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The Value of Analysts' Recommendations and the Organization of Financial Research*

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Abstract. Brokerage houses usually organize their research activities by country or economic sector. We evaluate which research structure provides most value to investors. To do so, we study the relative information content of recommendations issued by country-specialized analysts and sector-specialized analysts. Our findings show that the former issue more valuable recommendations. The strength of country-specific commonalities and institutional factors explain at least part of the better performance of country-specialized financial analysts. Although analysts' geographic location has been shown in the literature to be a significant determinant of earnings forecast accuracy, its relevance is more subtle when it comes to stock recommendations.

JEL Classification: D82, G1, G29

1. Introduction

Brokerage houses usually organize their research activities by country or economic sector. The units of production are financial analysts who dedicate their time and effort to issuing earnings forecasts and recommendations for the set of firms they follow. There are probably different forces that shape how analysts' research is structured such as commonalities across firms, the information environment, customer needs, and cost considerations. No matter what drives analyst specialization, large amounts of money are invested every day on the basis of analysts' recommendations. This makes it important to understand which organizational structure gives investors most value.

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The information environment and the existence of commonalities across firms are significant determinants of the structure and quality of financial research.[1] The quality of analysts' recommendations is influenced by the availability and quality of information and by the models they use to interpret this information. In addition, information complementarities can facilitate the process of analyzing firms and contribute to a better understanding of firms' economics. They provide a rationale for why analysts tend to specialize and choose portfolios of firms that share certain commonalities. According to Kini et al. (2009), analysts tend to cover single-country portfolios in countries where national influences are strong, and specialize in firms that belong to a single economic sector in industries where common economic forces are prominent. As they argue, this is "consistent with the objective of taking advantage of economies of scale in information acquisition and production to produce high-quality research."

Alternatively, the organization of financial research may be driven by customer needs or by the way fund managers structure their investment process and not by the possibility of exploiting economies of scale. Investors who believe that financial markets are segmented try to profit from international diversification. They mostly need country-specific research. For instance, they are willing to know the future top-performing firms within each country. Investors who, on the contrary, are convinced that financial markets are highly integrated rely on sector diversification. For that reason, they tend to value global sector-based approaches. Sector-by-sector analysis is then more appropriate to the specific needs of these fund managers.

The forces and constraints that shape how financial research is organized may affect brokerage houses in different ways. In this paper, we evaluate which research structure provides most value to investors. To this end, we explore whether stock recommendations issued by country-specialized analysts contain more information than recommendations issued by sector-specialized analysts, or vice versa.[2] We focus on financial research performed on European equities, for which both country-based research and sector-based research exist.[3]

Our findings show that stock recommendations issued by country specialists contain more information than those released by sector specialists. When the

[1] Berger et al. (2005); Petersen and Rajan (2002); and Stein (2002) focus on the importance of the information environment in the organization of financial intermediaries.

[2] From now on, we interchangeably call country-specialized analysts "country specialists" and sector-specialized analysts "sector specialists".

[3] Financial research on U.S. equities is mostly organized along sector lines and for Asian equities country-based research is most preferred. See Reuters Institutional Investor Survey, Institutional Investor Research Group (2002), also mentioned in Kini et al., 2009. To the contrary, research on European firms, even though biased towards country-based structures, is performed by both country and sector specialists. Approximately 30% (70%) of the 6587 analysts considered in our sample are sector (country) specialists.

recommendation is released, the stock price reaction is stronger for recommendations issued by country specialists. Furthermore, country specialists provide additional information that is slowly incorporated into prices, with a drift lasting up to 20 trading days. Conversely, there is no drift after recommendations issued by sector specialists. We interpret this delayed price reactions for country specialists as evidence of greater information content since, for a given firm, the post-announcement price response is related to the type of analyst.

We further explore whether our findings are due to a geographic advantage. Country specialists are on average based closer to the firms they follow and may therefore have better access to private information. In addition to being physically proximate, they are also generally located within the same country as the firms they follow, thus increasing cultural and institutional proximity. While we find weak evidence that physical proximity matters, our results indicate that location (which captures other dimensions of proximity) may still play a role in explaining the comparative advantage of country specialists. Specifically, we show that distant country specialists outperform distant sector specialists and they do not do worse than proximate country specialists. Also in some specifications, we find that proximate/local sector specialists do not do as well as country specialists but they do slightly better than distant/foreign sector specialists.

Next we explore whether our findings stem from information complementarities and economies of scale in gathering and processing information. More specifically, we evaluate different sources that could explain the informational advantage of country specialists, such as country factors, governance regimes and financial disclosure environments. Commonalities across firms may stem from a shared country of domicile. Firms within a country share the same reporting and governance systems and are subject to similar economic forces. High-quality institutional structures (i.e. high-quality disclosure and good governance) have a positive impact on the information environment and may require less country-specific knowledge. Moreover, with a better information environment, the role of geographic and cultural proximity may be less important. For these reasons, we explore whether the information advantage of country specialists is stronger in countries with lower-quality institutional structures. Our results suggest that the disclosure environment and minority investor legal protection partly explain the advantage of country specialists.

We then investigate whether country specialists draw their comparative advantage from recommendations issued for firms headquartered in countries with strong common economic forces. Results show that part of the additional information conveyed by country specialists' stock recommendations can be explained by this factor. Country-specific variables therefore appear to be important determinants. Sector specialists, who may need to summarize these variables when valuing firms from different locations, are at a disadvantage, as they may lose valuable information.

This paper is most closely related to Sonney (2009). Both conclude that country specialists outperform sector specialists. However, there are some important differences. First, in contrast with Sonney (2009), we focus on analyst recommendations rather than on earnings forecasts. With this choice, we add to the literature on the value of stock recommendations that mostly concentrates on U.S. firms by showing that stock recommendations are valuable also for firms outside the United States. Furthermore, we document that the value largely depends on how analysts organize their research activities. Second, we find that proximity might be responsible for the superior performance of country specialists when issuing stock recommendations, but to a lower extent than that by which it explains the greater earnings forecast accuracy of country specialists in Sonney (2009). In general, the literature on proximity and accuracy focuses on one-year-ahead earnings forecasts. When it comes to stock recommendations, short term earnings forecasts are just one of various inputs that take part in the valuation process. While short-term earnings forecasts may indeed benefit from informational advantages that result from geographical proximity, the forecast of other inputs may not. Instead, a good forecast of inputs such as long-term earnings, long-term growth, risk, etc., may depend more, for example, on the knowledge of country specificities. As such, when issuing stock recommendations proximity may become relatively less important than other sources of information advantage.

Even though we perform a battery of tests to check the robustness of our results, we are aware of potential limitations of this study. Some of the variables considered as potential explanations for the differences in the relative information content of recommendations issued by country and sector specialists are quite highly correlated. This makes it a hard task to disentangle the individual effect. For instance, countries with low accounting standards are also likely to provide low shareholder protection. They are also likely to be the smallest national markets in the sample. Therefore, our tests should not be viewed as an unequivocal explanation of the comparative advantage of country specialists. Instead, our results are more likely to indicate under which conditions country specialists bring more information than do their sector peers. All of these conditions may not be mutually exclusive.

The paper is organized as follows. Section 2 presents a brief review of the extant literature on the value of stock recommendations. In Section 3, we discuss the objectives and constraints that shape brokerage houses' organization of research on European equities. Section 4 introduces the data and the methodology. In Section 5, we focus on financial analysts. We analyze their portfolio characteristics, how they tend to specialize, and whether there is an informational advantage linked to specialization. Section 6 is devoted to explanations of the comparative advantage that country specialists seem to have over sector specialists. We conclude in Section 7.

2. The Value of Stock Recommendations and Its Determinants

Stock recommendations constitute a final output of analyst research and reflect analysts' overall opinion on the value of stocks in relation to their market price. Elton et al. (1986) highlight the unequivocal piece of information constituted by analyst recommendations. They write: "Stock recommendations clearly and unambiguously indicate whether financial analysts consider any given security as under- or over-valued." In contrast, earnings forecasts represent an intermediate number contributing to stock recommendations. As Schipper (1991) emphasizes, analysts' earnings forecasts are just one ingredient used to evaluate the investment potential of a stock. Thus, stock recommendations may incorporate further country- and sector-specific analysis and judgments beyond what is included in one-year-ahead earnings forecasts. For that, we focus on analysts' stock recommendations.[4]

Various studies show that analysts' recommendations convey valuable information to investors. Womack (1996); Francis and Soffer (1997); Ivkovic and Jegadeesh (2004); and Asquith et al. (2005), among others, document a positive relationship between recommendation upgrades and downgrades and stock prices. Those studies show that significant price reactions occur both when recommendations are released and in the months after. Womack (1996) finds that the drift appears to last up to six months after recommendation downgrades, whereas it is shorter-lived when stocks are upgraded. All of these studies focus on recommendations issued on U.S. equities. A notable exception is Jegadeesh and Kim (2006), who extend the investigation to the G7 countries. They report that, although abnormal returns are highest in the United States, recommendation changes significantly affect prices in all G7 countries. They also find that prices continue to drift in the direction of the recommendation change over the following two to six months in all of the countries. Beyond that, there is limited evidence on the value of stock recommendations in Europe.

Despite the importance that both academics and practitioners attach to the information content of stock recommendations, there is limited evidence on what factors determine the value of those recommendations. Stickel (1995) is among the few authors who analyze the short- and long-term price performance of analysts' recommendations and identifies some contributing factors. He shows that the stock price reaction is positively related to the strength of the recommendation, the size of the brokerage house issuing the recommendation, and the analyst's reputation, and is negatively related to the size of the firm. Asquith et al. (2005) report a similar result and show that the price reaction around the release of recommendations is negatively related to the number of analysts following the firm. Ivkovic and Jegadeesh (2004) show that the stock price reaction is weaker when

[4] See also, e.g., Asquith et al. (2005). They explore additional information pieces contained in financial analysts' reports, such as target price revisions, and the strength of the quantitative and qualitative arguments.

recommendations are released immediately after earnings announcement dates. They conclude that financial analysts add more value by gathering information than by interpreting it. Boni and Womack (2006) support this view, as they show that price reactions to analyst recommendations generally increase with time from the last scheduled earnings announcement. The results of Loh and Mian (2006) are consistent with the notion that the value of analysts' recommendations is founded in economic rationale and not on other ad hoc firm characteristics.[5] The common theme of the studies cited above is that stock recommendations are valuable because analysts have superior information than the market as a result of their gathering and interpreting skills.

Other studies focus on the analysis of the information content of earnings forecast. These studies reveal additional variables that can explain the differential information content of analysts' output. Some of these variables are related to geographic factors. In the context of European markets, Orpurt (2004) shows that financial analysts located in the same country as the firms they follow issue on average more accurate earnings forecasts than do analysts based abroad. Enlarging the investigation to a sample of 32 countries, Bae et al. (2005) confirm this finding. Malloy (2005) examines another geographic dimension: that of physical distance. Building on the work by Coval and Moskowitz (2001) on fund managers, Malloy (2005) computes the "fly of bird" distance between analysts and the firms they cover. He reports that proximate analysts strongly outperform analysts located farther away. Physical proximity, as well as being located within the same country as the firms' headquarters, may therefore also play an important role in the value that analysts deliver to investors.

We further hypothesize that the composition of analysts' portfolios and particularly analysts' specialization may be important in determining the relative level of information contained in stock recommendations. In the next section, we discuss potential explanations that could support this hypothesis.

3. The Organization of Research Departments: Country versus Sector Specialization

The quality of analysts' recommendations is influenced by the availability and quality of information and by the models or skills used to process this information. These are broadly the two sources of value in analysts' recommendations. Ivkovic and Jegadeesh (2004) show that the dominant source of analysts' value lies in the quality of information rather than in its interpretation.

[5] A confronting view is that offered by Jegadeesh et al. (2004), Cornell (2001), and Bradshaw (2004) who argue that the market reaction to analysts' recommendations is related to heuristic firm characteristics rather than founded in economic analysis or stock picking ability.

To exploit economies of scale in gathering information, Kini et al. (2005) show that analysts tend to specialize and choose portfolios of firms that share certain commonalities. Commonalities across firms may stem from sector- or country-specific factors. If analysts think that the earnings and value of firms are largely driven by common factors within an economic sector of activity, they may choose to follow only companies within a sector. Similarly, country specialists will tend to follow only firms located in the same country and for which national forces may be the most significant driver of future earnings.

