Country versus Sector Influences
And
Financial Analysts' Specialization

PhD Thesis

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Country versus Sector Influences and Financial Analysts' Specialization

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Introduction

Global investing is more than ever a reality. Academic works published over the last thirty years have definitely convinced practitioners that they could not content themselves with investing their clients' wealth in their domestic market exclusively. Foreign financial markets provide investors with benefits in terms of risk diversification. By expanding the investment universe, they also offer higher expected return potential.

The huge number of stocks traded on the various national markets implies a need to summarize the information on these numerous securities into a few relevant statistics, and to group firms accordingly. One possibility, which has been traditionally followed, relies in considering each national market as a distinct entity. Thus, stocks are classified into different groups depending on their nationality. Accordingly, the traditional top-down route would consist in selecting first countries to overweight or underweight, and then pick stocks within each of the selected countries. The belief that globalization led international markets to becoming close to fully integrated poses a new challenge. Shall we continue approaching global investing with this traditional country-by-country approach? Or shall investments be conducted worldwide, without making any reference to the portfolios' national dimensions. Under this alternative, which clearly considers national influences to have become of minor importance, global economic sectors are usually considered as the dimension of choice.

Whether international financial markets are integrated in such an extensive way that portfolio managers should disregard the national characteristics of their portfolios and rely on a global sector-by-sector approach is still an open question. It is perhaps true that markets have been moving towards integration over time. Also, globalization is apparent through the great number of international mergers and acquisitions and the ever increasing level of foreign sales and assets held abroad. Though, many factors, such as differences in economic policies and accounting standard or the still prevalent home bias, prevent capital markets from being fully integrated.

While academic research shows that country influences are and will probably remain important determinants of security returns, practitioners behave as if the opposite was true. Galati and Tsatsaronis (2003) report results from a survey conducted on the behalf of Merrill Lynch. For the purpose of this survey, portfolio managers were asked which dimension they

thought was the most important in terms of portfolio diversification. In 1997, 75% of them were convinced by the superiority of the country-by-country approach. No later than in 2001, only 10% were still favoring this approach. Although emerging markets, or atypical markets such as Japan, are still considered by investors as having a clearly distinct nationality, common belief is that worldwide developed markets are nowadays highly enough integrated to justify switching from the traditional country-by-country to a new global sector-by-sector approach.

This new paradigm certainly constitutes the main reason that led banks and brokerage houses to reorganize their financial research departments along sector lines. Traditionally, financial analysts were mostly specialized by countries. There were financial analysts following firms headquartered in Switzerland, while others were assigned firms headquartered in the U.K., irrespective of the industry sector in which these firms were active. That is, a given analyst could have been assigned Novartis, UBS, and Logitech, all of which are Swiss firms active in the pharmaceutical, financial, and technology sectors respectively. Over the recent past, there has been a clear shift towards reorganizations of financial research departments along industry lines. Accordingly, there are nowadays relatively more analysts following firms active in a single industry, whilst headquartered in various countries. Such a sector-specialized analyst could then be assigned UBS, Deutsche Bank, and Citigroup. That is, firms active in the financial sector, irrespective of their headquarters' location.[1]

Investment managers now demand for sector-by-sector research and, to be competitive, brokerage houses have to conform to this requirement. However, this does not mean that a financial analyst specialized in the global financial sector will forecast UBS earnings more accurately than a financial analyst specialized in Swiss firms. The present work deals with this issue. To the best of my knowledge, I am the first to explicitly raise the question of the relative performance of country- versus sector-specialized financial analysts by looking at the accuracy of their earnings forecasts and the information content of their recommendations. Instead, academics have usually relied on the study of factors affecting stock returns to advocate the way financial research departments should be structured. If country-specific factors are the most important determinants of stock returns, financial analysts should specialize by countries. The rationale is that analysts should benefit from economies of scale

[1] From now on, I will refer to these two types of analysts as "country specialists" and "sector specialists" or "country-specialized analysts" and "sector-specialized analysts" interchangeably.

in their information acquisition and production activities due to commonalities among firms that share a same country of domicile. If, on the other hand, sector-specific factors explain relatively more of stock return variations, financial analysts should specialize by sectors. I explain further in the text why such a conjecture is not appropriate and, thus, why my contribution is important to get insight into the relationship between financial analysts' specialization and forecast quality. Yet, for my work not to be orthogonal to the existing literature, I still devote a Chapter to the relative importance of country and sector factors in stock returns. It is the purpose of Chapter 1, which can be seen as a descriptive analysis of the relative importance of country and sector factors in European stock returns.

Chapters 2 and 3 constitute the core of my research. In the former, I show that country specialists issue on average far more accurate earnings forecasts than their sector-specialized peers. To get the economic meaning of how significant this difference in performance is, one can compare its level to another variable that significantly impacts financial analysts' accuracy: "firm experience". My results show that sector-specialized analysts would need to follow a given firm for more than five consecutive years to being able to forecast its earnings as accurately as would a "junior" country-specialized analyst.

Chapter 3 builds on this finding. Acknowledging the relative higher accuracy of country-specialized analysts, I investigate whether the market recognizes this difference. The analysis of short-term price reactions around stock recommendations reveals that investors do not make a clear distinction between country- and sector-specialized analysts. Long-term price reactions further show that, consistent with the results presented in Chapter 2, recommendations issued by country specialists convey more information than those issued by their sector-specialized peers.

In Chapters 2 and 3, I also investigate the factors that provide country specialists' with their comparative advantage. My results lead to the conclusion that the higher quality of country specialists' forecasts results from country-specific factors in a broad sense. Country specialists are mostly based within the same country as the set of firms they follow. This is obviously not the case for sector specialists who, by definition, follow firms headquartered in several countries. Also, country specialists are in general located geographically close to the firms they follow. While physical proximity does not seem to deliver any comparative advantage, institutional and cultural proximity – as proxied by location within the same

country as firms – is a powerful source of outperformance. Domestic financial analysts' outstanding knowledge of the country's particular features allows country specialists to release more accurate, as well as more informative forecasts. Moreover, country specialists' superiority is highest in countries with strong country-specific factors and in small national markets, which reinforces the idea that country-specific factors in a broad sense play a major role in the financial analysis industry.

In the rest of this introductive part, I discuss two strands of literature that relate most to the problematic I raise thereafter. I focus in a first step on the relative strength of country and sector factors in stock returns. I then introduce financial analysis and discuss why country- and sector-specialized financial analysts may perform differently.

The Relative Importance of Country and Sector Factors

Up to the nineties, asset allocation was mostly based on the premise that country factors were the dominant source of stock returns' variation. Thus, international diversification was commonly admitted as the primary way of reducing variance in the asset management industry. Today, practitioners tend to privilege global sector-based asset allocation strategies. They usually justify this shift in the asset allocation paradigm as the necessary consequence of increasing globalization and integration of financial markets. Although there is no one-to-one relationship between financial integration and the relative importance of country and sector factors, I first discuss some potential drivers of and, above all, forces playing against financial market integration. This may provide useful insight on how and why country factors may still constitute important determinants of security prices. I then review the roots and main results of the literature on the relative importance of country and sector factors.

The Drivers of Financial Market Integration in Europe

Drivers of European financial market integration are numerous. Perhaps most importantly, over the last decade, are the advent of the European Monetary Union and the Euro, together with all additional measures undertaken with the objective of eliminating sources of market segmentation. Another crucial factor of integration relies in the progress of information and communication technologies, which have increased the availability and timeliness of information worldwide. As such, they have eroded national barriers by improving access to

foreign markets. The elimination of regulation barriers to cross-border pension funds' investment, coupled with the advent of the single currency, decreased the constraints these institutions had to home-bias their portfolios in virtue of currency matching rules. Also, competition among firms has become truly global, mostly through the vast activity of cross-border mergers and acquisitions, and through the fact that numerous firms now diversify their sales and production activities internationally.

Even though all these forces should drive financial markets towards greater integration, several factors still prevent from talking about a truly "global" financial market. Many of these factors are most apparent in emerging markets. One may think of political risks (e.g. prohibitions on repatriation of the capital invested in foreign countries), poor corporate governance, or poorly functioning domestic financial systems. More generally, in developed markets, differences persist in economic policies, tax, and legal systems. Even though efforts are being made to harmonize accounting standards, there also remain substantial divergences, even across European countries. Moreover, while European firms have shown a clear tendency to internationalize their sales and production activities over recent years, the domestic market remains dominant for the majority of them.[2] Last but not least, psychological barriers remain numerous. While information technologies have so much evolved that timely worldwide information is readily available, investors remain to a large extant unfamiliar with foreign markets and trading procedures. They know less about foreign stocks than they do about domestic ones and probably perceive them as riskier. This is especially true for small stocks; see Kang and Stulz (1997). Also, foreign investors can be at a disadvantage because of distance (Coval and Moskowitz (1999, 2001)), language and culture (Grinblatt and Keloharju (2001)), or simply because of time-zone differences. Interestingly, institutional investors, which have been given more freedom in their ability to invest abroad, still show a strong tendency to overweight their domestic market.

[2] I look at data extracted from the Worldscope database over the period 1994-2003. For a typical year, namely 2002, even in a small open economy such as Switzerland, more than 40% of the firms' production is sold within the country. Also, more than 40% of Swiss firms sell less than 50% of their production abroad. In the U.K., for instance, approximately 60% of firms' sales are made within the domestic market, and more than 60% of U.K. firms sell less than 50% of their production abroad. Moreover, more than 20% of U.K. firms sell less than 10% abroad and are, in this sense, mostly domestic-oriented firms.

Country and Sector Effects in Stock Returns

Why Is the Question Relevant?

Over the last decade, many authors – both from the academic and practitioner side – have investigated the relative importance of country versus sector factors. Which of country or sector factors is having the predominant influence on stock price variations is a key question that is usually aimed at solving several issues. First, if sector effects primarily impact stock returns, then portfolio managers should approach their investment process along sector lines. Conversely, the traditional top-down country-by-country approach should be pursued in a world where country effects are more important than sector effects. Second, many researchers have relied on results from this literature to draw conclusions on how financial analysts should structure their research. If sector factors are more relevant, one should organize research along sector lines. Conversely, if country factors are predominant, any single analyst should focus on firms headquartered within a single country. As a consequence, many attempts have been made in order to disentangle country and sector effects, and several advices have been put forward on how to diversify portfolios and how to organize financial research.

