0750	---	0.0559	0.5279
Sector Special.	4.82 ** (2.14)					
Loc. S. Special.		-4.85 (-1.32)	0.3340	0.0559	---	0.0148
For. S. Special.		4.90 *** (2.69)	0.0170	0.5279	0.0148	---
Wald F-Stat	0.0043					
Adj-R^2	0.03	0.03				
Nb Observations	23413	23413				

Table 8: Forecast Timeliness – Leader-to-Follower Ratios

This table reports results for forecasts' timeliness. Non-parametric Wilcoxon-Mann-Whitney tests for the difference of LFR measures across different specialization groups are shown. Mean and Median LFRs of the first (1) and second (2) mentioned specializations are given in columns 3, 4, 6 and 7. The differences and the p-value for the statistical significance of this difference appear in columns 5 and 8, and 9. The p-values are shown into parentheses when the difference is negative (i.e. when (1) < (2)). Analysts' specialization is defined according to the Herfindahl index measure developed in section IV. Thus, an analyst is considered as a country (sector) specialist if her country (sector) HI is above 0.90 and her sector (country) HI is smaller than 0.90. Absolute specialists have both HIs bigger than 0.90. All control variables are as defined in section IV.

(1) - (2)		Wicoxon-Mann-Whitney						
		Mean (1)	Mean (2)	(1) - (2)	Median (1)	Median (2)	(1) - (2)	Prob
Absolute Sp.	Country Sp.	1,25	1,20	0,0501	0,99	0,98	0,0078	0,1955
Absolute Sp.	Sector Sp.	1,25	1,19	0,0619	0,99	0,97	0,0178	0,0369
Absolute Sp.	Generalist	1,25	1,20	0,0500	0,99	0,97	0,0171	0,2597
Country Sp.	Sector Sp.	1,20	1,19	0,0118	0,98	0,97	0,0100	0,0820
Country Sp.	Generalist	1,20	1,20	-0,0001	0,98	0,97	0,0093	0,5749
Sector Sp.	Generalist	1,19	1,20	-0,0119	0,97	0,97	-0,0007	(0,0836)