The organization of research may also be shaped by other forces and constraints. Despite the predictions of Kini et al. (2005), when we look at analysts' portfolios, we find that firms are often followed by both country and sector specialists. That is, there are sector specialists following firms that have important country-factor commonalities and vice versa. It is probable that when choosing their portfolios, analysts weigh forces and constraints beyond economies of scale in gathering and interpreting information.

If some analysts' portfolios benefit from the information environment more than others do, it is plausible that the quality of analysts' forecasts and the value they deliver to investors differ. Actually, we expect that recommendations issued by analysts whose portfolios benefit most from the existence of commonalities across firms are those that are more informative about the true value of the firm. For example, if the earnings of a given firm are driven largely by country economic forces, we would expect country specialists to benefit from economies of scale in using country-specific information and to issue superior forecasts and recommendations. In fact, Sonney (2009) shows that country specialists issue on average more accurate earnings forecasts, and finds that geographic proximity constitutes a significant determinant of this superior performance. However, better accuracy need not necessarily translate into more informative recommendations.[6] In our example, sector specialists could be at a disadvantage in terms of economies of scale in gathering and using information; however, they could benefit from using a valuation model that captures well the economics of the sector that they follow. Indeed, Demirakos et al. (2005) remark that analysts tailor their valuation methodology to the industry in which the firms operate.[7] It is also possible that less accurate earnings forecasts translate into more informative stock recommendations because recommendations may include information in addition to that attached to forecasts.

[6] Loh and Mian (2006) document a positive association between the value of recommendations and the quality of forecasts for U.S. equities. Relying on their findings, they argue that stock-picking ability is founded on economic rationale and not on ad hoc firm-specific characteristics. See Jegadeesh et al. (2004) and Bradshaw (2004).

[7] The analysis of strategic issues and R&D projects is the critical part of the valuation process in the pharmaceuticals industry, whereas brand strength, and innovative skills and competence in technology are the center of attention respectively in the beverages and electronics industries.

For example, analysts provide a justification for their recommendations, but not for their forecasts. Also, focusing on recommendations allows us to evaluate whether and how investors recognize the informational advantage that analysts may have.

It is well documented that complexity affects the accuracy of analysts' earnings forecasts because processing limitations and shortages of time cause some information to be excluded or simplified. Thus, it may well be that it also has implications for the value of stock recommendations (see Plumlee 2003; Haw et al. 1994; Lang and Lundholm 1996; Duru and Reeb 2002; Clement 1999; Malloy 2005; Clement et al. 2003). An important source of complexity for country specialists lies in the fact that they follow firms in different sectors. Therefore, there may be a limit to the sector-specific information they can process. For sector analysts, complexity arises from following firms from different countries. They need to obtain country-specific information for each country represented in their portfolio. Before using this information, they need to standardize it across firms. This standardization may lead to a loss of information value that may be larger when country-specific factors are more important. If country-specific information appears to be more important than sector-specific information to assess the investment potential of a firm then sector specialists may be at a disadvantage.

Several studies provide evidence that country factors are important. These studies stress that there are still numerous divergences among national markets. Since the mid-1990s and the work of Heston and Rouwenhorst (1994, 1995), much attention has been devoted to the relative impact of industry and country factors on stock returns. Heston and Rouwenhorst (1994, 1995), Beckers et al. (1996), and Griffin and Karolyi (1998), among many others, conclude that country factors are more important determinants of stock returns than are sector factors. More recently, Cavaglia et al. (2000) and Baca et al. (2000) reveal a growing influence of industry factors. Moreover, their results lead to the impression that sector factors may even have become more important than country factors at the end of the 1990s. However, as is apparent in the work of Adjaouté and Danthine (2003), the relative influence of country and sector factors in stock returns appears to follow cycles. The Cavaglia et al. (2000) and Baca et al. (2000) studies would very likely have returned the same results if they had been carried out in the mid-1970s. Our reading of this literature is that country-specific factors still exist and may even have strong impacts on the earnings and stock prices of firms. Thus, these studies suggest that country commonalities across firms are important; country specialists therefore, could have an advantage over sector specialists.

Despite the overwhelming evidence that country-specific factors may still play an important role, professional circles currently seem to favor a global-sector-based approach. Focusing on international fund managers, Galati and Tsatsaronis (2003) report the results of a survey conducted on behalf of Merrill Lynch that shows that in

2000, 75 percent of surveyed fund managers indicated sector diversification as their primary objective, with only 10 percent giving priority to the international diversification approach. If investor needs are important in shaping analysts' portfolios, investor's preferences may tend to influence the structure of financial research.

4. Data and Experiment Design

4.1 DATA

The construction of our sample starts with all recommendations on European firms issued during the period 1994–2003, regardless of the location of the analysts who issued the recommendations. In 2003, the Market Abuse Directive (2003/6/EC) and other directives (2003/124/EC and 2003/125/EC) were adopted in Europe. These European directives became legally binding for member states in 2004 and had an impact on financial analyst output and behavior (see, i.e., Dubois and Dumontier (2008)). Thus, restricting our analysis to recommendations issued before 2004 allows us to control for the potential effect that these new regulations could have had on the information content that we study. We focus on the 15 major European markets, namely, Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom. As we have already discussed, our choice to restrict the analysis to European markets stems from the fact that the organization of financial research departments along country or sector lines is mainly a European phenomenon. Therefore, our focus on these markets provides us with a large cross-section of country- and sector-specialized analysts.[8]

Financial analysts' stock recommendations are extracted from the I/B/E/S International and U.S. Recommendation History databases. The I/B/E/S Identification File is also used to obtain the country of origin of each firm, as well as the industry sector in which each firm operates. Eleven sectors are defined: finance, health care, consumer nondurables, 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 provide us with a country, an industry, or the name of the analyst who issued the recommendation.

Market data such as stock prices, dividends, risk-free interest rates, and the firms' market capitalization are taken from the Thomson Financial Datastream database. From this database, we also obtain the market index SP350 Europe (euro currency) that we use as a benchmark. The availability of market data for each firm imposes

[8] In general, analysts following Japanese firms are country specialists, whereas research on U.S. firms tends to be structured according to sectors.

additional restrictions on our final sample, which includes only firms with available price and recommendations data in both the I/B/E/S and Datastream databases.

Other sources are used to obtain further relevant data and control variables that we introduce in succeeding sections. The Worldscope database provides us with data on the geographic locations of firms' headquarters. Financial analysts' addresses are found in different editions, from 1994 to 2003, of Nelson Information's Directory of Investment Research. The latitude and longitude data needed to compute the distance between analysts and the firms they follow are extracted manually from the Website www.heavens-above.com. Finally, we obtain the country-specific variables relating to accounting standards and shareholder protection used by La Porta et al. (1998) from the Center for International Financial Analysis and Research.

4.2 ANALYSTS' SPECIALIZATION

As a next step, we classify all analysts according to their specialization. To this end, we compute the Herfindahl Index (HI), a concentration ratio that is generally used as an indicator of the degree of competition in an industry. This ratio allows us to classify as sector (country) specialists those analysts that concentrate on firms within the same sector or industry (country). It is possible that sector (country) specialists also issue recommendations for firms that belong to other sectors (countries), but this activity is marginal. The advantage of using this measure to classify analysts according to their specialization is that it is based on concentration. For example, it allows us to classify as a sector specialist an analyst who follows ten firms in the same sector and one firm in a different sector. An alternative classification could consist of defining as sector (country) specialists only those analysts following firms in a single sector (country). However, this measure would be much more restrictive, and would not consider the analyst in our example a sector specialist.

For each analyst, we compute both a sector and a country HI as follows

$$HI_{a,y}^{Country} = \sum_{c=1}^{C} \alpha_c^2$$

$$HI_{a,y}^{Sector} = \sum_{s=1}^{S} \alpha_s^2$$

where $\alpha_c = N_{c,a,y}/N_{a,y}$ and $\alpha_s = N_{s,a,y}/N_{a,y} \cdot N_{c,a,y}(N_{s,a,y})$ 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 HI takes a value of 1 (i.e., its maximum value) when the analyst follows firms that are all headquartered within a single country. Similarly, a sector HI takes value of 1 when the analyst follows firms that are active in one sector. Analysts

who also follow few firms in other countries (sectors), but who devote most of their attention to firms within a single country (sector) will have a country (sector) HI close to one. HI values go towards zero as the analysts' portfolio diversification increases.

An analyst is classified as a country specialist if her or his country HI is larger than 0.90 and her or his sector HI is smaller than 0.90. An analyst is classified as a sector specialist if her or his sector HI is larger than 0.90 and her or his country HI is smaller than 0.90.[9] For the purpose of our analysis, we take only analysts who are either country or sector specialists. After matching I/B/E/S to Datastream and selecting only firms with price and recommendations data, our sample includes 4,445 country specialists and 2,063 sector specialists. We drop analysts who follow many countries and many sectors and analysts who mainly follow only one sector in one country. With an HI threshold of 0.90, non-country non-sector specialists represent about 30% of our sample.

4.3 DESCRIPTIVE STATISTICS

Table I reports key sample statistics. The first column refers to the whole sample. The second and third columns refer to country and sector specialists, respectively. This allows us to compare the main characteristics of the portfolios of these two types of analysts. As a first insight, this table shows that the average number of firms followed by each type of analysts is very similar across specializations. On average, both country and sector specialists follow approximately eight firms. To the same extent, the average number of yearly recommendations is equivalent for both types of analysts. Country and sector specialists issue an average of 17.1 and 18.2 recommendations per year, respectively. However, the focus seems to be different across specializations. Sector specialists focus on more actively followed firms. The average number of analysts following firms analyzed by sector specialists is 27.2, which is well above the average of 16 for country specialists.

The third row of the table indicates that country specialists follow on average 1.04 countries. In fact, a country specialist may follow up to four countries. This gives support to our definition of specialization. That is, the use of Herfindahl indices allows us to consider as country specialists analysts who spend most of their time analyzing firms headquartered in a single country, but who may also follow a small number of foreign firms. The same holds true for sector specialists who follow an average of 1.09 sectors. In fact, there are sector specialists who follow up to six industries over a given year but concentrate their efforts on firms within

[9] The choice of 0.90 as a threshold is somewhat arbitrary. Nonetheless, a closer look at the data suggests that it accurately depicts the analysts' specialization. The results remain unchanged with thresholds of 0.80, 0.85, and 1.

Table I. Descriptive statistics

This table presents the average values of various characteristics of analysts' portfolios and research activities, depending on specialization. We include all analysts following European firms. However, to reach a clear picture of analyst portfolio characteristics, a worldwide sample of firms is considered in some instances. The reason is that sector specialists do not (always) restrict themselves to European firms and the comparison with country specialists would be worthless if one considers European firms only. "Avg. number of firms," "Avg. number of recommendations," "Avg. number of countries," and "Avg. number of sectors" indicate the average number of firms each specialization type of analysts follows, the average number of recommendations issued by analysts, and the average number of countries and sectors followed by analysts, respectively. All of these variables are computed on a yearly basis from a worldwide sample of firms. The rest of the table refers to a sample restricted to European firms. "Avg. number of analysts per firm" is an indication of the average number of analysts who follow a given firm on a yearly basis. "Avg. firm size" is the average market capitalization of firms in analysts' portfolios. "Avg. market size" is the average size of the national markets followed by analysts. "Avg. distance" is the average number of kilometers between analysts and the firms they follow. "Local" stands for analysts located in the same country as the firms they follow. By contrast, "foreign" analysts are based abroad. "Large brokers" are those in the top broker size-decile. "Small and medium brokers" constitute the remainder. The percentage of analysts in large and small/medium brokerage houses indicates for which type of brokers financial analysts work. To test whether analyst specific variables are significantly different for country vs. sector specialists, we compute a two-sample Wilcoxon test (W-test) and report the *p*-values.