I do not believe such conclusions can be drawn from the literature on country and sector factors. First, while there is an obvious link between the relative importance of country versus sector effects and portfolios' risk reduction benefits, there is no such straightforward relationship. De Moor and Sercu (2005) analytically show that the standard methodology used in the literature on factors does not allow to concluding on whether sector-based or country-based diversification is more efficient. That is, even if sector factors were more important determinant of stock returns than country factors, country-based diversification could still provide higher risk-reduction benefits under certain circumstances; see also Adjaouté and Danthine (2003). Second, as I argue and show in Chapter 2, the very fact that country or sector effects are most pronounced does not tell whether financial analysis should be performed along this particular factor. Indeed, there are many forces at play that determine the quality of analyst forecasts. Commonalities among firms due to shared country of domicile or industry are only a small piece of the puzzle.

The Early Stage of the Literature: A Puzzling Fact

The question of the relative importance of country versus sector factors has attracted many practitioners' attention, as this topic is of an obvious relevance to them. Though, this literature takes its roots in a more academic-oriented question. Instead of a question, one may even talk about a puzzling fact.

The first papers that dealt with industry factors were in fact interested in solving a somehow strange feature of international equity markets. As a result of globalization and financial integration, financial markets should be expected to be highly dependent. Though, correlations between national stock indices have always been at surprisingly low levels, given the presumed level of integration. As correlations are the key to international diversification benefits, many efforts have been made to understand which country-specific influences could explain these low correlation levels. All of these country-specific influences need not, however, be related to the level of integration of international markets.

According to Roll (1992), stock indices may differ in several instances. First, they may differ in terms of their construction. Specifically, the number of individual stocks widely differs across national indices. The level of industry concentration also shapes the level of diversification of each national stock market. Beyond these rather technical features, national stock market indices may also behave differently because of differences in their industrial structures.[3] According to this view, the Swiss stock market would outperform other national indices because firms in the banking and health care sectors performed better than average rather than because the Swiss economy is particularly wealthy. At the extreme, stock market indices could perform differently for the only reason that their industrial compositions differ. Perfect integration would therefore be fully consistent with low correlation levels across country indices. Even in perfectly integrated markets where country-specific influences are

[3] Obviously, many other influences are at play. Different exposures to common global risk factors may explain a significant part of cross-country differences; see e.g. Ferson and Harvey (1993). Market segmentation is another potential determinant of the differences between the performances of national stock markets. It may result from investors' home bias. In this case, different stock market behaviors would result from the different sentiment and evaluation of investors from different countries, since stocks are mainly held by domestic investors. Segmentation may also result from different political and institutional environments across countries. This may induce shocks that affect only firms within the country, or may cause global shocks that influence national markets differently. Under segmented national markets, the French and Swiss stock markets would behave differently because banks in these countries are subject to different shocks, not because there is a greater proportion of banks in the Swiss market index.

nil, industry effects could be at work to push international correlations downward. Thus, it is not because cross-country correlations are low that international diversification is beneficial. If countries' differing industrial structures drive the low correlations between national stock markets, then diversifying primarily across industries rather than countries would be more efficient. Roll (1992) reports that global industry indices explain as much as 40% of the volatility of daily stock market index returns. However, his result is highly biased in favor of industries, as it incorporates the effect of a global market factor. In other terms, the variables considered by Roll are industry returns, rather than industry factors. Whereas the former contains other influences beyond the only influence of the industry, the latter would and should have been the true measure of the variability brought by industries.

Heston and Rouwenhorst (1994, 1995) develop a methodology for studying the importance of industry-specific factors. According to their model, any stock return can be decomposed into four elements: the return on a global market index (common to all stocks), a country-specific "pure" factor return, a sector-specific "pure" factor return, and an idiosyncratic, firm-specific component. The term "pure" emphasizes that country and sector factors are net of all other influences. The country factor of a given national market is the return on a portfolio that takes a pure bet on this particular country, with no exposition to global or sector influences. Similarly, a given sector factor return is a pure bet on the particular sector. Whereas Roll (1992) fails to disentangle the global and sector-specific components, this decomposition allows a clear and straightforward way of disentangling the different influences governing stock prices.

Building on this model, Heston and Rouwenhorst (1994) report that sector influences explain almost nothing of the cross-sectional differences in country stock index returns. Specifically, over the period 1978 to 1992, industry factors explain approximately only 1% of the total variation of the 12 European country index returns considered in their study. Also, country-specific forces explain almost all of the low observed correlation levels between country indices.

Lessard (1976), Grinold, Rudd, and Stefek (1989), and Drummen and Zimmermann (1992) also come up with results consistent with industry factors having little influence on national stock index returns. Though, these studies find a more significant role of industries than is apparent in Heston and Rouwenhorst (1994). Beyond differences in sample periods, sizes, or

markets covered, this apparently stronger evidence of a significant impact of industry-specific influences certainly comes from a problem similar to the one in Roll (1992)'s study. Indeed, industry index returns were used as proxies for industry factors, while country index returns were used as surrogates for country factors. The problem, which the Heston and Rouwenhorst (1994) methodology solves, is that industry indices are polluted with country influences, to the same extent that country indices are confounded by industry influences.

The intuitive appeal of the Heston and Rouwenhorst methodology, but also the difficulty to go beyond and improve it, has led many researchers to rely on this particular approach. Beckers, Connor, and Curds (1996), Griffin and Karolyi (1998), Marsh and Pfleiderer (1997), Rouwenhorst (1999), L'Her, Sy, and Tnani (2002), Hamelink, Harasty, and Hillion (2001), and De Moor and Sercu (2005) among many others, all confirm the result according to which very little of country index return variation can be explained by their industrial composition.

The Relative Importance of Country and Industry Factors

Thus, industry composition fails to explain the low correlations observed between national equity market indices. But another, arguably more pragmatic or practitioner-oriented question remains. Are country effects more influent than industry effects when it comes to individual stock return variations? Indeed, if industry composition cannot explain country index returns, country composition cannot explain global industry index returns. This should not come as a surprise. Industries (countries) are in general well diversified in terms of countries (industries). Thus, country (industry) effects tend to compensate each other and be of a lesser relevance in explaining industry (country) indices. Though, both country and industry effects are strong determinants of individual stock return variations. As a consequence, the question that has motivated researchers over recent years has been to determine whether country or industry effects are the dominant source of stock return variations.

One general result emerges from the literature. On average, country factors are more important determinants of stock returns than industry factors; see e.g. Heston and Rouwenhorst (1994, 1995), Beckers et al. (1992), Beckers et al. (1996), and Griffin and Karolyi (1998). While this is presumably the strongest message of this literature, additional results have emerged since the mid-nineties. I provide a detailed review of this literature in Chapter 1.

Financial Analysts: Their Job and Specialization

There has been huge amount of work undertaken on financial analysts. Ramnath et al. (2005) report that more than 250 papers dealing with financial analysts were published between 1992 and 2005 in nine major journals.[4] They further remark that, over the 6 months preceding the last version of their review of literature, 105 working papers with the word "analysts" in the abstract had been posted on the Social Sciences Research Network. I do not aim at providing here an exhaustive review of this vast literature. Instead, I focus on a few narrow topics which are of interest in the context of my work.[5] This will be done in Chapters 2 and 3. In the present section, I introduce financial analysts and what their job consists in. I then discuss the potential advantages and drawbacks conveyed by organizing research along country or sector lines.

What Do Financial Analysts Do?

Financial analysts act as intermediaries between portfolio managers – for whom they are supposed to work – and the managers of the firms they evaluate. They are specialist advisors, whose role is to gather and process information and then communicate it to investors who, in turn, buy, hold, or sell stocks. Sell-side analysts publish written reports, which usually contain in depth analysis of the firm.[6] Their fundamental, technical, or quantitative analyzes return mainly three figures of interest: earnings forecasts for various time-horizons, stock recommendations, and price targets. They are usually complemented with information rationalizing the forecasts and recommendations. Earnings forecasts and stock recommendations have been the two most extensively studied variables in the academic literature, presumably because the time horizon of price targets is usually not clearly defined.

Financial analysts need information inputs, which they process, and return outputs in the forms mentioned above. The inputs to financial analysis are manifold. Financial statements represent an important part. Though, financial analysts themselves usually recognize that this

[4] These nine journals are: *The Accounting Review, Contemporary Accounting Research, International Journal of Forecasting, Journal of Accounting and Economics, Journal of Accounting Research, Journal of Finance, Journal of Financial Economics, Review of Accounting Studies, and Review of Financial Studies.*

[5] I refer the reader to Kothari (2001) for a broad review of the literature on the relation between capital markets and financial statements, and to Ramnath et al. (2005) for a more focused review of the research on analysts' decision processes and the usefulness of their forecasts and stock recommendations.

[6] I focus here and in all the remaining of this work on sell-side financial analysts.

does not constitute their most important source of information. Instead, direct contact with the managers of the company being evaluated appears as a predominant source of information.

Of course, financial analysts must know the firms they are covering. They must know what these firms do, and know and evaluate their managers, their strategies and the likely consequences of them. In order to do so, they must be experts in the industry sector in which these firms compete, together with the position of the firms in their sector. This is, as a matter of fact, an argument which is often advanced to justify that financial research departments should be structured by sectors instead of countries. Yet, analysts must also master the political, legal, regulatory, and ethical environments of the firms they follow. A far from exhaustive list of such factors may include the firm's political influence, labor law, product and price regulations, taxation of the firms, and international trade treaties.

This outstanding knowledge of the firms' businesses constitutes the qualitative part of the financial analysis process. Financial statements provide the quantitative dimension. Thus, financial analysts must understand what financial statements say, but also, and perhaps more importantly, what they do not say.[7] That is why financial analysts must also have a thorough knowledge of the specific accounting standards followed by the firms they cover. This is also probably why additional sources of information turn out to be so important for financial analysts. Indeed, the source of information considered by financial analysts themselves as the most important is direct contact with the companies' managers. Barker (1998) reports results from a survey-based study. He shows that personal contact is significantly more important than earnings announcements and financial statements. The author suggests four reasons why personal contact is so crucial. First, it is the timeliest source of information. Second, it allows analysts to ask the questions they are willing to ask. Third, it provides analysts with a comparative advantage over their peers. Fourth, it enables analysts to focus on strategic and forward-looking issues.[8] Rogers and Grant (1997) confirm this finding. They screen analysts' reports and find out that analysts rely heavily on information external to the corporate annual reports. In fact, only half of the information found in analysts' reports can be traced to

[7] For instance, Graham et al. (2002) report that, while the income statement, the balance sheet and the cash flow statement all constitute crucial information, financial analysts make an extensive use of the financial statement's footnotes.