Variable	All Analysts	Country Specialists (a)	Sector Specialists (b)	W-test (*p*-value) (a)–(b)
Avg. number of firms	8.1	8.4	7.9	0.00
Avg. number of recommendations	17.0	17.1	18.2	0.00
Avg. number of countries	1.60	1.04	3.33	0.00
Avg. number of sectors	2.69	3.22	1.09	0.00
Avg. number of analysts per firm	18.7	16.0	27.2	0.00
Avg. firm size (mio. EUR)	7,818.9	4,911.0	17,152.0	0.00
Avg. market size (bio. EUR)	867	869	864	0.94
Avg. distance (km)	307	176	595	0.00
% of local analysts	65.4%	87.8%	41.3%	0.00
% of foreign analysts	34.6%	12.2%	58.7%	
% of analysts in large brokerage	60.0%	51.3%	81.1%	0.00
% of analysts in small/medium brokerage	40.0%	48.7%	18.9%	

a single sector. The average number of sectors followed by country specialists is three, which is equivalent to the average number of countries followed by sector specialists. This is surprisingly low. Even though sector and country specialists may follow up to 25 countries and 11 sectors, respectively, these figures may indicate that brokerage houses try, in many instances, to specialize on both the country and the sector dimensions.

As Table I also indicates, a noticeable difference between the portfolios of country and sector specialists is the size characteristics of the covered firms. Country specialists follow on average far smaller firms than do their sector counterparts.

We also evaluate whether geographic location is an important differentiator between country and sector specialists. To assess where analysts are located with respect to the firms they follow, we take from I/B/E/S analysts' names and the brokerage houses they work for. Then, year by year, we search in different editions of the Nelson Information's Directory and obtain the city in which each financial analyst is located. Finally, for each recommendation with available geographic information on the analyst and the firm, we compute the distance between the analyst who issued the forecast and the firm for which the forecast was issued.[10] We observe that country specialists are on average located closer to the firms they follow. The average distance of 176 kilometers is mainly due to the fact that country specialists are mostly based within their country of expertise. Indeed, 87.8 percent of them are located in the same country as the firms they follow. Perhaps more interestingly, 41.3 percent of the recommendations issued by sector specialists relate to local firms. Although they follow more than three countries on average, sector specialists seem to tilt their activities towards domestically headquartered firms.

The type of brokerage house country and sector specialists work for also delivers interesting insights. Whereas country specialists are almost equally spread across large and small to medium brokerage houses (51.3 percent of them are working for large brokerage houses), 81.1 percent of sector specialists belong to large brokerage houses.

Panel A of Table II, presents the main statistics of interest on a country-by-country basis. Panel B presents the same statistics by sector. Surprisingly, panel A shows that the relative percentages of recommendations issued by country and sector specialists are similar across countries. On average, between 69.3 percent and 83.3 percent of the recommendations are issued by country specialists. The only exception is Ireland, where the total number of recommendations is spread equally between country and sector specialists. We are therefore unable to confirm the Kini et al. (2009) prediction according to which financial analysts are more likely to specialize by country in countries where national commonalities are largest. These percentages are more widely dispersed in the sector-by-sector analysis of panel B. The proportion of recommendations issued by country specialists ranges from 68.8 percent in the health care sector to 96.5 percent in the technology sector. An exception is the financial sector, which is followed mostly by sector specialists. The very high proportion of country specialists in the technology sector is surprising. A potential explanation may rely on the fact that firms in the technology sector are mainly small-capitalization stocks. As small firms tend to be more actively

[10] The formula used to compute the distance (*Dist*) between to cities *A* and *B* is given by

$$Dist = R \arccos[\sin(latitude_A)\sin(latitude_B) + \cos(latitude_A)\cos(longitude_B - longitude_A)],$$

where $R = 6378$ km is the earth's radius.

Table II. Descriptive statistics: Country-by-country and sector-by-sector

This table reports statistics of interest on a country-by-country (panel A) and a sector-by-sector (panel B) basis. In both panels, column 2 reports the total number of analysts having issued recommendations on firms headquartered in the corresponding country (panel A) or sector (panel B) over the period 1994–2003. Columns 3 to 6 give the total number and percentage of recommendations issued by country and sector specialists over the whole sample period in the corresponding country or sector. Columns 7 and 8 report the average size of firms in country and sector specialists' portfolios, respectively. Columns 9 and 10 indicate the average distance (in kilometers) that separates country and sector specialists and the firms they follow. The last two columns report the percentage of local analysts (i.e., based within the same country as firms) having issued recommendations on firms in the corresponding country (panel A) or sector (panel B).

Panel A

		Total number of recommendations				Avg. firm size (mio EUR)		Avg. distance (kilometers)		% of local analysts	
Country	Total number of analysts	Country Specialist	%	Sector Specialist	%	Country Specialist	Sector Specialist	Country Specialist	Sector Specialist	Country Specialist	Sector Specialist
Austria	189	1,423	71.0%	582	29.0%	760	1,650	507	1,349	55.6%	0.0%
Belgium	516	5,399	78.1%	1,510	21.9%	2,222	9,595	43	357	84.5%	2.3%
Denmark	401	4,130	73.2%	1,515	26.8%	9,280	32,967	190	629	67.9%	11.3%
Finland	413	6,278	82.4%	1,337	17.6%	2,820	7,501	138	1,212	88.8%	1.8%
France	1,816	38,980	83.3%	7,817	16.7%	3,627	14,069	169	385	90.6%	22.2%
Germany	1,510	21,929	76.1%	6,893	23.9%	4,830	14,516	283	668	82.1%	15.6%
Ireland	205	598	48.7%	629	51.3%	1,791	6,462	165	531	52.2%	4.1%
Italy	748	8,874	73.5%	3,198	26.5%	2,907	8,413	225	982	84.9%	2.6%
Netherlands	1,097	18,923	82.2%	4,095	17.8%	5,560	17,168	98	334	81.1%	10.6%
Norway	439	4,918	77.6%	1,419	22.4%	10,642	26,369	182	895	91.0%	10.1%
Portugal	259	2,690	75.4%	880	24.6%	1,234	5,265	1,014	1,338	72.1%	3.1%
Spain	710	9,139	72.6%	3,441	27.4%	2,967	11,084	250	1,101	84.5%	9.7%
Sweden	785	7,273	69.3%	3,222	30.7%	23,873	48,257	173	974	89.7%	19.1%
Switzerland	804	8,013	69.7%	3,482	30.3%	10,336	41,192	154	760	88.0%	2.9%
UK	2,017	51,390	79.8%	13,046	20.2%	2,426	11,445	126	353	97.8%	82.0%
All countries	6,587	189,957	78.2%	53,066	21.8%	4,911	17,152	176	595	87.8%	41.3%

Panel B

Sector	Total number of analysts	Total number of recommendations				Avg. firm size (mio EUR)		Avg. distance (kilometers)		% of local analysts	
		Country Specialist	%	Sector Specialist	%	Country Specialist	Sector Specialist	Country Specialist	Sector Specialist	Country Specialist	Sector Specialist
Finance	1,892	15,987	41.5%	22,540	58.5%	7,565	18,205	153	586	89.0%	41.3%
Health Care	1,179	8,239	68.8%	3,732	31.2%	8,412	28,477	199	562	87.0%	40.4%
Cons. Non-Dur.	1,863	21,144	84.4%	3,919	15.6%	3,346	11,844	185	338	86.4%	46.3%
Cons. Services	3,108	40,121	85.8%	6,667	14.2%	3,480	7,839	162	416	91.0%	48.5%
Cons. Durables	1,014	7,078	94.1%	444	5.9%	10,328	21,251	232	874	88.9%	25.9%
Energy	777	5,154	72.8%	1,930	27.2%	22,322	54,528	128	572	89.3%	41.9%
Transportation	771	5,489	85.5%	930	14.5%	2,345	2,901	180	575	94.7%	44.9%
Technology	1,539	15,165	96.5%	544	3.5%	979	1,118	170	917	91.6%	39.0%
Basic Industries	2,311	19,013	75.3%	6,247	24.7%	3,280	7,509	168	871	89.4%	39.8%
Capital Goods	3,032	44,456	92.9%	3,397	7.1%	3,865	17,581	178	597	89.2%	39.6%
Public Utilities	1,285	8,111	74.9%	2,716	25.1%	13,847	33,824	237	993	90.0%	26.5%
All sectors	6,587	189,957	78.2%	53,066	21.8%	4,911	17,152	176	595	87.8%	41.3%

Table III. Distribution of recommendations

This table reports the distribution of stock recommendations for each type of analyst specialization. We include recommendations on firms headquartered in European countries that were released over the period 1994–2003. We indicate the percentages of Strong Buy, Buy, Hold, Sell, and Strong Sell recommendations issued by all analysts (irrespective of specialization), and country and sector specialists. The second to the last column reports the difference between the percentage of each recommendation type issued by country and sector specialists. The *p*-value for the statistical significance of this difference appears in the last column.

Recommendation	All Analysts	Country Specialist (a)	Sector Specialist (b)	Difference (a)–(b)	Anova F-statistic
Strong Buy	18.9%	20.1%	15.1%	5.0%	0.000
Buy	26.4%	25.9%	27.9%	−2.0%	0.000
Hold	37.2%	36.4%	39.9%	−3.5%	0.000
Sell	11.3%	11.1%	11.7%	−0.6%	0.068
Strong Sell	6.3%	6.5%	5.4%	1.1%	0.000
Total	100.0%	100.0%	100.0%	0.0%	–

followed by country specialists, this may indeed explain why country specialists dominate so reliably in the technology sector.

Table II also gives strong support to the firm-size characteristics already reported at the global level. Indeed, the small-firm bias of country in relation to sector specialists is not peculiar to a specific country or sector. Country specialists follow smaller firms more than sector specialists do in every country and sector. On average, firms followed by country specialists are a third the size of those followed by sector specialists.

The country-by-country average distance for sector specialists ranges from 334 to a high of 1,349 kilometers. The average distance between sector specialists and the firms they follow is greatest for Austria, Finland, and Portugal. Also, the percentage of local sector specialists is relatively low in these countries, below 3.1 percent. To the contrary, the average distance for sector specialists in large markets such as France, Germany, and the United Kingdom is 385, 668, and 353 kilometers, respectively. The percentage of local sector specialists is also far more important than in small markets.

In Table III, we report the distribution of recommendations. We first note that the conclusions are not much different from those reported in studies on the U.S. market. In European countries, as in the U.S. market, analysts are reluctant to issue strong sell recommendations, but this type of recommendation occurs slightly more often in Europe than in the United States, representing 6.3 percent of the total recommendations issued over the sample period. Our aim in constructing this table is to check whether there are significant differences in the behavior of both country and sector specialists. It could be that potential conflicts of interest affect country

and sector specialists differently, or that one group is more optimistic than the other. If country analysts have better access to private information, they may be tempted to issue positively biased forecasts to preserve their privileged relationships with firms' management. On the other hand, sector specialists could be those who are the most affected by conflicts of interest, as this type of analyst generally works for larger banks and brokerage houses, which are more likely to be active in the investment banking industry.

Table III seems to indicate no difference in the behavior of the two groups of analysts. In fact, country specialists tend to issue more extreme recommendations than sector specialists. Country specialists issue on average a higher percentage of strong buy, as well as a higher percentage of strong sell recommendations. As is shown by the F-statistics for the difference in means, both differences are statistically significant, even though they do not appear to be economically large. Sector specialists, on the other hand, seem to rely more heavily on hold recommendations than their country specialist peers.

4.4 EVENT STUDY

To evaluate the information content of analysts' recommendations, we compute abnormal returns around the day that an analyst issues a recommendation. For that, we follow standard event-study methodology as in Brown and Warner (1985). The event day is the day the recommendation is issued as reported by I/B/E/S. Following existing literature, we define the estimation period as the interval $[-200, -11]$ with respect to the announcement date. Abnormal returns are the prediction errors from the one-factor ordinary least squares market model calculated over the estimation period, where the explanatory factor is the market index SP350 Europe. Both stock returns and the market index are log-differences computed in euros.

Our sample includes some small firms that are thinly traded. Infrequent trading can be problematic, as it can induce autocorrelation in stock returns. To appropriately account for that possibility, we follow the "trade-to-trade" approach of Maynes and Rumsey (1993) for all stocks. They show that the use of "trade-to-trade" returns leads to correct estimations for all levels of trading frequency.

The trade-to-trade approach builds on the single-factor market model and uses multi-period returns computed as

$$R_{i,n_t} = \ln\left(\frac{P_{i,t}}{P_{i,t-n_t}}\right)$$

where n_t is defined as the length of the non-trading interval ending at date t. $P_{i,t-n_t}$ is the last quoted price before the non-trading interval, in euros. Next, for every event we estimate the following equation that is analogous to the market

model and considers multi-period returns:

$$R_{i,n_t} = \alpha_i n_t + \beta_i R_{m,n_t} + \sum_{s=0}^{n_t-1} \varepsilon_{i,t-s}$$

where R_{m,n_t} is the market index return over the non-trading period that matches the stock return. $\alpha_i n_t$ and β are the weighted least squares coefficients calculated over the estimation window. The errors from the "trade-to-trade" adjusted one-factor model are heteroskedastic with variance $n_t\sigma_i^2$. To correct for heteroskedasticity, before we estimate the coefficients, the data are divided by the square root of n_t (weights). We note that the equation above is equal to the conventional market model equation when shares are traded daily and n_t equals one. Finally, the abnormal return is computed as the difference between the actual return and the expected return over the event window as follows:

$$AR_{i,n_t} = R_{i,n_t} - E[R_{i,n_t}] = R_{i,n_t} - [\hat{\alpha}_i n_t - \hat{\beta}_i R_{m,n_t}]$$

After obtaining abnormal returns we cumulate them over the following intervals $[-1, +1]$, $[+2, +20]$ and $[+21, +60]$, and we get *CABNRET*, *CABNRET20*, and *CABNRET60* correspondingly.[11]

CABNRET allows us to evaluate the market reaction at the time the stock recommendations are issued. The other measures provide us with some insight into whether a price drift follows the date the recommendation is issued. We find that the mean *CABNRET* is 0.31 percent for upgrades and -0.38 percent for downgrades. This is much lower than cumulative returns reported for U.S. firms but it is in line with results in Dubois and Dumontier (2008) and Jegadeesh and Kim (2006) who provide estimations for countries such as the United Kingdom, France, Germany and Italy. Also consistent with these studies, for the period $[-1, +60]$, the mean cumulative abnormal return is 0.66 percent for upgrades and -0.89 percent for downgrades.

4.5 CROSS-SECTIONAL REGRESSION TESTS

Here, we introduce the approach that we follow to examine the relation between the price reaction, recommendations, and the structure of analysts' portfolios. We consider that the price reaction is related to the direction and the magnitude of the recommendation change. For that, we define *SURP* as in Jegadeesh and Kim (2006) or Clement and Tse (2005), a variable indicating the surprise, or difference, between the newly issued recommendation and the last recommendation by the

[11] Alternatively, we also compute size and mean adjusted cumulative abnormal returns (unreported) and re-estimate models (1) and (2) below. The results are qualitatively similar to the ones reported in the paper.

same analyst on the same firm.[12] In some instances, analysts discontinue their coverage of a firm for quite long periods. Given that, we include a recommendation in the final sample only if there is a previous recommendation by the same analyst on the same firm that is no more than 360 days old. Although brokers usually follow a home-made classification for stock recommendations, I/B/E/S translates recommendations in a unique five-scale grouping. The values 1 to 5 are respectively assigned to Strong Buy, Buy, Hold, Sell, and Strong Sell recommendations. As in previous studies, we reverse the scale used by I/B/E/S to have positive (negative) values for upgrades (downgrades). *SURP* can therefore take discrete values that range from -4 to $+4$. Our baseline regression model is the following:

$$CABNRET_{[t_0;t_1]} = \alpha + \beta \cdot SURP + \gamma \cdot Controls + \varepsilon \quad (1)$$

If recommendation changes convey information that affects stock prices, we expect the slope coefficient β to be significantly positive. To test whether country-specialized analysts issue more informative stock recommendations, we expand model (1) and estimate the following equation:

$$CABNRET_{[t_0;t_1]} = \alpha + \beta_c \cdot SURP \cdot COUNTRYSP + \beta_s \cdot SURP \cdot SECTORSP + \gamma \cdot Controls + \varepsilon \quad (2)$$

where *COUNTRYSP* equals 1 if the analyst is a country specialist and 0 otherwise, and *SECTORSP* equals 1 if the analyst is a sector specialist and 0 otherwise. This specification allows us to test whether there is any difference in the information that country and sector specialists convey to the market. If there is no information advantage of one group over the other then we expect $\beta_c = \beta_s$. However, if one group has an advantage in gathering and processing information, the coefficient will be larger for the group that conveys more information to the market.[13]

Empirical studies on stock recommendations motivate the use of several control variables. Thus, we define the following characteristics: broker size, number of analysts covering the firm, days in relation to the earning announcement date and to previously issued recommendations for the same firm and firm market capitalization. The first three are constructed from the information made available by I/B/E/S. The market capitalization of firms is computed with data taken from Datastream.

Stickel (1995) argues that large brokerage houses have the resources to disseminate stock recommendations more efficiently to investors. Also, in large

[12] Alternatively, we define SURP as the difference between the current recommendation and its consensus where the consensus is computed as the average of all outstanding analyst recommendations issued over the previous year (see Dubois and Dumontier 2008). This alternative definition of the surprise does not have any bearing on our conclusions.

[13] The distribution of SURP across country and sector specialists is very similar. Parametric and non-parametric tests reveal that the means and medians of each group are not significantly different.

brokerage houses, analysts have more resources to gather and process information. It is therefore likely that their results may be of higher quality and as a consequence have a stronger impact on stock prices. Stickel (1995) indeed shows that the stock price reaction to recommendation releases is larger when recommendations are issued by analysts working for large brokerage houses. To control for this effect, we rank brokerage firms based on the number of analysts employed over a given year. Then we define *BRKSIZE*, a dummy variable that equals one if the broker belongs to the highest size deciles and zero otherwise.

Large firms are in general followed more actively by financial market participants. Therefore, the marginal information brought to the market by recommendations issued on large firms and followed by a large number of analysts is likely to be of less investment value than the recommendations issued on less frequently investigated firms. A measure that is commonly used as a surrogate for the firm's information environment is the number of analysts following the firm. Thus, for each recommendation, we define *NUMANA* as the number of analysts who issued at least one recommendation on the firm over the 360 days preceding the recommendation release. The firms' market capitalization *MV* is another measure that is commonly used (see Stickel 1995). In fact, as is noted by Asquith et al. (2005), both *MV* and *NUMANA* serve as proxies for the firm-specific information environment that less actively followed firms may have compared with more widely followed firms. In our tests, we consider both measures and argue that each captures different aspects of the firm-specific information environment.

Ivkovic and Jegadeesh (2004) show how the price reaction depends on whether the recommendation precedes or follows the earnings announcement date and on how close the recommendation is to the earnings announcement date; see also Boni and Womack (2006). We include three dummy variables to account for the differential information content of recommendations issued before and after earnings announcements. First, *PAGE* (i.e., precedes an earnings announcement) equals one if the recommendation is issued within the 10 days preceding an earnings announcement date and zero otherwise. *FAGE* (i.e., follows an earnings announcement) equals one if the recommendation is issued within the 10 days following an earnings announcement date. Finally, the variable *CAGE* (i.e., contemporaneous with an earnings announcement) is equal to one if the recommendation is released on the same day as the earnings announcement. The use of these three control variables has a double objective. It is aimed at controlling for the varying level of information content of recommendations reported by Ivkovic and Jegadeesh (2004) and Boni and Womack (2006). They also have the objective of avoiding the possibly confounding effect of earnings announcements and recommendation releases that occur within the same couple of days.

Intuitively, the value of recommendations should also depend on whether they are issued right after other recommendations for the same firm or on whether they are lead recommendations. Cooper et al. (2001) suggest that the timeliness of the

recommendation can be relevant in explaining abnormal returns. To account for this possibility, we follow Dubois and Dumontier (2008) and compute *TIMELINESS* as the number of recommendations issued during the previous month for the same firm. The larger *TIMELINESS* is, the lower is the information content of a new recommendation and the lower is its price impact. In addition, to avoid confounding effects we discard all recommendations that are issued simultaneously in the window [−1, 1] by both country and sector specialists which represent about 5 percent of total recommendations.

The explanatory variables that we use as controls are expected to have reverse signs for upgrades versus downgrades. Since we stack upgrades and downgrades in our estimations, we multiply all control variables by a variable that equals 1 for upgrades and −1 for downgrades. Finally, to detect the possibility that the reaction to the recommendation surprise depends on the sign of the surprise (Hayn 1995), we define one last variable *ASYM*, a dummy that equals one for upgrades and zero otherwise. Then, we interact *ASYM* with *SURP* to control for any asymmetric price reaction to recommendation upgrades versus downgrades.[14]

5. Regression Results

5.1 DOES THE INFORMATION CONTENT OF RECOMMENDATIONS DEPEND ON SPECIALIZATION?

Before investigating whether the information content of recommendations depends on whether analysts are country or sector specialists, it is crucial to confirm that stock recommendations on European firms do contain valuable information. This has been shown to be the case within the U.S. market, but we have limited knowledge about the value of stock recommendations in Europe. To this end, we first estimate model (1).[15]

[14] The literature on the accuracy of earnings forecasts documents that analysts' experience also plays an important role in explaining accuracy. For this reason, in unreported results, we also examine whether experience significantly explains abnormal returns to analyst recommendations and we find that it is not the case. Due to data constraints adding experience reduces significantly our sample, but our results remain virtually unchanged.

[15] Even though it has been shown that the recommendation changes are more relevant than the recommendation levels, in alternative tests we also control for the level of stock recommendations. We follow two alternative approaches. In the first we define a variable that we call *SURP·Level* which is constructed as follows: it is the *SURP* variable multiplied by 2 if the newly issued recommendation is a strong buy or a strong sell, multiplied by 1 if it is a buy or a sell and by 0 if it is a hold. Then we replace *SURP* by *SURP·Level* in the regressions. The second approach to control for the level of the recommendation together with the magnitude consists of adding a dummy variable to the basic regressions that takes value 1 if the recommendation is a strong buy or a strong sell. Given that controlling for the level of the recommendation in any of the two described approaches does not alter our inferences we do not report the results here, but they are available upon request from the authors.

Table IV presents the results. As reported in the context of the U.S. market, column (1) shows that the initial stock price reaction is positively related to recommendation changes. Columns (2) and (3) further show that there is also a drift that appears to last at least up to 60 days following the recommendation release. All of the coefficients on *SURP* are statistically significant at high confidence levels. In columns (4) to (6) we add various control variables. The initial stock price reaction related to broker size is strongly significant and similar to what is reported by Stickel (1995) in the context of the U.S. market. In addition to a contemporaneous relationship, the price drift continues to be related to brokerage size, which emphasizes the need to control for broker size in subsequent tests.

Then we observe that the number of analysts covering the firm is also a significant determinant of the amount of information contained in stock recommendations. This supports the notion that the firms' information environment may play a role in the strength of market participants' reaction to newly issued recommendations. Precisely, we find that the market tends to react contemporaneously more to stock recommendations issued on firms with extensive analyst coverage. This finding contrasts with our prediction outlined in Section 4 that the relation between *NUMANA* and the price reaction to recommendations releases was expected to be negative. It also evidences that the relation between the information environment and the price reaction to analyst recommendations is complex. In fact, there are some studies such as Bailey et al. (2006), among others, that document a positive association. Then, when we look at columns (5) and (6), the association between *NUMANA* and price reaction reverses and becomes negative. Overall, we find that *NUMANA* is negatively related to the cumulative price reaction over the period $[-1, +60]$.