[8] Note that this may not be true anymore, because of the recent implementation of regulation FD in the United States.

financial statements. Moreover, half of the financial statements' information can be found in the narrative sections rather than in the basic financial statements.

From their knowledge of the firms, their underlying business, and their financial statements, financial analysts must find a way to translating their understanding into a valuation of the firms. For that purpose, they must rely on appropriate valuation technologies, which vary from very simple multiple to more sophisticated real option methods. In general, the choice of a particular model depends on the particularities of the firms being valued. This in turns mainly depend on the industry in which the firms are active. Block (1999) surveys approximately 300 members of the Association for Investment Management and Research and reports that the most widely used valuation model is a simple Price-Earnings ratio (PE). In fact, approximately half of the surveyed analysts answered they never used present valuation techniques, while only 15% always used present valuation techniques. Demirakos et al. (2004) screen financial analyst reports and confirm that analysts mostly rely on simple PE multiples. Though, they show that the choice of the valuation methodology depends in general on the particular economic sector.

Financial Analysis: Sector- or Country-Based Structures?

To the same extent that portfolio managers should structure their investment process along predefined characteristics, it is generally assumed that financial analysis should focus on, and specialize in firms sharing common features. It is also usually assumed that to determine what these characteristics are, one shall adhere to some vision of the world, regarding what the main factors governing stock prices are. The most followed approach has been to consider these characteristics as being either countries or economic sectors. In Europe, both specializations co-exist, and there is no consensus about which approach – by sectors or by countries – is best.

Solnik and McLeavey (2004, p. 277-278) argue that there are in fact two clearly distinct questions. First, shall a firm valuation be performed within the context of its industry? Assuming that the industry can be unambiguously defined, the answer to this first question is a clear and unequivocal yes. It would not come to anyone's mind to argue that a company can be analyzed without making reference to its competitors and the environment in which it is active. This runs through a wide knowledge and understanding of the industry the firm

belongs to. For example, analysts must be aware of the industry life cycle, the competition structure within the industry, or any other factor related to it. In most cases, this competition has become truly international. Yet, one has to keep in mind that country-specific factors, such as human capital, stage of the domestic markets, corporate governance, or management practices are also important aspects of this environment.

The second question raised by Solnik and McLeavey is: "Shall a company be valued relative to other companies within the same industry or relative to other companies within the same country?" In other words, shall financial analysis be performed along industry or country lines? Whilst answering the question by relying on the relative importance of country and sector factors, Solnik and McLeavey acknowledge that the answer is not that straightforward. They give reasons for that. Beside the fact that answering the question of the relative importance of country and sector factors is a hard task, the authors emphasize on one of the main caveats of the industry-based approach by stating "any industry classification is open to questions". The first problem arises when having to determine the number of industries. Shall we define 7, 10, or 30 industries? Also, every industry must have intern homogeneity, while there must be reasonable heterogeneity across industry groups. For instance, is "Union Pacific" a firm active in the railroad industry or in the transportation industry? Depending on which choice is made, the analysis of the industry will not be similar. The railroad industry has already experienced a full industry life cycle, while the transportation industry has not.[9]

Country-by-country financial analysis can also be criticized. Firms now compete on a global basis. Both their revenues and production activities are truly international. It is therefore difficult to assign a nationality to a multinational firm. However, this critic can similarly be addressed to sector-based analysis. Beside the extensive activity around cross-border mergers and acquisitions, there have also been numerous cross-industry mergers and acquisitions. For instance, what industry shall one assign to "Virgin Group"? Media, transportation, telecommunications, leisure, or non-durable goods?

Valuing firms relative to their competitors in the same industry group also implies having to analyze and compare financial statements published in different countries. Large

[9] Note that this problem also applies to the first question raised by Solnik and McLeavey. While firms have to be valued in relation with their competitors and environment, it still remains that one has to determine what these competitors and environment are.

capitalization firms usually release these documents both in their domestic language and in English. But smaller firms often publish these documents in their domestic language only, making information difficult to understand for foreign financial analysts. Also, accounting standards differ across countries. Even though developed countries are enforcing harmonization and increased quality of accounting standards, problems remain for smaller firms, especially in countries with a weak tradition of information transparency. And even when identical accounting standards are used, cultural, institutional, political, or tax differences make international comparisons difficult. Corrections are required to make financial information comparable across countries; see e.g. Rajan and Zingales (1995) about international measures of financial leverage for instance.

Geographic location may also be an important determinant. Country-specialized financial analysts have by definition the opportunity to be located geographically close to the firms they follow. This is not the case for sector-specialized analysts who follow firms headquartered in many different countries. The information obtained directly from the firms' management has been advocated to be of primary importance for financial analysts. As reported above, it appears as a more important source than accounting-based information; see Barker (1998). Location, therefore, may drive to a large extent the decision to organize financial research departments along country or industry lines. It may also affect the quality and quantity of information available to financial analysts. Lastly, visiting firms worldwide is an extremely time-consuming and expensive process.

Yet another feature is worth of interest. There is a vast literature on investment managers, who show a strong tendency to home bias their portfolios. It may very well be that financial analysts are characterized by the same feature. Behavioral explanations may be advanced. To the same extent that investors are unfamiliar with foreign firms and markets, financial analysts may feel more confident with firms that they know well, because located in their home country. Differences in language may also constitute a barrier to information acquisition and be interpreted as a disadvantage; see Grinblatt and Keloharju (2001) in the context of portfolio managers. In Chapter 2, I report summary statistics on financial analysts and their location relative to the firms they follow. Whereas country-specialized financial analysts are almost exclusively based within the same country as the set of firms they cover, sector-specialized analysts are not. Though, the reported figures indicate that sector specialists tilt

their portfolios towards domestic firms, which tends to confirm the argumentation above of the presence of home bias in the financial analysis profession as well.[10]

The information environment and the existence of commonalities across firms are also significant determinants that shape the structure of financial research departments. Information complementarities can facilitate the process of analyzing firms and contribute to a better understanding of the firms' economics. According to Kini et al. (2003), 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 producing high quality research, by taking advantage of economies of scale in information acquisition and production.

It is probable that brokerage houses weigh forces and constraints beyond economies of scale in gathering and interpreting information when setting analyst department structures. Cost considerations are such an additional influence. Even though large brokerage houses can afford implementing branches in many countries to keep financial analysts close to the firms, smaller brokers may not have this opportunity. Therefore, they may rather make the choice of having a geographically centralized department organized by sectors. However, this is not what one observes. A close look at the I/B/E/S database indicates that large brokerage houses mostly perform sector-by-sector research. Their smaller competitors often focus on a single country, with financial analysts specializing in this particular country.

[10] This question has not been explored in the literature and, of course, one cannot draw definite conclusions from these rough statistics.

Chapter 1: Are practitioners right? On the relative importance of industrial factors in international stock returns

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Abstract

This paper investigates the relative influences of industrial and country factors in international stock returns. Until very recently, academic research has consistently found that country factors dominate industrial factors. This result is in contradiction with practitioners beliefs. This paper re-examines this issue by analyzing a sample of more than 4000 stocks quoted in 20 developed countries. We find that on average the country effect still dominates stock returns over the period 1997-2000. This result has to be interpreted with caution though, as an analysis that allows for time-varying relative influences demonstrates the rapidly increasing impact of industry effects in recent times. We find, in particular, that this trend is common to all 20 developed countries considered and not only to those that are member of the European Monetary Union. We interpret this result as evidence of the increasing globalization of international equity markets.

1.1 Introduction

In recent years, an increase in the harmonization of economic, monetary and fiscal policies has been observed in developed countries, and especially in countries of the European Union. There has also been a trend towards a general deregulation of markets as well as a progressive elimination of barriers to international investments. Finally, trading and communication systems have benefited from technical improvements over this period. The consequence of all these changes should be a greater integration of international capital markets. Therefore, factors that drive equity returns are very likely to have changed over time. More specifically, integration should have an effect on the relative importance of the following factors: the country where the company is domiciled and the industry in which the firm has its main activities. One would expect that the more segmented markets are, the more influential national effects should be. Conversely, global industry factors should play the major role in integrated capital markets.

There is strong evidence that practitioners now believe that industry is more important than country in the evolution of stock returns. For instance, Galati and Tsatsaronis (2003) report that in 1997, 20% of managers of European equities believed in the superiority of portfolio allocation strategies based on industrial sectors, while 50% of managers thought that country factors were dominant. These proportions have been reversed in 2001. About 75% of managers think that investment strategies based on industry are superior to country strategies while only 10% still believe in the dominance of country effects. Another piece of evidence is provided by Bolliger (2004) who documents that most banks and brokers have decided to reorganize their research departments according to sectors rather than countries. Further confirmation of this fact is found in the presentation of stock quotes in financial newspapers and specialized magazines. Most classify stocks according to the industry they belong to rather than according to the market where they are quoted (at least in Europe). The expansion of several cross-market industrial investment funds is another example of this radical change in the practice of top-down asset allocation. The question is therefore: Are practitioners right when they assume that the industrial factor is the main determinant of stock returns?

Academics have addressed the issue of the relative importance of country and industry factors long before the recent developments in international financial markets. However, the evidence in favor of the approach taken by practitioners recently is very weak as most of the empirical

results show that the country influences have been stronger than those of industries. Our paper contributes to the ongoing debate by providing new insights on this issue by analyzing more than 4000 individual stocks from 20 developed markets over the period 1997-2000. Consistent with the most recent studies, this paper shows that the impact of industrial factors on stock returns has increased significantly and, in fact, that they dominate country factors in many cases. This research also provides some additional results. First, when we restrict our sample to stocks from the eight countries member of the European Monetary Union (EMU), we find that they respond today more to industrial than to country effects. One could think that this result is a consequence of convergence of economic and fiscal policies within EMU countries. However, we find that this does not seem to be the case since all developed countries have witnessed an increase in the significance of industry factors. Therefore, this trend is more likely to be attributable to an increasing globalization of the world economy rather than to convergence of EMU economies. Second, we document that small capitalization stocks are more sensitive than large caps to national influences. Third, we observe an atypical behavior of information technology and telecommunication stocks over the last part of the period under study. Finally, we find that the results are robust to the definition of industrial classification and to the number of industries taken into account.