Among the variables aimed at capturing differences due to contemporaneous earnings announcements, *CAGE* appears to be the most significant. Indeed, recommendations issued on the same day as earnings announcements look as if they convey significantly more information than recommendations issued at other times. Probably, this result reinforces the idea that one has to control for contemporaneous earnings announcements to avoid the confounding effects of these two simultaneous pieces of information brought to the market. *TIMELINESS* is negative and significant across specifications, indicating that recommendations following other recommendations issued on the same firm are less informative than fresh and newly issued recommendations. In column (4), *ASYM* is not statistically significant, which suggests that there is no asymmetry in the initial stock price reaction to upgrades and downgrades. This result contrasts to what is observed for US recommendations: a stronger price reaction for downgrades than for upgrades. Surprisingly, in columns (5) and (6) the price drift following the recommendation release is stronger for upgrades than for downgrades while for U.S. recommendations we tend to observe the reverse. However, we note that this is consistent with the results reported in

Table IV. Stock price reaction

This table reports the results from the estimation of the following two models:

$$CABNRET_{[t_0;t_1]} = \alpha + \beta \cdot SURP + \varepsilon$$

$$CABNRET_{[t_0;t_1]} = \alpha + \beta \cdot SURP + \gamma \cdot Controls + \varepsilon$$

Columns (1) to (3) report results relative to the estimation of the model without control variables. The estimations reported in columns (6) to (8) are performed with the whole set of control variables. $CABNRET_{[t_0;t_1]}$ is the cumulative abnormal return computed over different time windows. The models are successively estimated for $CABNRET_{[-1;+1]}$, $CABNRET_{[+1;+20]}$, and $CABNRET_{[+21;+60]}$, where the values of t_0 and t_1 are expressed in days. *SURP* is the surprise, or difference, between each newly issued recommendation and the last recommendation previously released by the same analyst on the same firm. The values 1 to 5 are respectively assigned to Strong Buy, Buy, Hold, Sell, and Strong Sell recommendations. *SURP* therefore takes discrete values that range from −4 to +4. The set of controls variables includes *BRKSIZE* (a dummy variable that takes the value 1 if the recommendation was issued by an analyst working for a large brokerage house and 0 otherwise), *MV* (the market capitalization of the firm on which the forecast was issued), *NUMANA* (the number of analysts having issued recommendations on the firms over the last 360 days), *PAGE* (a dummy variable that takes the value 1 if the recommendation precedes an earnings announcement date by less than 10 days and 0 otherwise), *FAGE* (a dummy variable that takes the value 1 if the recommendation follows an earnings announcement date by less than 10 days and 0 otherwise), *CAGE* (a dummy variable that takes the value 1 if the recommendation is issued contemporaneously, i.e., on the same day of an earnings announcement), *TIMELINESS* (the number or recommendations issued during the previous month on the same firm) and *ASYM* (a dummy that equals one for upgrades and zero otherwise interacted with the surprise). As the models we estimate include both recommendation upgrades and downgrades, all our controls are multiplied by a variable that takes the value 1 if the recommendation revision is an upgrade, −1 if it is a downgrade, and zero otherwise. We report heteroskedasticity and serial correlation robust *t*-statistics in parenthesis below their corresponding coefficient. ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels, respectively.

Variables	CABNRET (1)	CABNRET20 (2)	CABNRET60 (3)	CABNRET (4)	CABNRET20 (5)	CABNRET60 (6)
α	0.041	−0.001	0.088	0.024	−0.238	0.177
	(1.98)**	(−1.22)	(0.94)	(0.68)	(−2.95)***	(1.42)
SURP	0.242	0.217	0.198	0.080	0.079	0.179
	(16.94)***	(6.71)***	(3.93)***	(1.94)**	(1.58)	(1.16)
BRKSIZE				0.379	0.388	0.271
				(8.47)***	(3.83)***	(1.90)*
MV				−0.003	0.021	0.053
				(−0.30)	(1.03)	(1.67)*
NUMANA				0.009	−0.021	−0.035
				(3.52)***	(−2.77)***	(−3.03)***
PAGE				−0.015	0.657	0.230
				(−0.11)	(2.09)**	(0.49)
FAGE				0.416	−0.230	−0.178
				(3.57)***	(−0.95)	(−0.45)
CAGE				0.708	2.297	0.684
				(2.00)**	(3.66)***	(0.89)
TIMELINESS				−0.045	−0.117	−0.075
				(−2.88)***	(−3.38)***	(−1.46)
ASYM				0.014	0.252	0.425
				(0.28)	(2.32)**	(2.51)**
Observations	46,656	46,637	49,184	46,654	46,635	46,182
Adjusted R^2	0.007	0.001	0.000	0.010	0.003	0.001

Jegadeesh and Kim (2006) who find no asymmetric price response to upgrades and downgrades or even a stronger price reaction to upgrades in several of the G7 countries (i.e. Canada, United Kingdom, Italy).

Overall, Table IV confirms that recommendations on European firms do convey valuable information as in the U.S. market. Furthermore, most of the characteristics considered, which have been shown to significantly affect the information content of recommendations within the U.S. market, turn out to be significant in the context of Europe as well. Therefore, in all the regression models we estimate in the rest of the paper, we include all of these variables as controls.[16]

We previously discussed that analysts' portfolios were shaped by the information environment and the existence of common forces driving the firm's earnings. We also argued that other forces also affect how analysts define their portfolios. If this is true, the composition of analysts' portfolios and particularly analysts' specialization may be important in determining the relative level of information contained in stock recommendations. We expect that recommendations issued by analysts whose portfolios benefit most from commonalities across firms are more informative of the true value of the firm. Having shown that European stock recommendations affect prices significantly, we now turn to the analysis of whether recommendations issued by country and sector specialists provide investors with differing levels of information.

To test for the relative information content of recommendations from country and sector specialists, we estimate model (2). Table V presents the results. Column (1) shows no significant difference between the price reaction to recommendations issued by country and sector specialists. However, column (4) shows a different picture when we control for the various dimensions that can also influence the price reaction. We observe that at the time of the recommendation release, the stock price reaction is economically stronger when the recommendation is issued by a country specialist. An F-test with a *p*-value of 0.08 reported in the last row of column (4) confirms that this difference is statistically significant. Thus, the market seems to react differently to recommendations issued by country and sector specialists at the time of the recommendation release. Furthermore, we also observe that the price continues to drift over the window [+2, +20] only for recommendations issued by country specialists, although the statistical significance is only marginal. We argue that country specialists bring additional information that is not incorporated into prices at the time of the recommendation release. In contrast, the coefficients on

[16] Since *NUMANA* and *MV* are positively correlated and to avoid concerns about potential multicollinearity issues, we re-estimate our base regressions including either *NUMANA* or *MV* alternatively, but not both. We note that our results remain virtually unchanged. When we include these variables separately, *NUMANA* and *MV* are both negative and significant, which is consistent with our predictions. When included together, *MV* does not seem to add additional explanatory power beyond that conveyed by *NUMANA*.

Table V. Stock price reaction: Country versus sector specialization

This table reports the results from the estimation of the following two models:

$$CABNRET_{[t_0;t_1]} = \alpha + \beta_c \cdot SURP \cdot COUNTRYSP + \beta_s \cdot SURP \cdot SECTORSP + \varepsilon$$

$$CABNRET_{[t_0;t_1]} = \alpha + \beta_c \cdot SURP \cdot COUNTRYSP + \beta_s \cdot SURP \cdot SECTORSP + \gamma \cdot Controls + \varepsilon$$

Columns (1) to (3) report results relative to the estimation of the model without control variables. The estimations reported in columns (6) to (8) are performed with the whole set of control variables. $CABNRET_{[t_0;t_1]}$ is the cumulative abnormal return computed over different time windows. The models are successively estimated for $CABNRET_{[-1;+1]}$, $CABNRET_{[+1;+20]}$, and $CABNRET_{[+21;+60]}$, where the values of t_0 and t_1 are expressed in days. *SURP* is the surprise, or difference, between each newly issued recommendation and the last recommendation previously released by the same analyst on the same firm. The values 1 to 5 are respectively assigned to Strong Buy, Buy, Hold, Sell, and Strong Sell recommendations. *SURP* therefore takes discrete values that range from −4 to +4. *COUNTRYSP* (*SECTORSP*) is a dummy variable that is equal to 1 if the recommendation is issued by a country specialist (sector specialist) and 0 otherwise. The set of control variables includes *BRKSIZE* (a dummy variable that takes the value 1 if the recommendation is issued by an analyst working for a large brokerage house and 0 otherwise), *MV* (the market capitalization of the firm on which the forecast was issued), *NUMANA* (the number of analysts having issued recommendations on the firms over the last 360 days), *PAGE* (a dummy variable that takes the value 1 if the recommendation precedes an earnings announcement date by less than 10 days and 0 otherwise), *FAGE* (a dummy variable that takes the value 1 if the recommendation follows an earnings announcement date by less than 10 days and 0 otherwise), *CAGE* (a dummy variable that takes the value 1 if the recommendation is issued contemporaneously, i.e. on the same day of an earnings announcement), *TIMELINESS* (the number or recommendations issued during the previous month on the same firm) and *ASYM* (a dummy that equals 1 for upgrades and zero otherwise interacted with the surprise). As the models we estimate include both recommendation upgrades and downgrades, all our controls are multiplied by a variable that takes the value 1 if the recommendation revision is an upgrade, −1 if it is a downgrade, and zero otherwise. We report heteroskedasticity and serial correlation robust *t*-statistics in parenthesis below their corresponding coefficient. ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels, respectively. F-test reports *p*-values on the test that the coefficient on SURP*COUNTRYSP is equal to the coefficient on SURP*SECTORSP.

Variables	CABNRET (1)	CABNRET20 (2)	CABNRET60 (3)	CABNRET (4)	CABNRET20 (5)	CABNRET60 (6)
α	0.000	−0.065	0.001	0.023	−0.239	−0.179
	(1.99)**	(−1.23)	(0.93)	(0.67)	(−2.96)***	(1.44)
SURP*COUNTRYSP (b)	0.232	0.002	0.003	0.081	0.082	−0.005
	(14.35)***	(6.79)***	(4.66)***	(1.97)**	(1.74)*	(−0.05)
SURP*SECTORSP (c)	0.281	0.092	−0.001	0.018	−0.066	−0.310
	(9.42)***	(1.42)	(−0.81)	(0.36)	(0.58)	(−1.80)*
BRKSIZE				0.393	0.422	0.250
				(8.61)***	(4.07)***	(1.57)
MV				−0.002	0.002	0.005
				(−0.26)	(1.08)	(1.73)*
NUMANA				0.010	−0.019	−0.031
				(3.80)***	(−2.48)***	(−2.05)**

(*continued*)

Table V. (Continued)

Variables	CABNRET (1)	CABNRET20 (2)	CABNRET60 (3)	CABNRET (4)	CABNRET20 (5)	CABNRET60 (6)
PAGE				−0.019	0.646	0.208
				(−0.14)	(2.05)**	(0.44)
FAGE				0.413	−0.238	−0.191
				(3.55)***	(−0.97)	(−0.48)
CAGE				0.705	2.291	0.671
				(2.00)**	(3.65)***	(0.87)
TIMELINESS				−0.046	−0.117	−0.075
				(−2.89)***	(−3.39)***	(−1.47)
ASYM				0.014	0.253	0.427
				(0.29)	(2.96)***	(2.52)***
Observations	46,656	46,637	46,184	46,654	46,635	46,182
Adjusted R^2	0.007	0.001	0.001	0.010	0.003	0.001
F-test: $b = c$ (p-values)	0.146	0.033	0.001	0.068	0.049	0.006

recommendation changes issued by sector specialists are statistically insignificant, indicating that this type of analysts does not bring any new information to the market beyond what it is captured by control variables. The p-values for the tests of the difference between the coefficients on country and sector specialists support this insight.[17]

Country specialists seem to bring additional information that is not incorporated into prices at the time the recommendation is released, although statistical significance is only marginal. We interpret this finding as evidence that the price drift is related to the information advantage of country specialists. That is, recommendations issued by country specialists contain more information that is slowly incorporated into prices over the window [+2, +20]. This delayed price response could be a result of traders failing to assimilate the information provided by country specialists. It could also be explained by the existence of transaction costs that exceed the potential gains from exploiting the information.[18] It is not possible for

[17] The results are robust to the inclusion of country and industry fixed effects.

[18] In addition, Kovacs (2007) suggests that the price drift could be due to subsequent news from rival firms. The delayed price response that we observe for country specialists could mostly reflect the failure of country specialists to take competitors' development into account while sector specialists do not fail to do so. To examine this possibility, for a given recommendation, we compute the variable *DRIFT* that measures the number of recommendations issued during the subsequent 20 days for firms belonging to the same sector. We also consider several transformations of this variable. For example, we create dummies that equal one if *DRIFT* is on the top quartile or over the median value, etc. The inclusion of *DRIFT* or any of its related dummies as an additional control in specification (5) of Tables V and VI does not alter qualitatively our results. Furthermore, the slope of the *DRIFT* related variables is not significantly different from zero. Given our results, we fail to find support for the possibility that the delayed price reaction is related to subsequent news for rival firms. This result contrasts with Kovacs (2007) and this could be due to the fact that he focuses on earnings

us to distinguish between these two possible explanations, and doing so is beyond the scope of the paper. What we can rule out is the possibility that the price drift is due to risk shifting that could occur if, for example, after an upgrade investors would perceive that the risk profile of the firm has changed. In the next section, we provide an indirect test that provides support for this claim.