The paper is organized as follows. The next section reviews the existing literature, while section 1.3 presents our data. Section 1.4 describes the methodology used to measure the relative influence of both factors. Empirical results are detailed in section 1.5. We provide some concluding remarks in section 1.6.

1.2 Review of Literature

In the sixties, academic literature already considered industrial factors as being a potential determinant of stock returns. King (1966) and Meyers (1973) assign an explicit role to industrial factors in a study of the structure of U.S. equity returns. Lessard (1974) is the first to extend the issue of the importance of industries to an international context. Through an analysis of market and sector indexes, he finds that national effects dominate industrial effects in international stock returns. Grinold, Rudd and Stefek (1989) confirm Lessard's results. Yet, they find large differences depending on the country or sector that is analyzed. They conclude their article with the following statement: "Most countries are more important than industries, but most important industries are more important than the less important countries". A large

fraction of this literature reaches similar findings regarding the dominance of country over industry factors and the dispersion of these effects. Such results are reported by Drummen and Zimmermann (1992), Beckers, Grinold, Rudd and Stefek (1992), Heston and Rouwenhorst (1994, 1995), Beckers, Connor and Curds (1996), Griffin and Karolyi (1998), Rouwenhorst (1999) and Kuo and Satchell (2001). The only exception to this fairly homogeneous literature is the paper by Roll (1992) who finds that industry factors are the most important. However, Heston and Rouwenhorst (1994) show that Roll's results are not valid since the variables that are used to explain 40% of the country index variances are not industry factors but rather industry returns. As such, they do not represent only the effect of the industry, but also other influences such as world (or global) factors.

Beckers, Connor and Curds (1996) and Griffin and Karolyi (1998) provide some interesting extensions of the results obtained in the literature. Beckers, Connor and Curds (1996) find that industrial factors appear to be more influential when stocks are classified into 36 different industries rather than into seven global sectors (although the country influence remains dominant). Second, they find that the European Monetary Union country members are much more integrated than other countries. Griffin and Karolyi (1998) consider both 66 industries and 9 sectors and confirm that industry influences grow with a finer definition of industrial sectors. They also distinguish countries belonging to different regions of the world. As they include in their sample the most important emerging countries, they find that these are less integrated at the international level. Third, they differentiate between traded and non traded-goods industries[11] and find an intuitively appealing result that traded-goods are on average more influenced by industrial factors than are non traded-goods industries.

Overall, the previously mentioned studies show that country effects are more important than industry effects. Moreover, most of them do not find any growing importance of industries relative to countries with data extending up to 1998. The first two papers that give credit to the practitioners top-down industry approach are Baca, Garbe and Weiss (2000) and Cavaglia, Brightman and Aked (2000). They find out that the industry factors have become more and more influential over the period 1995 to 1999. In particular, Baca, Garbe and Weiss (2000) conclude that the influence of the country factor was on average two to three times larger than the industrial factor until 1995 but that this ratio has dropped to 1.23 during the 48 months

[11] Non traded-goods industries are defined to be those for which high transportation costs prevent international trade.

prior to March 1999. Cavaglia, Brightman, and Aked (2000) are the first to report that industry effects are more important than country effects at the end of the nineties.

1.3 Data

Our sample consists of weekly local currency denominated excess returns. We use the one-month Euro-market interest rate for each market that we analyze to proxy for the risk-free rate of each particular country. Daily returns would have been less appropriate because of the trading-time difference between the countries included in our sample. On the other hand, a significant part of information would have been probably lost with the use of monthly returns. Moreover, in order to avoid issues such as abnormal Monday or Friday returns, our returns are calculated from Thursday to Thursday. We consider a total of 4359 stocks from 20 countries from January 1997 to December 2000. This sample period contains 205 weekly returns. In our view, a twenty-country sample is more realistic than a smaller or restrictive sample since it is close to the real universe of shares available to each investor. However, we do not include emerging markets in our coverage because of their specific features and their relatively small degree of integration. As one the goals of the paper is to analyze the robustness of our results with respect to different settings, we conduct our empirical study on six different datasets. Our base sample contains 2162 firms followed by Morgan Stanley Capital International (MSCI). Each stock is assigned to one of the 10 broad sector categories defined by this company and to the country where its headquarters are domiciled. This sample can be considered as a large cap sample as Morgan Stanley follows only firms that represent the top 60% of the domestic market capitalization.

To check for the robustness of our results we repeat the tests on different datasets. This will give us some insights on different hypotheses. The second sample includes the same universe of assets as the base sample, but stocks are assigned to industries according to Thomson Financial Datastream. Table 1.1 reveals that the stocks do not always belong to the same industry according to one provider or the other. The results obtained with this sample will show if the differences between the two classifications have an impact on the conclusions.

Table 1.1: Comparison of MSCI/Datastream Classifications

This table provides the correspondence between MSCI and TF Datastream industrial classifications. Each row indicates the number of stocks of a particular MSCI industry that are present in the different TF Datastream industries. Columns indicate the number of stocks of a particular TF Datastream industry that are present in the different MSCI industries.

		TF Datastream classification										
		Resources	Basic Industries	General Industrials	Cyclical Cons. Goods	Non-Cyclical Cons. G.	Cyclical Services	Non-Cyclical Serv.	Utilities	Financials	Info. Technology	**Total**
MSCI Classification	Energy	63	-	1	-	-	-	-	1	1	-	**66**
	Materials	20	177	7	1	18	1	-	1	-	-	**225**
	Industrials	2	68	169	5	3	152	1	-	4	13	**417**
	Consumer Discretionary	-	12	22	110	-	232	5	-	1	3	**385**
	Consumer Staples	-	-	2	-	119	5	33	-	-	-	**159**
	Health Care	-	2	4	1	103	1	-	-	2	-	**113**
	Financials	-	2	14	1	2	4	-	-	353	1	**377**
	Information Technology	-	4	53	2	-	8	4	-	-	188	**259**
	Telecom. Services	-	1	1	-	-	1	59	-	-	2	**64**
	Utilities	1	-	4	-	-	1	-	91	-	-	**97**
	Total	**86**	**266**	**277**	**120**	**245**	**405**	**102**	**93**	**361**	**207**	**2162**

The third sample uses the TF Datastream classification and includes all the stocks followed by TF Datastream. This increases the size of the sample to 4359 stocks. It includes companies with smaller capitalization than those followed by MSCI. Tests on this dataset and comparison with the results obtained with sample 2 measures the sensitivity of the conclusions to the inclusion of small size stocks. Sample 4 will again use MSCI classification but a finer decomposition of industrial structure. The results from this sample will provide insights on the sensitivity of the results to the refinement of the classification. In particular the results will show if industry effects are stronger when a finer decomposition of industries is used as found by Beckers, Connor and Curds (1996) and Griffin and Karolyi (1998). In sample 5 and 6, we restrict our universe to stocks of companies domiciled in the countries that are member of the European Monetary Union[12] to check if the general process of harmonization at work in Europe as well as the introduction of a common currency reinforce industrial influences (and/or decrease country effects) and if the results differ from those

[12] These countries are: Belgium, Germany, Spain, Finland, France, Italy, Netherlands and Portugal.

obtained for developed markets in general. The second European dataset excludes stocks from the information technology and telecommunication services sectors as they display a very atypical behavior over the years 1999-2000. Table 1.2 summarizes the main features of the samples used in this study

Table 1.2: Characteristics of the Samples

This table summarizes the features of the six datasets that are successively considered in the empirical part. It shows the total number of stocks included in the sample, the number of countries considered, the type of industrial classification and the level of refinement of the industrial classification.

Sample	Number of shares	Number of countries	Industrial classification	Number of industries
1	2162	20	MSCI	10
2	2162	20	Datastream	10
3	4359	20	Datastream	10
4	2162	20	MSCI	23
5	504	8	MSCI	10
6	462	8	MSCI	8

1.4 Methodology

To determine the relative importance of industry and country factors in international stock returns, we use the methodology developed by Heston and Rouwenhorst (1994). This procedure is widely used in the literature. It assumes that each individual stock return can be decomposed into four components that are: a global common factor, a country factor, an industry factor and a component that is specific to each firm. This amount to writing the return generating process of every stock *i* (originating from country *k* and active in industry *j*) at a given date *t* as:

$$r_{it} = \alpha_t + \gamma_{kt} + \delta_{jt} + \varepsilon_{it} \qquad \forall \text{i} \qquad (1)$$

where r_{it} is the local currency excess return on security *i* at time *t*. The analysis of local currency-denominated excess returns corresponds to an analysis of market returns available to every investor (whatever his or her nationality) under the hypothesis of fully hedged excess returns, as shown by Singer and Karnosky (1995). α_t is a term common to every stock in the world 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.[13] ε_{it} is an idiosyncratic disturbance 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 (1):

$$r_{it} = \alpha_t + \sum_{k=1}^{K} \gamma_{kt} \cdot C_{ik} + \sum_{j=1}^{J} \delta_{jt} \cdot I_{ij} + \varepsilon_{it} \qquad \text{for} \quad \mathrm{i} = 1,...,\mathrm{N_t} \tag{2}$$

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*. By estimating this equation cross-sectionally at each date *t*, we obtain *K*+*N* time series of pure country and industry effects. These time-series are then used to determine the relative importance of country and industry factors.

Unfortunately, equation (2) cannot be estimated directly because of the multicollinearity problem induced by the fact that each firm belongs to both one country and one industry. One way to avoid this issue would be to define one country and one industry as a benchmark. However, to avoid potential interpretation problems caused by the choice of an arbitrarily selected benchmark, Heston and Rouwenhorst (1994) propose to adopt a more general and intuitive approach. It is possible to estimate the model directly by imposing the constraints that, for equally-weighted portfolios, the sum of the industry coefficients equals zero and the sum of the country coefficients equals zero. This method, proposed initially by Suits (1984) and Kennedy (1986), allows interpreting each coefficient as a deviation from the mean value of the sample. Formally, the two constraints are as follows

$$\sum_{k=1}^{K} m_{kt} \cdot \gamma_{kt} = 0 \tag{3}$$

$$\sum_{j=1}^{J} n_{jt} \cdot \delta_{jt} = 0 \tag{4}$$

where m_{kt} and n_{jt} are respectively the number of stocks in country *k* and industry *j* available at time *t*. Thus, running cross-sectional regression (2) subject to restrictions (3) and (4) for each period gives estimates of γ_{kt} and δ_{jt}. The two constraints have a couple of interesting consequences. First, since the sums of country and industry coefficients both equal zero, the coefficient α_t is the average return of the sample, which is nothing else than the return at date

[13] We use the terminology "pure" to emphasize the fact that these variables represent country returns net of world

t of an equally-weighted world index.[14] The second interesting feature of this methodology is that it allows decomposing each country and each industry return into its principal determinants. By summing equation (2) over each stock in country *k* and dividing it by the number of stocks in that particular country (m_{kt}), we obtain the following expression for r_{kt}, the country *k* equally-weighted return at date *t*:[15]

$$r_{kt} = \frac{1}{m_{kt}} \sum_{i=1}^{m_{kt}} r_{it} = \frac{1}{m_{kt}} \sum_{i=1}^{m_{kt}} \left(\alpha_t + \sum_{k=1}^{K} \gamma_{kt} \cdot C_{ik} + \sum_{j=1}^{J} \delta_{jt} \cdot I_{ij} + \varepsilon_{it} \right)$$

note that as $\sum_{i=1}^{m_{kt}} \alpha_t = m_{kt}\alpha_t$, $\sum_{i=1}^{m_k} \sum_{k=1}^{K} \gamma_{kt} \cdot C_{ik} = m_{kt}\gamma_{kt}$ and $\sum_{i=1}^{m_{kt}} \varepsilon_{it} = 0$ by construction, we obtain

$$r_{kt} = \frac{1}{m_{kt}} \left(m_{kt} \cdot \alpha_t + m_{kt} \cdot \gamma_{kt} + \sum_{i=1}^{m_{kt}} \sum_{j=1}^{J} \delta_{jt} \cdot I_{ij} \right)$$

Decomposing each global industry index in the same way, the following relationships are obtained for each country *k* and industry *j* equally-weighted return at each given point in time:

$$r_{kt} = \alpha_t + \gamma_{kt} + \frac{1}{m_{kt}} \sum_{i=1}^{m_{kt}} \sum_{j=1}^{J} \delta_{jt} \cdot I_{ij} \tag{5}$$

$$r_{jt} = \alpha_t + \frac{1}{n_{jt}} \sum_{i=1}^{n_{jt}} \sum_{k=1}^{K} \gamma_{kt} \cdot C_{ik} + \delta_{jt} \tag{6}$$

where r_{kt} and r_{jt} are respectively the country *k* and industry *j* equally-weighted returns. As equation (5) shows, the return of the country *k* index can diverge from the world return (α_t in the right-hand side of the equation) for two reasons. First, because the return of country *k*, net of industry influences, is potentially different from the worldwide return (which implies that γ_{kt} is different from zero), and second, because the industrial composition of country *k* (represented by the third term) differs from that of the world index. If, for instance, on average across the world, the financial industry outperforms, the resulting impact of the Swiss industrial composition on the Swiss index (which includes many financial companies) will be, all other things being equal, positive. Notice also that if the industrial composition of a country is exactly the same as the world's industry composition, the resulting industry effect would be zero for that particular country.[16]

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and industry influences and industry returns net of world and national influences.

[14] In the case of a sample including European stocks only, α would represent the return of an equally-weighted European index.

[15] Note that the *i*-summation is taken over firms from country *k* only.

[16] That is due to the restrictions (3) and (4).

The cross-sectional estimation of the coefficients α_t, γ_{kt} and δ_{jt} of equation (2) at each given point in time *t* provides time-series of coefficients. Following Heston and Rouwenhorst (1994) or Baca, Garbe and Weiss (2000), we focus our attention on the time-series variances of the coefficients of equations (5) and (6), which are a measure of the explanatory power of the country and industry factors. More specifically, for every country *k* returns (equation (5)), the variance of γ_{kt} measures the pure country variance, and the variance of the term $\frac{1}{m_{kt}} \sum_{i=1}^{m_{kt}} \sum_{j=1}^{J} \delta_{jt} \cdot I_{ij}$ represents the cumulative sector-effect variance. For every global sector *j* returns (equation (6)), the variance of δ_{jt} measures the pure sector variance, and the variance of the term $\frac{1}{n_{jt}} \sum_{i=1}^{n_{jt}} \sum_{k=1}^{K} \gamma_{kt} \cdot C_{ik}$ represents the cumulative country-effect variance. To assess the relative importance of country and industry factors we will compare the average (across all countries) pure country variance to the average (across all industries) pure industry variance.

1.5 Empirical Results

1.5.1 Results for the base sample

We first consider the 2162 firms from 20 countries that are grouped into industrial portfolios according to the 10-sector MSCI classification (i.e., dataset 1). Panel A of table 1.3 displays the variances of the components of each country index, where the variances of the second and third terms of equation (5) are respectively in the first and third columns. In the same manner, panel B reports the variances of the components of each industrial index, where the variances of the second and third terms of equation (6) are respectively in the first and third columns. All the variances are estimated over the whole period from January 1997 to December 2000.

Panel A shows that only a small portion of the country index returns in excess of the world return can be on average attributed to the specific industrial composition of the countries. Indeed, the average variance of the weighted-sum of the industrial effects represents only 2.8% of the variance of the two effects. This is probably due, at least in part, to the fact that the country indices are generally industrially well diversified. Concerning industrial indices, a similar conclusion emerges from panel B. Nevertheless, even though the country factor

Table 1.3: Variances of Country and Industry Components

The first and third columns of the panel A display the variances of the pure country effects and the variance of the cumulative sector-effects for each country. The second and fourth columns of the panel A report the ratio of these two variances to the variance of the sum of the two effects. Panel B reports the variances of the cumulative country-effects and the variance of the pure industry effects for each industry. The second and fourth columns of panel B report the ratio of these two variances to the variance of the sum of the two effects. The variances are estimated over the whole period from January 1997 to December 2000.

Panel A

	Pure country effect		**Sum of 10 industry effects**	
	Variance (in squared %)	Ratio relative to market	Variance (in squared %)	Ratio relative to market
Belgium	2.839	91.14%	0.098	3.13%
Germany	2.345	101.70%	0.048	2.08%
Spain	3.162	106.41%	0.196	6.61%
Finland	4.406	104.72%	0.048	1.13%
France	2.33	100.55%	0.027	1.18%
Italy	5.522	104.68%	0.116	2.20%
Netherlands	2.974	99.04%	0.039	1.30%
Portugal	6.664	108.57%	0.3	4.89%
Switzerland	2.146	98.36%	0.11	5.06%
Denmark	3.613	102.61%	0.081	2.29%
United Kingdom	1.53	94.78%	0.026	1.63%
Norway	5.649	101.41%	0.268	4.80%
Sweden	4.845	103.76%	0.096	2.05%
Australia	2.741	97.81%	0.077	2.75%
Hong Kong	14.867	101.59%	0.106	0.73%
Japan	4.604	99.69%	0.007	0.15%
New Zealand	5.319	96.67%	0.223	4.06%
Singapore	17.747	100.00%	0.152	0.86%
Canada	1.581	97.49%	0.039	2.39%
United States	1.897	87.06%	0.15	6.88%
	4.839	**99.90%**	**0.11**	**2.81%**

Panel B

	Sum of 20 country effects		**Pure industry effects**	
	Variance (in squared %)	Ratio relative to market	Variance (in squared %)	Ratio relative to market
Energy	0.278	4.73%	5.943	101.09%
Materials	0.063	4.22%	1.522	102.48%
Industrials	0.063	15.31%	0.31	75.14%
Consumer Discretionary	0.011	4.30%	0.231	94.03%
Consumer Staples	0.027	1.70%	1.488	93.24%
Health Care	0.075	5.10%	1.469	99.55%
Financials	0.081	9.24%	0.888	100.97%
Information Technology	0.158	1.70%	9.165	98.68%
Telecommunication Serv.	0.308	5.10%	5.249	86.79%
Utilities	0.155	4.29%	3.647	101.19%
	0.122	**5.57%**	**2.991**	**95.32%**

explains only a small fraction of the industry returns, the comparison between the level of the average variance of the pure country effects and the one of the pure industry effects shows that the former is a more powerful variable to explain equity returns. Indeed, the average variance of the pure country effects is 4.839, which is greater than the average variance of the pure industry effects of 2.991.

However, comparing this result to those of previous studies which use the same methodology leads to the conclusion that the gap between these two variances is pretty small. Indeed, if one computes the ratio of the average variance of the pure country effects to the average variance of the pure industry effects, it is only 4.839/2.991 = 1.62. This ratio is very close to the one of 1.23 computed by Baca, Garbe and Weiss (2000) but it is relatively small in comparison to the ratios provided in the literature, as it is shown in table 1.4. This seems to indicate that the relative importance of industry over country effects is growing in recent periods.

Table 1.4: Summary of Results

This table compares the different results obtained in the literature. The last column provides the ratio of the average variance of pure country effects to the average variance of the pure industry effects.

	Period	Universe	Ratio
Heston and Rouwenhorst (1994)	1978 - 1992	Europe	4.45
Beckers, Connor and Curds (1996)	1982 - 1995	World	5.53
	1982 - 1995	Europe	1.99
Griffin and Karolyi (1998)	1992 - 1995	World (9 sectors)	11.42
	1992 - 1995	World (66 industries)	3.32
Baca, Garbe and Weiss (2000)	1995 - 1999	World	1.23

Furthermore, even though the influence of the country factor seems to be larger on average than the variance of the industry factor, table 1.3 also shows the divergence existing between the different results according to the country or the industry taken into consideration. For instance, one can notice very strong national effects for markets such as Hong-Kong or Singapore (14.867 and 17.747), which in turn confirms the intuition that these capital markets are less integrated than Great Britain or the United States, which show far smaller variances (1.530 and 1.897). We find similar results at the industry level. The variances are between 0.231 for the consumer discretionary sector and 9.165 for the information technology sector.