5.2 ROBUSTNESS TESTS

5.2.1 Restricted Sample

A potential concern with our previous analysis is that the results could be attributed to the fact that country specialists tend to follow firms that are different, for example in size, from firms followed by sector specialists, as Table I suggests. Thus, the differential market reaction to recommendations may not be due to informational advantage but simply to the different type of firm included in country versus sector analysts' portfolios. To control for this possibility, first we add market capitalization as an explicit control in our base regressions. Second, we restrict our sample to include only the subset of firms that are followed by both sector and country analysts. As a result, our restricted sample includes firm XYZ only if there is at least a country and a sector analyst issuing recommendations on firm XYZ over a given year. With this test, we evaluate the relative performance of country versus sector specialists specifically on the subset of firms followed by both types of analysts. Columns (1) to (3) of Table VI report the estimations on the restricted sample. We observe that our results remain virtually unchanged. By showing that the country advantage is present for firms followed simultaneously by both types of analysts, we indirectly demonstrate that the better performance of country analysts is not due to firm-specific characteristics but to an informational advantage vis-à-vis sector specialists. Alternatively, in columns (4) to (6) of Table VI we estimate the full model including country and sector fixed effects. Again, the results have no bearing on our previous conclusions.

Furthermore, the results on the restricted sample reinforce our understanding that the delayed price response following country specialist recommendations is the result of greater information content and not the outcome of risk shifting. More specifically, a price drift could take place if, for example, after an upgrade investors would perceive that the risk profile of the firm has changed (Bernard and Thomas 1989). Such a risk-based explanation would require that we observe a drift for all upgrades irrespective of the type of analyst issuing the recommendation. For a given firm, however, we document a drift only for upgrades issued by country analysts.

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announcements of U.S. firms (not on stock recommendations) or to the broad measure of rivalry that we can construct.

Table VI. Stock price reaction: Robustness tests

This table reports cross-sectional regressions using a restricted sample and alternative estimation methods as a robustness check. The dependent variable $CABNRET_{[t_0;t_1]}$ is the cumulative abnormal return computed over different time windows. The models are successively estimated for $CABNRET_{[-1;+1]}$, $CABNRET_{[+1;+20]}$, and $CABNRET_{[+21;+60]}$, where the values of t_0 and t_1 are expressed in days. The independent variables include the surprise *SURP*, or difference, between each newly issued recommendation and the last recommendation previously released by the same analyst on the same firm. The values 1 to 5 are respectively assigned to Strong Buy, Buy, Hold, Sell, and Strong Sell recommendations. *SURP* therefore takes discrete values that range from −4 to +4. *COUNTRYSP* (*SECTORSP*) is a dummy variable that is equal to 1 if the recommendation is issued by a country specialist (sector specialist) and 0 otherwise. All estimations include (unreported) the set of control variables described in the text. In Panel A, column (1) to (3) we re-run pooled ordinary least square regressions on a restricted sample where we only include a firm if it is followed by at least one country specialist and one sector specialist. In column (4) to (6), we include country and sector fixed effects in our estimations. In columns (7) to (9), we use the Heckman specification on the full model to further assess the potential effect of self-selection. *MILLS* refers to the inverse Mills ratio computed from the first step (unreported) probit estimation where the dependent variable equals one if an analyst is a country specialist and zero otherwise. In Panel B, we split our sample into *All time* country specialists, *All time* sector specialists, and *Switching* country specialists both *Before* and *After* they become sector specialists and interact each of these groups with the variable surprise. We report heteroskedasticity and serial correlation robust *t*-statistics in parenthesis below their corresponding coefficient. ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels, respectively. F-test reports *p*-values on the test that the coefficient on SURP*COUNTRYSP is equal to the coefficient on SURP*SECTORSP.

Panel A

	Restricted Model Pooled OLS			Full Model Fixed Effects			Full Model Heckman		
Variables	CABNRET (1)	CABNRET20 (2)	CABNRET60 (3)	CABNRET (4)	CABNRET20 (5)	CABNRET60 (6)	CABNRET (7)	CABNRET20 (8)	CABNRET60 (9)
SURP*COUNTRYSP (b)	0.106	0.281	0.314	0.075	0.063	0.010	0.080	0.082	−0.006
	(2.01)**	(2.19)**	(1.47)	(1.83)*	(1.70)*	(0.07)	(1.93)*	(1.70)*	(−0.04)
SURP*SECTORSP (c)	0.042	0.096	−0.040	0.012	−0.092	−0.301	0.018	−0.066	−0.315
	(0.70)	(0.71)	(−0.18)	(0.24)	(0.81)	(−1.71)*	(0.35)	(−0.58)	(−1.80)*
MILLS							−0.081	0.008	0.000
							(−1.93)*	(0.08)	(0.05)
Country Fixed Effects				*included*	*included*	*included*			
Sector Fixed Effects				*included*	*included*	*included*			
Observations	16,800	16,795	16,646	46,654	46,635	46,182	46,654	46,635	46,182
Adjusted R^2	0.014	0.003	0.001	0.011	0.003	0.002	0.010	0.003	0.001
F-test: $b = c$ (*p*-values)	0.199	0.076	0.022	0.067	0.038	0.006	0.074	0.052	0.007

Panel B

	Full Model		
	Before/After		
Variables	CABNRET (1)	CABNRET20 (2)	CABNRET60 (3)
SURP*COUNTRYSP *All time (a)*	0.080	0.081	−0.005
	(1.91)*	(1.74)*	(−0.04)
SURP* *Switching* COUNTRYSP *Before (b)*	0.080	0.125	−0.005
	(1.65)*	(0.73)	(−0.02)
SURP* *Switching* COUNTRYSP *After (c)*	−0.080	−0.035	−0.416
	(−0.69)	(−0.14)	(−1.15)
SURP*SECTORSP *All time (d)*	0.029	−0.068	−0.306
	(0.55)	(−0.87)	(−1.65)*
Observations	46,654	46,635	46,182
Adjusted R^2	0.010	0.002	0.001
F-test: $a = d$ (p-values)	0.150	0.058	0.009
F-test: $b = c$ (p-values)	0.100	0.555	0.316

5.2.2 Endogeneity of the Organizational Setup

Another reasonable concern stems from the potential endogeneity of the organizational setup. In fact, the specialization status may be endogenous if the decision on how to specialize is linked to unobservables that affect the market reaction to recommendations. Failing to control for this correlation may yield an estimated specialization effect on performance that is biased. Thus, the possible endogeneity of the organizational choice and its consequences deserve further investigation.

To start with, it is important to understand what unobservables might be correlated with performance and drive the decision of being a country specialist. Sonney (2009) suggests that skilled analysts may be able to select how to specialize. If skilled and more experienced analysts have a choice, they will decide to follow firms within the same country and therefore minimize traveling time and costs. Then inferior analysts will be left to follow firms spread over different countries. Similarly, one could argue that country analysts may happen to work for firms with more resources and therefore enjoy superior processing skills that lead to better performance. Thus we may falsely indicate that country specialists' performance is due to informational advantage when it is due to additional resources and processing skills. Nonetheless, there is an observation that could invalidate this possibility. At first sight, sector analysts tend to work for large brokerages with more resources. Even if our conjecture would imply the superiority of sector analysts over country analysts, we evaluate it with a more rigorous approach.

To investigate whether skill and resources are driving our results and to mitigate the potential endogeneity of the organizational choice, first we include explicitly additional control variables in our base regression. In Table V, we include the size of the brokerage house as an explanatory variable. Although it is significant and reduces the estimated impact of country specialization on performance, it does not eliminate it. Then in unreported specifications, we also include analyst experience. We find that it is neither significantly related to abnormal returns nor does it subsume the additional information brought by country specialists. In fact, the inclusion of analyst experience as an explanatory variable leaves our results virtually unchanged.

Second, we estimate self-selection Heckman-type models, where the first stage models an analyst decision to become a country specialist and the second stage refers to our baseline specification (2). For the first-stage estimation, we follow Sonney (2009) in our choice of instruments and include analysts' past accuracy, the size of the brokerage house, the average total capitalization weight of the countries followed by the analyst and the number of firms followed by the analyst. We also include the analyst's experience measured as the number of years the analyst has been reporting stock recommendations to I/B/E/S. Columns (4) to (6) in Table VI report the second-stage regression results where being a country specialist is the choice variable at the first stage. We note that the estimated Mills ratios are not

statistically different from zero, which indicates that selection bias does not seem to be problematic. Overall, the results remain unchanged.

And third, we exploit the panel nature of our sample and perform one last test. Since there has been an evolution from country-towards sector-oriented organizational structures (Sonney 2009), we identify country specialists that turned to be sectors specialists over our sample period. This identification allows us to further explore if skill, experience, or other unobservable attributes that characterize country specialists would be driving our results. If country analysts are better performers due to inherent attributes then we would expect to see that analysts who shift specialization from country towards sector do not suffer a change of performance. To test this hypothesis, we split our sample into all-time country specialists, all-time sector specialists, and switching country specialists both before and after they become sector specialists and interact this classification with the surprise variable. Panel B of Table VI reports the results. Switching country specialists do as well as all-time country specialists but when they become sector specialists their performance is reduced and converges towards that of all-time sector specialists.

Put together, these results indicate that skill, experience and resources are not responsible for the superior market reaction of country specialist recommendations and reinforce our interpretation that this superior performance can be attributable to an informational advantage.

6. Explaining the Differential Information Content

In the previous section, we documented that country specialists issue more valuable recommendations than do sector specialists. This result could be attributed to the geographic location of country analysts. Alternatively, it could be due to the existence of commonalities across firms followed by country analysts or to economies of scale that country specialists realize when evaluating country factors. In particular, country factors may stem from particularities in institutional, accounting, fiscal, legal, or cultural aspects that make countries differ. In what follows, we explore these possibilities.

6.1 GEOGRAPHIC PROXIMITY AND LOCATION

The value brought by country specialists may be simply picking up the effect of geographic distance or locality. Since country specialists tend to be closer than sector specialists to the firms they follow, country specialists may enjoy an advantage in gathering and obtaining information. This advantage could then translate into superior recommendations. In fact, existing studies suggest that proximity is an important determinant of the quality of analysts' forecasts. Therefore, it may also be a relevant factor explaining the value of stock recommendations.

A few papers study information asymmetries due to proximity in the context of financial analysis. Bae et al. (2005) report accuracy differences depending on whether analysts are based within the same country as the firms they evaluate. Relying on a sample of 32 countries, their results show that local analysts issue on average far more accurate earnings forecasts than their foreign peers. In the context of European markets, Orpurt (2004) reports a similar result. Malloy (2005) studies the difference in accuracy between analysts located close to the firms they follow and those farther away. He concludes that, within the United States, geographically proximate analysts issue on average more accurate earnings forecasts. Whereas Malloy focuses on physical proximity and uses measures that capture distance between analysts and firms, Bae et al. (2005) and Orpurt (2004) focus on different measures of proximity, that is, local versus foreign analysts. Being local reflects not only physical proximity but also other dimensions of proximity such as cultural, economic, or institutional. These papers do not try to evaluate which dimension of proximity is relevant, probably because data on physical distance are hard and tedious to get.

In this paper, we capture these two dimensions of proximity. First, we compute the distance between analysts and the firms they follow. Second, we classify analysts as local or foreign, depending on whether they are located in the same country as the firms they follow or abroad. These two geographic dimensions do not have the same implications for sources of information advantage. In the first case, analysts may have better access to private information, as they are located close to the firms' headquarters. They can visit the firm on a regular basis and build solid relationships with management. In the second case, the advantage that local analysts may have is more likely related to better knowledge of country characteristics. One may think of language, fiscal policies, regulations, and cultural and institutional dimensions.

Therefore, we make a clear distinction between the advantage due to being local, as opposed to foreign, and the physical proximity advantage, as opposed to being located geographically far away from firms' headquarters. To compute variables that relate to these two dimensions, first we construct two dummies based on whether an analyst is located less (*PROXIMATE*) or more (*DISTANT*) than 100 kilometers away from the firm.[19] From the same information set, we also determine whether analysts are located within the same country as the firms they follow. For each recommendation, we create two additional dummies based on whether the analyst and the firm are located in the same country (*LOCAL*) or not (*FOREIGN*).