Thus, according to these initial results, we conclude that the country factor remains, on average over the period 1997 to 2000, a slightly more powerful explanatory variable than the industry factor. We also confirm the Grinold, Rudd and Stefek (1989) statement that there is a wide dispersion in pure country and industry effects.

1.5.2 Robustness of the results

To get further insights into the country-industry effects, this section addresses the following questions: (1) Is there an impact of industrial classification on the results? (2) Does the inclusion of smaller capitalization securities in the sample significantly alter the conclusions of the analysis? (3) Does the number of industries considered within the industrial classification influence the results? (4) Are countries member of the EMU relatively more influenced by industrial factors than the other developed countries? (5) Is the atypical behavior of the information technology and telecommunication services industries likely to lead us to biased conclusions?

To answer these questions we re-estimate our model on different samples. Besides the first sample, that contains 20 countries and 10 sectors as defined by MSCI, we use the other five datasets described in section 1.3 and summarized in table 1.2. The average results, estimated on the whole period, are provided in table 1.5.

Table 1.5 confirms the results obtained with our base sample: the country factor is a more influential variable than the industry factor as its variance is higher. The only exception comes from the fifth sample (i.e., the first European sample) where the pure country effect average variance (2.162) is lower than the pure industry effect average variance (3.171). However, it is quite important to note that this result is essentially due to the very strong industrial influence of the information technology and telecommunication services industries. This can be seen when one takes into consideration the sample which does not include the securities belonging to these two sectors (i.e., dataset 6). In this case the results are, on average over the whole period, more favorable to the country factor. A second conclusion that emerges from the analysis of the results shown in table 1.5 is that the European countries are less sensitive to national factors than the other countries in the world. The six figures of the first column of panel A are evidence of this clear-cut result. Indeed, it appears that the first four rows of this column, which are related to the worldwide estimations, show country effects average

variances uniformly twice as big as the two average variances resulting from the estimations considering the European samples and reported in the two last rows. Finally, it should be noted that our results are robust to the definition of the industrial sectors as well as to the number of industries into which the stocks are divided.

Table 1.5: Results for Alternative Datasets

The first and third columns of the panel A display the variances of the pure country effects and the variance of the cumulative sector-effects for each country. The second and fourth columns of the panel A report the ratio of these two variances to the variance of the sum of the two effects. Panel B reports the variances of the cumulative country-effects and the variance of the pure industry effects for each industry. The second and fourth columns of panel B report the ratio of these two variances to the variance of the sum of the two effects The variances are estimated over the whole period from January 1997 to December 2000.

Panel A

	Country indices			
	Pure country effect		Sum of 10 industry effects	
	Variance (squared %)	Ratio relative to market	Variance (squared %)	Ratio relative to market
20 countries, 10 sectors MSCI	4.839	99.90%	0.11	2.81%
20 countries, 10 sectors DS (2,162 shares)	4.782	96.82%	0.112	3.18%
20 countries, 10 sectors DS (4,319 shares)	4.697	93.48%	0.114	3.54%
20 countries, 23 industries MSCI	4.798	100.20%	0.126	3.46%
8 countries, 10 sectors MSCI	2.162	99.63%	0.041	1.92%
8 countries, 8 sectors MSCI	2.313	100.46%	0.038	1.58%

Panel B

	Sector and industry indices			
	Sum of 10 country effects		Pure industrial effect	
	Variance (squared %)	Ratio relative to market	Variance (squared %)	Ratio relative to market
20 countries, 10 sectors MSCI	0.122	5.57%	2.991	95.32%
20 countries, 10 sectors DS (2,162 shares)	0.144	10.08%	2.535	92.17%
20 countries, 10 sectors DS (4,319 shares)	0.16	8.87%	2.466	88.91%
20 countries, 23 industries MSCI	0.194	9.46%	2.786	90.23%
8 countries, 10 sectors MSCI	0.106	5.57%	3.171	96.45%
8 countries, 8 sectors MSCI	0.089	6.53%	1.587	98.44%

1.5.3 Evolution through time of the country/industry effects

The results above represent the average relative influences of country and industry between January 1997 and December 2000. However it is very likely that these relative influences are

evolving through time. More precisely, the industrial factors may have gained in importance relative to the country factors in recent periods. To test this hypothesis, we compute the 36-weeks moving average of the average country effects variances and of the average industry effects variances. We then consider the ratio of these average country variances to the average industry variances as a measure of the relative importance of the country factor relatively to the industry factor. The choice of a 36-weeks period is a results form the trade-off between using a shorter period which could lead to a lack of statistical power, and using a longer period which could excessively smooth the data.[17] The evolution of the ratio resulting from the base sample (2163 stocks, 20 countries and 10 MSCI industries) is shown in figure 1.1 for the period October 1997-December 2000.

Figure 1.1: Evolution over Time of the Relative Country/Industry Influences

Evolution of the ratio of the variance of the country effects to the industry effects for the sample of 20 countries and 10 industries according to the MSCI classification. Variances have been estimated over 36-weeks intervals.

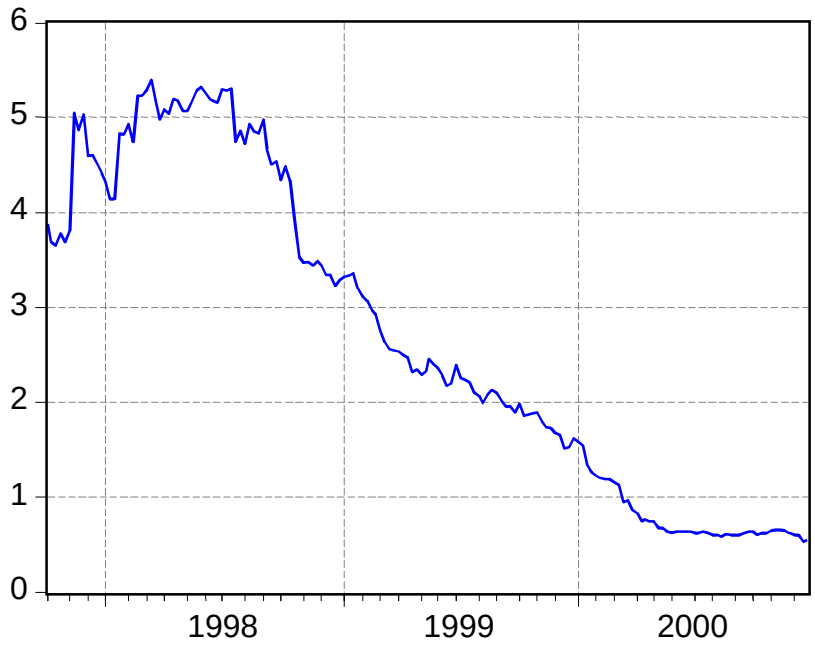


Figure 1.1 shows that the importance of the industrial influences has increased relatively to country influences, at least since the third quarter of 1998. Some convincing numbers also confirm the magnitude of this radical change: the ratio reaches its maximum of 5.39 in March 1998 and plummets until 0.53 at the end of December 2000 (the industry factor is stronger than the country factor since March 2000, i.e. the ratio is smaller than 1). Thus, although it is

[17] Estimations considering periods of 12, 24, 48 and 52 weeks have also been computed but they do not provide very different results from the ones presented for 36 weeks.

true on average over the whole period that the country factor remains the most important of the two factors considered here, this is no longer true when the effects are allowed to be time-varying. The more recent value of 0.53 of this ratio implies that the variance of the industry factors are, over the short period of 36 weeks prior to the end of year 2000, almost two times as large as the country factors.

Moreover, having in mind that this ratio has been estimated from a sample containing countries from all over the world, the use of a European sample should provide an even sharper result. Inversely, a factor that could be responsible for this strong industrial effect is the presence in the sample of information technology and telecommunication services stocks, which show a powerful industrial behavior. To illustrate the strong impact that the stocks from these two industrial sectors are likely to have on the results, we provide in figure 1.2 the time evolution of each pure industry effects variance for the sample of 8 country members of the EMU. One notices from this figure that stocks from these two industries have a very strong influence (high variance) especially towards the end of the period that we consider.

Because of these results, we have excluded these two sectors from the European Monetary Union sample to check if they were responsible for the domination of the industry effects over the whole sample. The results, obtained from the sixth dataset and reported in table 1.5, show that it is the case.

In order to check if there are differences in the evolution of the relative influence of country/industry factors we have computed the evolution of these ratios for the six samples that we use in our study. They are displayed in figure 1.3.

Several insightful results are emerging from these graphs. First, there is a clear difference between the two EMU samples and the four world samples during the first half of the period under study. But the trend toward financial markets integration of countries from all over the world has been stronger than for the 8 EMU countries during this four-year period. Thus, it cannot be argued that Europe is a far more strongly integrated region in comparison to other developed countries of the world. Moreover, if we keep in mind that the four world samples include stocks that are traded in market places such as Singapore or Hong-Kong (countries that are known to be segmented markets with important country influences), these results

Figure 1.2: Evolution of Variances of Different Industrial Sectors

Evolution of the variance of the pure industry effect for the sample of 8 EMU countries and 10 industries according to the MSCI classification. Variances have been estimated over 36-weeks intervals.

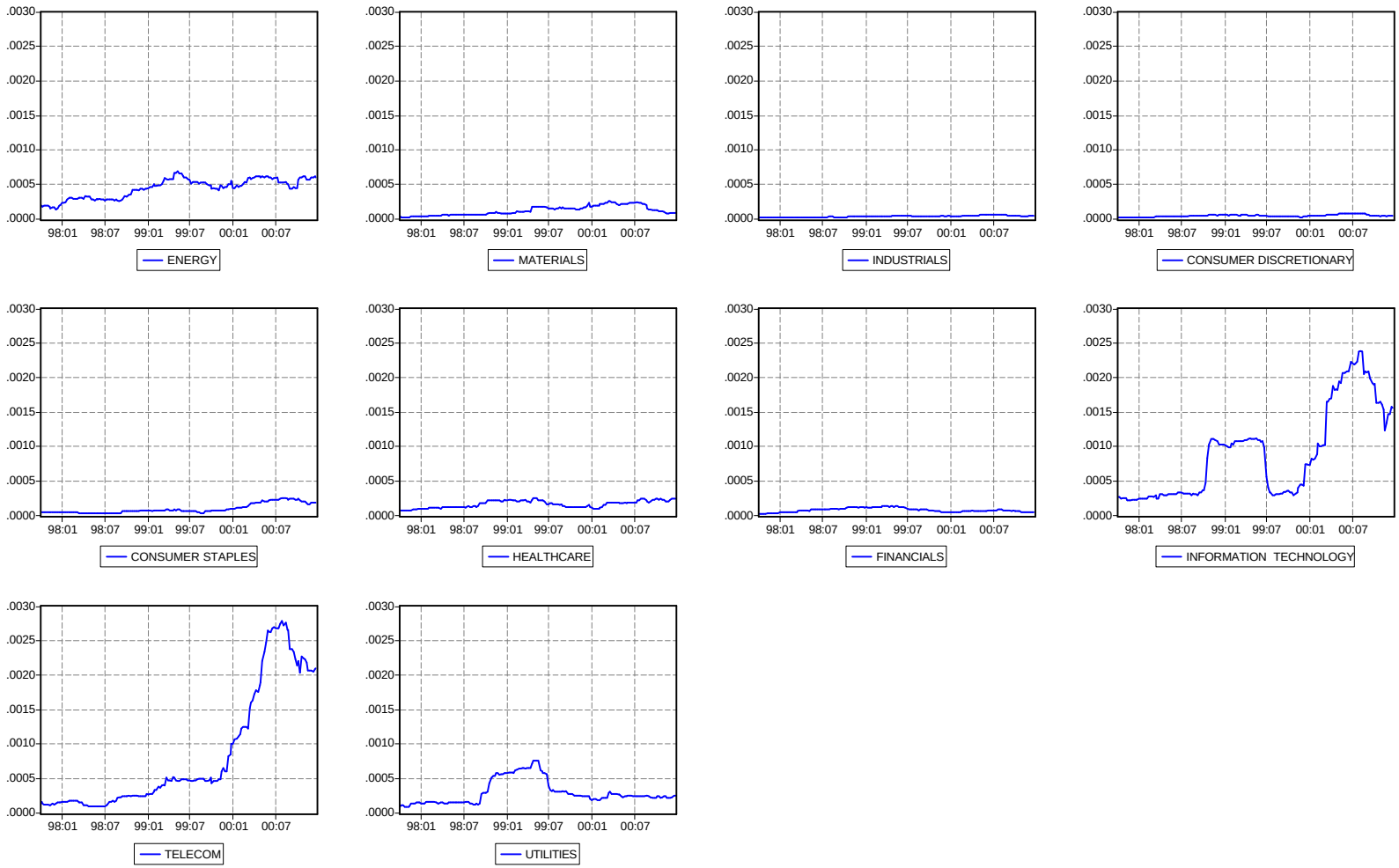
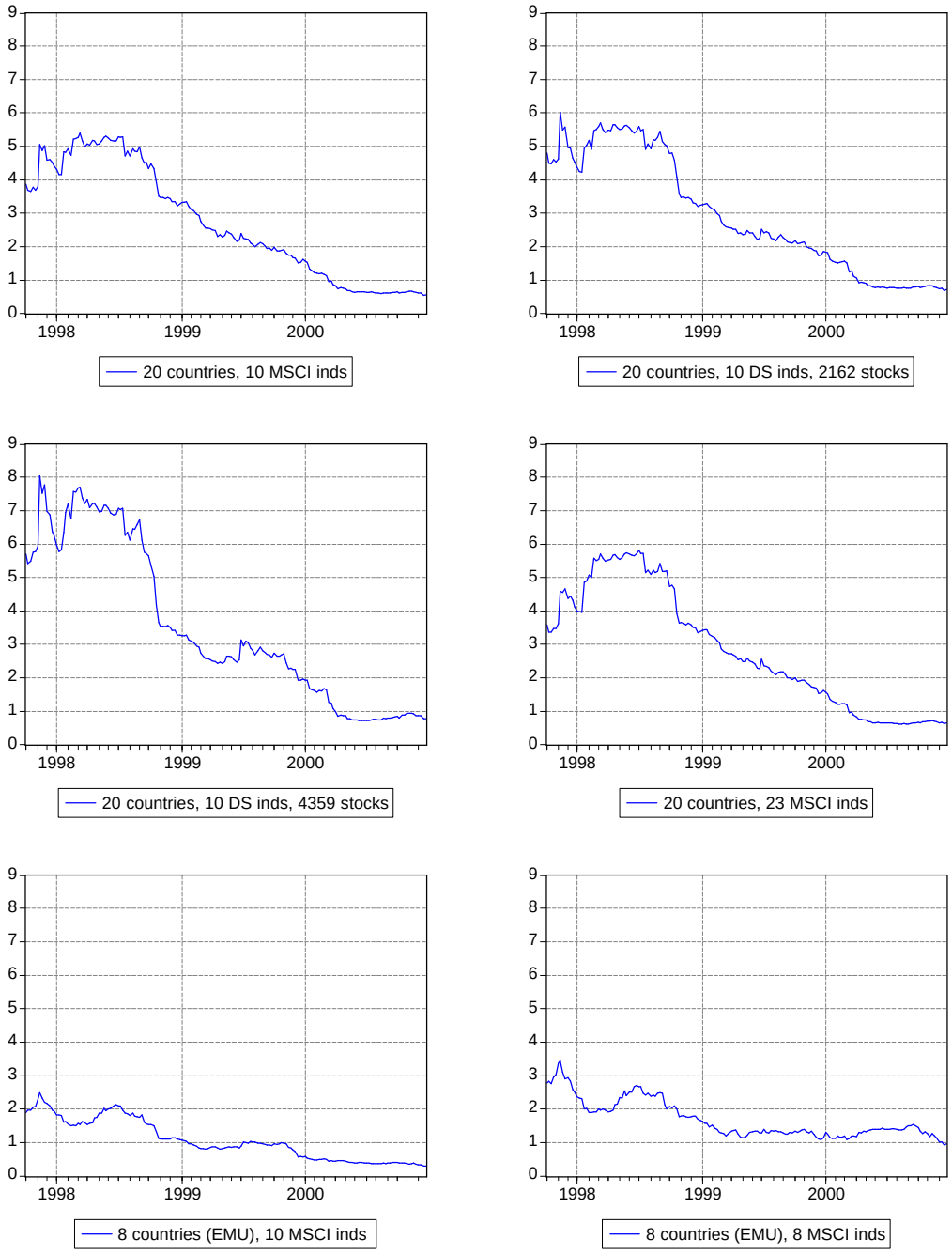


Figure 1.3: Evolution of the Country/Industry Variance Ratios for Alternative Datasets

Evolution of the ratio of the variance of the country effect to the industry effect for different samples considered in our research. Variances have been estimated over 36-weeks intervals.



seem to indicate that the most important financial markets are likely to have grown into a strongly integrated world market (with a powerful industry factor). As a matter of fact, these countries appear to be as integrated as European countries.

A second interesting result emerging from these estimations is the constantly higher ratio provided by our third sample (i.e., the sample considering the smaller capitalization stocks) in comparison to the results obtained with the base sample (i.e., the sample containing only the 2'162 stocks followed by MSCI). Even if the gap between these two ratios is no longer so important, these two evolutions show the relative stronger national behavior of the small capitalization stocks.

Last but not least, figure 1.3 provides another important result. It shows that the relatively growing importance of the industry factor over the country factor during this four years period is robust to the definition of the industrial classes as well as to the number of industries taken into consideration. European integration is therefore not the only cause of the increasing influence of the industrial factors relative to the country factor but it is more likely that this increase is due to a worldwide globalization that is observed in most developed countries. This is seen by a careful examination of the last two graphs with respect to the others. Although the EMU samples have a lower ratio at the beginning of the period, they are catched up by the other samples towards the end of the observation period as all of them have ratio around or lower.

1.6 Conclusion

The recent trend towards globalization and the growing harmonization of economic policies should lead to an increasing integration of equity markets. This in turn should also imply an increase of the relative influence of global industry factors over country specific factors in stock returns. Most practitioners are convinced of this fact and this is evidenced, among other things, by the reorganization of financial research along industry lines in the most important financial institutions across the world. However, recent academic studies continue to give credit to the relative superiority of national influences over industrial influences in stock returns. Applying a methodology similar to that used in the previous academic literature documenting the dominance of the country effect, we provide new results that indicate that practitioners might very well be right.

First, we find that, on average over the period from January 1997 to December 2000, the country factor remains the most important of the two factors in the explanation of stock price behavior. As such, our initial findings on more recent data are broadly consistent with most of

the previous literature. Nevertheless, further analysis that studies the time trend of national and industrial effects shows that the relative importance of the industrial factor increases significantly during our four year period. More precisely, our results on the whole period lead us to the following conclusions: (1) Industry factors currently appear to be more influential on stock prices than country factors. (2) There is evidence to support that the most developed equity markets are extremely integrated, probably to the same extent as the European markets. (3) Information technology and telecommunication stocks have displayed a very atypical behavior since 1998. It should be noted that our results are robust to industry definitions as well as to the number of industries taken into consideration.

Do our results mean that investors should not take into account national influences when selecting a stock and should forget about the potential for diversification provided by international investments? The answer is no, at least not on the basis of the evidence provided in this paper. First, the results drawn from the application of the Heston and Rouwenhorst (1994) methodology are sensitive to the data set taken into consideration. Second, despite the fact that industry factors are currently important, no conclusion can be drawn with respect to the level of correlations existing among the different sectors and the different countries. Third, as we only consider a limited period of time, we cannot extrapolate about the future evolution of these relative influences. Finally, this paper raises another important question: what are the reasons that have led to such dramatic changes in the relative importance of industry factors over this four-year period? All these topics are left for future research.

1.7 Chapter's Addendum: Recent Extensions

There has been numerous researches on the relative importance of country and sector factors in stock returns over recent years. Efforts have been made in mostly two directions. First, some authors have tried to overcome the main drawback of the Heston and Rouwenhorst (1994) methodology that consists in considering stock sensitivities to country and sector factors to being equal to either one or zero. Second, many studies have focused on the dynamics of the relative importance of country and sector factors.