Table VII reports the results of the analysis of proximity. In Panel A, we interact each of the physical proximity dummies with *SURP*COUNTRYSP* and *SURP*SECTORSP.* Taken together, the results show that there is a significant stock price reaction both for proximate and for distant country specialists and that the coefficients on the two types of country analysts are closed to each other when

[19] Results are unchanged with thresholds of either 50 or 200 kilometers.

considering the first two periods. We do not find such a reaction for recommendations issued by sector specialists. Remarkably, distant country specialists do better than sector specialists irrespective of their situation. Furthermore, when we compare the two subgroups of country specialists, we observe that there are no major differences in stock price reactions. There is only a higher contemporaneous

Table VII. Geographical proximity

This table reports cross-sectional regressions that examine whether the relative superiority of country specialists is explained by their location or proximity to the firms they follow. The dependent variable $CABNRET_{[t_0;t_1]}$ is the cumulative abnormal return computed over different time windows. The models are successively estimated for $CABNRET_{[-1;+1]}$, $CABNRET_{[+1;+20]}$, and $CABNRET_{[+21;+60]}$, where the values of t_0 and t_1 are expressed in days. The independent variables include the surprise *SURP*, or difference, between each newly issued recommendation and the last recommendation previously released by the same analyst on the same firm. The values 1 to 5 are respectively assigned to Strong Buy, Buy, Hold, Sell, and Strong Sell recommendations. *SURP* therefore takes discrete values that range from −4 to +4. *COUNTRYSP* (*SECTORSP*) is a dummy variable that is equal to 1 if the recommendation is issued by a country specialist (sector specialist) and 0 otherwise. All estimations include (unreported) the set of control variables described in the text. *PROXIMATE* (*DISTANT*) is a dummy variable that equals 1 if the analyst is located less (more) than 100 kilometers away from the firm. *LOCAL* (*FOREIGN*) is a dummy variable that equals 1 if the analyst is located within (outside) the same country as the firm for which the forecast is issued. This table is split into three panels. In Panel A, we interact both *SURP***COUNTRYSP* and *SURP***SECTORSP* with *PROXIMATE* and *DISTANT*. Alternatively, in Panel B, the interaction is with *LOCAL* and *FOREIGN*. The last column on each panel reports the % of observations included in each group. We report heteroskedasticity and serial correlation robust *t*-statistics in parenthesis below their corresponding coefficient. ***, **, and * indicate statistical significance at the 1% , 5% and 10% levels, respectively. F-test reports *p*-values on the test that the coefficients on various combinations of two explanatory variables are equal.

Panel A

Dep. Variable		CAbnRet	CAbnRet20	CAbnRet60	% Obs
SURP*COUNTRYSP*PROXIMATE	(b1)	0.086	0.230	0.260	38%
		(1.78)*	(2.15)**	(1.56)	
SURP*COUNTRYSP*DISTANT	(b2)	0.046	0.260	0.270	30%
		(0.86)	(2.13)**	(1.37)	
SURP*SECTORSP*PROXIMATE	(c1)	0.092	−0.030	−0.070	10%
		(1.08)	(−0.16)	(−0.29)	
SURP*SECTORSP*DISTANT	(c2)	−0.074	−0.050	−0.100	22%
		(−1.07)	(−0.10)	(−0.48)	
Observations		22,512	22,502	22,231	
F-test: (*p*-values)	b1 = b2	0.442	0.853	0.948	
	b1 = c1	0.950	0.106	0.176	
	b2 = c2	0.075	0.061	0.095	
	c1 = c2	0.054	0.944	0.918	
	b1 = c2	0.012	0.067	0.067	
	b2 = c1	0.589	0.097	0.193	

(*continued*)

Table VII. (Continued)

Panel B					
Dep. Variable		CAbnRet	CAbnRet20	CAbnRet60	% Obs
SURP*COUNTRYSP*LOCAL	(b1)	0.077	0.265	0.218	66%
		(1.86)*	(2.78)***	(1.46)	
SURP*COUNTRYSP*FOREIGN	(b2)	−0.081	0.235	0.308	3%
		(−0.78)	(0.98)	(0.90)	
SURP*SECTORSP*LOCAL	(c1)	0.101	0.100	−0.160	13%
		(1.35)	(0.63)	(0.68)	
SURP*SECTORSP*FOREIGN	(c2)	−0.074	−0.001	−0.207	18%
		(−1.06)	(0.01)	(0.98)	
Observations		25,065	25,054	24,743	
F-test: (*p*-values)	b1 = b2	0.120	0.898	0.791	
	b1 = c1	0.730	0.241	0.074	
	b2 = c2	0.950	0.354	0.156	
	c1 = c2	0.027	0.543	0.846	
	b1 = c2	0.014	0.044	0.023	
	b2 = c1	0.119	0.609	0.210	

stock price reaction to recommendations issued by proximate country analysts, but it is not significantly different from the one that corresponds to distant country analysts that becomes stronger over the window [+2, +20]. When we compare proximate country to proximate sector specialists we find that stock price reactions are larger for the former.

Similarly in Panel B, we interact each of the location dummies with *SURP*COUNTRYSP* and *SURP*SECTORSP* and present the results on the role of locality. The coefficients are larger for country than for sector specialists irrespective of their locations, but they are only statistically significant for local country specialists. Noticeably as in Panel A, foreign sector specialists are the group of analysts that performs worst as confirmed by several of the F-tests. From a different perspective, if we contrast local versus foreign analysts irrespective of their specialty, we observe that local analysts tend to do marginally better, especially in the case of sector analysts. This observation could indicate that local analysts enjoy an informational advantage either from being close to the firms or simply from a better understanding of their home country relevant factors. However, since only a small portion of country specialists are located abroad and because the statistical precision of our estimates depends critically on the number of observations, we remain cautious when interpreting these results and recognize that it is difficult to draw definitive conclusions.

Overall, given the results in panel B, we cannot fully reject the possibility that location partly explains the superior performance of country specialists when issuing stock recommendations. Even though Panel A supports the idea that country specialists' advantage does not seem to be related to physical distance, the role of

location as a source of comparative advantage may stem from other dimensions of proximity. In any case, our results suggest that proximity seems more relevant explaining the accuracy of country specialists (Sonney 2009) than in explaining the performance of their recommendations. Otherwise, we would have found proximate sector specialists doing as well as country specialists and distant country specialists doing worst. Our findings may also be interpreted as evidence that the knowledge of country characteristics such as language, fiscal policies, regulations, and culture, which local sector specialists also enjoy, may explain at least part of the superior performance of country specialists. We further investigate this possibility in the next section.

6.2 INSTITUTIONAL FACTORS

High-quality institutional structures have a positive impact on the information environment and may require less country-specific knowledge.[20] A system with high-quality institutions is consistent with high corporate governance, disclosure, and transparency standards. It could be that high-quality institutions affect the economies of scale that can be realized with specialization and a good understanding of country institutions. Another possibility is that high country-level standards imply a lower correlation of firm future earnings with the potential information and agency costs that arise with poor-quality institutions. In poor-governance settings, firm value may be affected to a larger extent by agency problems that are common to all firms subject to the same legal rules. In this setting, country specialists may be at an advantage in understanding the extent to which agency problems affect value for this group of firms. This advantage disappears as agency costs are reduced through improved governance. Therefore, better disclosure and governance may lead to lower commonalities across firms' future earnings (Morck et al. (2000)). There is still another possibility to explain why high-quality institutions may lower the benefits from specialization. An enhanced information environment makes it less costly to acquire and process information not only for analysts but for investors in general. Potential economies of scale being less relevant, it could be that analysts' information advantage over the market diminishes. If these institutional particularities play a role in the way analysts can process information and benefit from economies of scale, then we expect to find that the information advantage of country over sector specialists occurs only for firms located in countries with poorer disclosure standards and corporate governance.

In our analysis, we include country-level variables that allow us to explore whether corporate governance and the quality of disclosure play a role in the results we document. Following the corporate governance literature, we take the

[20] Ball et al. (2000); Morck et al. (2000); Rajan and Zingales (2003), and Chang et al. (2001) show how institutions impact the information environment.

anti-director rights index as presented in La Porta et al. (1998) as a measure of the quality of legal protection offered to minority investors in a given country. The index ranges from 0 to 5, and it measures the strength of laws and regulations in each country that aim to protect minority shareholders. Following the disclosure literature, we also consider the accounting index produced by the Center for International Financial Analysis and Research and used by La Porta et al. (1998). It is a measure of the quality of accounting standards in the country where firms are incorporated.[21] Specifically, we define dummy variables *HPROT* (*LPROT*) that equal 1 if the anti-director rights index is above (below) the sample median value and 0 otherwise. We also introduce dummy variables *HACTG* (*LACTG*) which equal 1 if the accounting index is above (below) the sample median and 0 otherwise. Also, we consider total market capitalization as a proxy for the extent to which each country's financial market is developed. This variable has been widely used as a proxy for the quality of the information environment. We divide our sample into high and low national market capitalization, and set the dummy variables *HMKTSIZE* (*LMKTSIZE*) equal to 1 if market capitalization is above (below) the median and 0 otherwise. Then to evaluate whether institutional factors are related to the superiority of country specialists, we interact each of the dummy variables defined above with *SURP*COUNTRYSP* and *SURP*SECTORSP* and estimate our base model (2) with these interactions. All estimations also include (unreported) the set of control variables.

Results are presented in Table VIII, panel A. With regard to estimations for both accounting index and anti-director rights, we first remark that the initial stock-price reaction does not depend on whether country specialist recommendations are issued in countries with high or low accounting index or anti-director rights. In fact, the overall information content of stock recommendations issued by country specialists is similar in countries with high- and low -quality institutions. However, the post recommendation price reaction is stronger for those recommendations issued by country specialists that refer to firms located in countries with lower-quality institutions. The coefficients on country specialists after the initial stock price reaction are all positively and significantly related to cumulative abnormal returns only in countries with low accounting index and anti-director rights. Turning to sector specialists, coefficients on *SURP*SECTORSP*LACTG/LPROT* are negative and significantly different from those corresponding to all other groups of analysts as indicated by several F-tests. Thus, we find that sector specialists underperform especially on recommendations that refer to firms located in countries with low institutions. Specifically, we observe that the initial stock price reactions for recommendations issued by sector specialists for firms subject to high-quality institutions are positive

[21] *International Accounting and Auditing Trends* (4th edition, 1997), Center for International Financial Analysis and Research, Princeton, New Jersey.

Table VIII. Institutional and country factors

This table reports results relative to the interpretation of the relative superiority of country specialists over sector specialists. The dependent variable $CABNRET_{[t_0;t_1]}$ is the cumulative abnormal return computed over different time windows. The models are successively estimated for $CABNRET_{[-1;+1]}$, $CABNRET_{[+1;+20]}$, and $CABNRET_{[+21;+60]}$, where the values of t_0 and t_1 are expressed in days. The independent variables include the surprise *SURP*, or difference, between each newly issued recommendation and the last recommendation previously released by the same analyst on the same firm. The values 1 to 5 are respectively assigned to Strong Buy, Buy, Hold, Sell, and Strong Sell recommendations. *SURP* therefore takes discrete values that range from −4 to +4. *COUNTRYSP* (*SECTORSP*) is a dummy variable that is equal to 1 if the recommendation is issued by a country specialist (sector specialist) and 0 otherwise. All estimations include (unreported) the set of control variables described in the text. This table is split into two panels. Panel A evaluates the role of institutional factors. We include *HACTG* (*LACTG*) a dummy variable that equals 1 if the accounting index from La Porta et al. (1998) is above (below) the median. *HPROT* (*LPROT*) is a dummy variable that equals 1 if the anti-director rights index in the same paper is above (below) the median. *HMKTSIZE* (*LMKTSIZE*) is a dummy variable that equals 1 if the national market capitalization is above (below) the median. Panel B evaluates country factors. *HFACTOR* (*LFACTOR*) is a dummy variable that equals 1 if the recommendation is issued on a firm headquartered in a country with a country factor above (below) the median. *HSTDEV* (*LSTDEV*) is a dummy variable that equals 1 if the country standard deviation is above (below) the median. In both Panels A and B, we interact *SURP***COUNTRYSP* and *SURP***SECTORSP* with the various variables that proxy for institutional and country factors. The last column on each panel reports the % of observations included in each group. We report heteroskedasticity and serial correlation robust *t*-statistics in parenthesis below their corresponding coefficient. ***, **, and * indicate statistical significance at the 1%, 5% and 10% levels, respectively. F-test reports *p*-values on the test that the coefficients on various combinations of two explanatory variables are equal.

Panel A: Institutional Factors

Dep. Variable		CAbnRet	CAbnRet20	CAbnRet60	% Obs
SURP*COUNTRYSP*HACTG	(b1)	0.080	0.112	0.027	46%
		(2.18)**	(1.33)	(0.20)	
SURP*COUNTRYSP*LACTG	(b2)	0.074	0.152	0.295	29%
		(1.88)*	(1.71)*	(1.98)**	
SURP*SECTORSP*HACTG	(c1)	0.115	0.001	−0.284	15%
		(2.10)**	(0.01)	(−1.58)	
SURP*SECTORSP*LACTG	(c2)	−0.107	−0.041	−0.102	10%
		(−1.91)*	(−0.32)	(−0.52)	
Observations		46,654	46,635	46,182	
F-test: (*p*-values)	b1 = b2	0.860	0.590	0.006	
	b1 = c1	0.455	0.255	0.078	
	b2 = c2	0.000	0.097	0.018	
	c1 = c2	0.000	0.738	0.338	
	b1 = c2	0.000	0.180	0.651	
	b2 = c1	0.409	0.138	0.000	
SURP*COUNTRYSP*HPROT	(b1)	0.070	0.074	−0.002	48%
		(1.94)*	(0.89)	(−0.02)	
SURP*COUNTRYSP*LPROT	(b2)	0.085	0.211	0.280	27%
		(2.10)**	(2.33)**	(1.84)*	
SURP*SECTORSP*HPROT	(c1)	0.091	−0.001	−0.298	15%
		(1.70)	(−0.00)	(−1.69)	

(*continued*)

Table VIII. (Continued)

Dep. Variable		CAbnRet	CAbnRet20	CAbnRet60	% Obs
SURP*SECTORSP*LPROT	(c2)	−0.087	−0.053	−0.085	10%
		(−1.52)	(−0.41)	(−0.42)	
Observations		46,654	46,635	46,182	
F-test: (*p*-values)	b1 = b2	0.680	0.070	0.019	
	b1 = c1	0.656	0.442	0.035	
	b2 = c2	0.001	0.027	0.038	
	c1 = c2	0.003	0.679	0.266	
	b1 = c2	0.001	0.268	0.626	
	b2 = c1	0.893	0.042	0.002	
SURP*COUNTRYSP*HMKTSIZE	(b1)	0.061	0.110	0.050	65%
		(1.72)*	(1.40)	(0.39)	
SURP*COUNTRYSP*LMKTSIZE	(b2)	0.154	0.222	0.421	10%
		(2.95)**	(1.77)*	(1.91)*	
SURP*SECTORSP*HMKTSIZE	(c1)	−0.009	0.004	−0.189	21%
		(−0.20)	(0.04)	(−1.14)	
SURP*SECTORSP*LMKTSIZE	(c2)	0.116	−0.00168	−0.316	4%
		(1.27)	(−0.93)	(−1.17)	
Observations		46,654	46,635	46,182	
F-test: (*p*-values)	b1 = b2	0.048	0.329	0.055	
	b1 = c1	0.061	0.195	0.044	
	b2 = c2	0.698	0.452	0.014	
	c1 = c2	0.165	0.334	0.620	
	b1 = c2	0.521	0.100	0.133	
	b2 = c1	0.003	0.098	0.004	
		Panel B: Country Factors			
SURP*COUNTRYSP*HFACTOR	(b1)	0.084	0.100	0.286	14%
		(1.97)**	(1.02)	(1.73)*	
SURP*COUNTRYSP*LFACTOR	(b2)	0.074	0.137	0.066	61%
		(2.08)**	(1.72)*	(0.49)	
SURP*SECTORSP*HFACTOR	(c1)	−0.006	−0.072	−0.347	6%
		(−0.11)	(−0.47)	(−1.61)	
SURP*SECTORSP*LFACTOR	(c2)	0.021	0.007	−0.138	19%
		(0.41)	(0.06)	(−0.79)	
Observations		46,654	46,635	46,182	
F-test: (*p*-values)	b1 = b2	0.781	0.655	0.109	
	b1 = c1	0.129	0.251	0.003	
	b2 = c2	0.206	0.126	0.113	
	c1 = c2	0.653	0.591	0.303	
	b1 = c2	0.200	0.385	0.011	
	b2 = c1	0.136	0.125	0.026	
SURP*COUNTRYSP*HSTDEV	(b1)	0.114	0.194	0.287	32%
		(2.72)**	(2.03)**	(1.79)*	
SURP*COUNTRYSP*LSTDEV	(b2)	0.049	0.073	−0.032	43%
		(1.37)	(0.89)	(−0.25)	
SURP*SECTORSP*HSTDEV	(c1)	−0.048	−0.119	−0.354	11%
		(−0.77)	(−0.87)	(−1.66)	
SURP*SECTORSP*LSTDEV	(c2)	0.061	0.047	−0.102	13%
		(1.22)	(0.43)	(−0.60)	
Observations		46,436	46,417	45,964	
F-test: (*p*-values)	b1 = b2	0.054	0.125	0.009	
	b1 = c1	0.005	0.013	0.001	
	b2 = c2	0.731	0.777	0.603	
	c1 = c2	0.073	0.206	0.161	
	b1 = c2	0.281	0.160	0.909	
	b2 = c1	0.081	0.105	0.068	

and significant, although there is no post-announcement significant price reaction. In sum, we observe that the additional information brought to the market by country specialists is more pronounced in countries with poorer standards, and it is in these countries that sector specialists underperform.

In Table VIII, the last section of panel A focuses on the breakdown by stock market capitalization of the country in which the firm is located. This is an ad hoc check of whether the relative advantage of country specialists is concentrated in firms for which the information environment is poorer. In such markets, country-specialized analysts may obtain benefits from commonalities that are supposedly large. Indeed, a comparison of the coefficients on recommendations issued by country specialists in small and large markets reveals that the information content of recommendations is more pronounced in the former. Here, this differential informativeness is partly acknowledged by investors, as the difference is statistically significant at the time of the recommendation release (t-stat: 2,95). Noteworthy, the market price reaction is significantly stronger for all country specialists' recommendations when compared with those issued by sector specialists.

Overall, these results suggest that institutional factors may explain part, but not all, of the informational advantage of country specialists over sector specialists. On average, country specialists issue more informative recommendations in small countries and in countries with low accounting standards and low minority shareholder protections. Moreover, the information content of stock recommendations issued by country specialists remains higher than those of sector specialists even in large markets and when accounting standards and shareholder protection are high. We acknowledge that the information advantage is only gradually incorporated into stock prices, especially in countries with poorer quality institutions.

6.3 COUNTRY FACTORS

Country factors represent common economic forces driving firms' future earnings beyond those related only to institutional factors. In this section, we test whether country factors explain the advantage of country over sector specialists. For that purpose, we follow Heston and Rouwenhorst (1994) and estimate the "pure" country factors from stock index returns. The details of the methodology are discussed in the appendix. This method returns, for each country in the sample, a time series of country factors. We then compute, on an annual basis, the variance of each country factor. It serves as a proxy for the strength of national influences in the country. Countries with important national specificities have a high country-factor variance. We then rank countries on the basis of their country-factor variance. Recommendations issued on firms in countries with a country factor above (below) the median country factor are classified as high (low) country-factor recommendations. The

dummy variable *HFACTOR* (*LFACTOR*) takes the value 1 for recommendations issued in these countries and 0 otherwise.

We hypothesize that country specialists may draw their relative advantage from countries in which commonalities among firms are large. If so, recommendations issued by country specialists on firms in countries with high country factors should convey more information than recommendations in countries with low country factors. Results are reported in Table VIII, panel B, and they marginally confirm our hypothesis. The initial stock price reaction is identical for recommendations issued by country specialists in low and high country-specific factor markets. These coefficients are 0.08 and 0.07 percent, respectively, and the test for their statistical difference reports a *p*-value of 0.781. However, the coefficient on country specialists in countries with high commonalities is much larger than the coefficient on country specialists in low-commonalities countries in the [+21; +60] period, and the difference is significant at the 10 percent level.

As an alternative measure for country factors we also consider the raw country standard deviation of stock returns. *HSTDEV* (*LSTDEV*) takes the value 1 for recommendations issued in countries where return variance is above (below) the median value and 0 otherwise. Results are also reported in Table VIII, panel B. We observe that the contemporaneous and subsequent stock price reaction is larger for recommendations issued by country specialists in countries with high country-specific variance. The difference is statistically significant for the periods [−1, +1] and [+21, +60] with *p*-values of 0.054 and 0.009 respectively. The coefficients on sector specialists are often negative and not significant. Overall, our results suggest that country factors could also explain part of our findings as the coefficients are significantly larger when country factors are high (especially for *HSTDEV*) showing that in that case country specialists add more value.

7. Conclusions

Brokerage houses usually organize their European research departments along either country or sector lines. Their research activities aim to provide valuable information and advice to investors. Our goal is to evaluate which form of organization provides most value to investors. In this paper, we document that the value contained in analysts' stock recommendations is related to how analysts structure their portfolios and research activities. We compare the information content of stock recommendations issued by country specialists and sector specialists. We show that the country specialists outperform sector specialists, in the sense that the recommendations of the former convey more information to the market.

We investigate potential sources of the information advantage that country specialists enjoy and show that the information content of country specialist recommendations is higher in countries with low accounting standards and weak shareholder

protection. It is also higher for firms located in countries with low market capitalization. Similarly, we observe that the relatively better performance of country specialists is highest in countries with relatively strong country-specific factors. In contrast, physical proximity does not seem to matter, but the influence of location is less clear cut and may still be a source of comparative advantage.

Finally, this study opens several new questions for future research. While we document that recommendations issued by country analysts are more valuable than those issued by sector specialists and that the incremental value is slowly incorporated into prices, we do not aim to investigate whether investors can exploit profitable strategies. Nevertheless, preliminary analysis seems to indicate that, due mostly to transaction costs, potential investment strategies would not provide investors with the opportunity to achieve positive risk-adjusted performances. Similarly, we could argue that our findings support the idea that country specialization would be more suitable in emerging markets. Unfortunately, we know little about the value of stock recommendations in emerging markets and it could be that there is no value just because of disclosure quality. Therefore, we remain cautious and recognize that it would be too premature to make any statement on whether the results of this study are applicable to emerging markets. This is indeed an interesting questions but it is beyond the scope of this paper.

Appendix: Computing Country Factors

To compute country factors we follow the methodology developed by Heston and Rouwenhorst (1994) for studying the relative importance of industry and country effects. According to their model, any stock return can be decomposed into four elements: a global common factor (common to all stocks), a country-specific "pure" factor, a sector-specific "pure" factor, and an idiosyncratic, firm-specific component. The term "pure" emphasizes that country and sector factors are net of all other influences.

In their model, the return generating process of every stock i (originating from country k and active in industry j) at a given date t can be written as:

$$r_{it} = \alpha_t + \gamma_{kt} + \delta_{jt} + \varepsilon_{it} \quad \forall i \tag{A1}$$

where r_{it} is the local currency excess return on security i at time t. α_t is a term common to every stock at time t, whereas γ_{kt} and δ_{jt} are respectively the pure country k and industry j component of the date t return for a firm that belongs to these particular country and industry. ε_{it} is an idiosyncratic firm-specific term. At any given date t, every country k and industry j pure effects can be estimated by means of the following cross-sectional regression, which is a simple generalization

of equation (A1):

$$r_{it} = \alpha_t + \sum_{k=1}^{K} \gamma_{kt} \cdot C_{ik} + \sum_{j=1}^{J} \delta_{jt} \cdot I_{ij} + \varepsilon_{it} \qquad \text{for } i = 1, \ldots, N_t \qquad \text{(A2)}$$

where C_{ik} is a dummy variable that equals 1 if the firm i belongs to country k and zero otherwise and I_{ij} is a dummy variable that equals 1 if the firm i belongs to industry j and zero otherwise. K and J are respectively the number of countries and industries considered in the sample and N_t is the number of stocks included in the cross-section at time t.

To estimate equation (A2) we account for the presence of multicollinearity induced by the fact that each firm belongs to both one country and one industry. For that, we follow the literature and impose the constraints that, for equally-weighted portfolios, the sum of the industry coefficients equals zero and the sum of the country coefficients equals zero. Thus, running the cross-sectional regression (A2) subject to the outlined constrains, for each country, we obtain a time series of pure country factors.

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