1.7.1 Beyond the Heston and Rouwenhorst (1994) methodology

The assumptions behind the Heston and Rouwenhorst (1994) approach, which drives most of the results in the literature, have sometimes been considered as strong, and even unrealistic. For instance, the most criticized feature of the model is that stocks' sensitivities to countries and industries are either equal to unity or to zero. Brooks and Del Negro (2002, 2006) estimate a latent factor model in which loadings are not constrained to unity, and show that such a restriction is strongly rejected by the data. Though, for 21 developed markets over the period 1986-2002, they confirm the conclusions of previous studies. That is, country factors are more important than sector factors. In an attempt to determine why country-specific shocks are so much more important, they remark that within-group heterogeneity in betas is far greater within industries than within countries. Also, many industry betas are negative, whereas almost all country betas are positive. According to the authors, country-specific shocks conform much better to the notion of an aggregate-level shock than industry-specific shocks. Indeed, a country-wide shock would similarly affect all firms within the country, while it wouldn't be the case for an industry-wide shock.

While the approach is interesting per se, two problems emerge. First, Brooks and Del Negro need a balanced sample to being able to estimate their model. Thus, their results suffer from a very strong survivorship bias, as stocks included in the analysis have to be traded continuously from 1986 to 2002. Whether or not this bias impacts the relative importance of country and sector factors is opened to question. Second, their results are averages over the whole time period. Thus, the only information they bring, though relevant, is that the average result according to which country factors are more important than industry factors, which has

been reported many times in the literature, also holds when factor loadings are not restricted to be equal to one.

Marsh and Pfleiderer (1997) also allow sensitivities to differ from one. They rely on a different estimation method, though, as they use an iterative approach. Whereas this approach allows them to work with unbalanced samples, the statistical properties of the resulting estimators are not well-known. Also, they concentrate on a very short time period, as their sample extends from July 1996 to July 1997. For the 29 countries in their sample, they report results consistent with previous research. They also consider two different levels of industry aggregation. Contrary to Beckers, Connor, and Curds (1996) and Griffin and Karolyi (1998)'s evidence, they show that the relative explanatory power of country and industry factors is not substantially affected by the use of 68 industries or 9 major sectors. They argue that, because there is so much noise in industry classifications, "more is not better".

1.7.2 Evolution through Time

It is very likely that the relative importance of country versus sector factors is not constant over time. Firms have become more and more international through the extensive activity of cross-border mergers and acquisitions over the recent past. This could have increased their sensitivity to foreign or global shocks, and reduced their exposure to domestic shocks. Also, declining barriers to international investments, the advent of the single currency within the European Monetary Union, and advances in information technologies should be reducing home bias. Domestic investors' sentiment may now play a smaller role than in the past. All of these changes may have a negative impact on country-specific factors.

Baca, Garbe, and Weiss (2000) and Cavaglia, Brightman, and Aked (2000) document a significant decrease in the importance of country relative to sector factors over time. Focusing on the nineties, the former argue that country and industry factors have become of roughly equal importance at the end of the nineties. The latter go a step further. Their results indicate that, at the end of the nineties, sector factors have probably become more important than industry factors.

This rise in the importance of sector relative to country factors has mostly occurred over the second part of the nineties, and showed its strongest evolution at the very end of the nineties;

see L'Her, Sy, and Tnani (2002), Ferreira and Ferreira (2006), Brooks and Del Negro (2004), among many others. Therefore, this pattern coincides with the rise and burst of the information technology (IT) bubble. One may therefore wonder whether the declining role of country factors relative to industry factors is only a temporary phenomenon due to the IT bubble. Conversely, it can be due to firms becoming more global, investors decreasing home-bias, and greater policy coordination, which would imply that this change is more likely permanent.

Brooks and Del Negro (2004) investigate this issue. They perform two sets of tests. First, they estimate the Heston and Rouwenhorst (1994) model from two different samples: one that includes all the stocks in their sample, and another that excludes stocks from the technology, media, and telecommunications (TMT) sectors. While they document a large increase in the relative importance of sector factors in the unrestricted sample, they find no significant change since the mid-eighties in the sample restricted to firms outside of the TMT sectors. As they argue, this finding is hard to reconcile with the notion that the rising importance of industry relative to country factors is the result of increasing economic and financial integration. Second, they split their sample according to the level of firms' international activities. For that purpose, they rely on the Griffin and Karolyi (1998)'s traded versus non traded-goods industry measure. They also use a firm-level measure computed from accounting-based data such as foreign sales and assets. Both measures lead to the same conclusion. Whereas sector factors are relatively more important for firms more opened to international markets, the rise in the relative importance of sector factors has been more pronounced for more domestic firms. Here as well, Brooks and Del Negro (2004) interpret this result as further evidence against the hypothesis that the rise in sector effects is driven by globalization.

The general conclusion of the Brooks and Del Negro (2004) paper is that the observed increase in the relative importance of industry factors is very likely to be only a temporary phenomenon rather than a permanent, structural change. Results from other studies support this view. Adjaouté and Danthine (2003) exploit a long time series of data and show that both the strength of country and the strength of industry factors follow cycles. An interesting insight of their study is that in the seventies already, industry factors were appearing as more important than country factors. Indeed, a study that would have been conducted with data from 1977 to 1979, at a time of truly global shocks, would have probably concluded that

sector factors were more important than country factors. Therefore, consistent with Brooks and Del Negro (2004)'s evidence, the authors argue that caution must be exercised before definitely concluding that the observed rise, and perhaps dominance, of sector factors is a phenomenon linked to permanent structural changes. Bekaert et al. (2005) bring an additional piece of evidence in favor of the temporary interpretation. They show that the growing influence of industry relative to country factors documented over the nineties mainly results from an increase in underlying factor volatilities and not from increased exposures to global factors. Based on this, they conclude that globalization has not changed the very fact that country factors dominate sector factors. Accordingly, the decrease in the relative importance of country over sector factors is likely to be only a temporary effect.

1.7.3 A Permanent Change within European Markets?

Market integration does not seem to explain the recent rise in the relative importance of industry effects at a worldwide level. Indeed, if integration had been the driver of a permanent change in the relative forces of industries and countries, the importance of the latter should have decreased over time. This is not what is observed. If anything, country effects became more important over the nineties. The rise in the relative importance comes from the industry side. Industry factors became extremely strong over the second part of the nineties. Moreover, this dramatic rise in the magnitude of global industry effects seems to be driven by a narrow set of sectors, namely the technology, media, and telecommunication sectors. One may also argue that this trend occurred too fast to be consistent with a structural change.

Overall, everything plays against financial integration as a convincing explanation. Acknowledging this fact, Brooks and Del Negro (2005) wonder whether the global world market is the right place to look at. They recognize that the recent past has acknowledged the emergence of large regional trading blocks. Consequently, they split their sample into three regions (Europe, America, and Asia), and hypothesize that market integration may occur at a regional level.

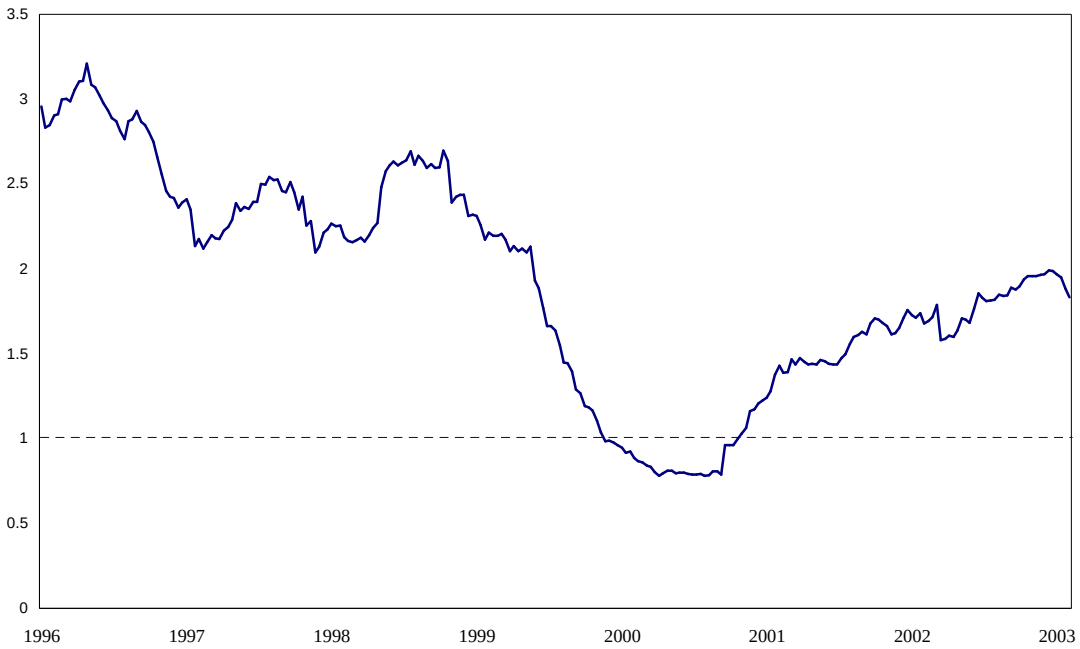
With a sample extending up to year 2002, they cannot conclude that industry effects have become more important than country effects in the American and Asian blocks. However, they report for the European market a strong increase in the relative importance of industry over country factors. Industry factors were twice as important as country factors at the end of

their sample period, leaving open the possibility that integration has played an important role within the European market.

Despite of Brooks and Del Negro (2004)'s results, it is still hard to conclude on whether the relative increase of sectors observed over the second part of the nineties is a permanent or only a temporary effect. While country-specific factors may have lost part of their relative advantage, they remain influential even within the European area. Recall the ratio of the strength of country to the strength of sector factors that we computed in Chapter 1. Loosely speaking, if this ratio is larger than one, country factors are more important than sector factors. Conversely, if sector factors are relatively more important, the ratio is less than one. Extending the sample period investigated above and computing this ratio focusing on the 15 major European countries, one gets figure 1.4 reported just below, where the dashed line is drawn at the level of one. This figure shows that the stark decrease of the relative importance of country factors that occurred over the last years of the nineties has not been confirmed in subsequent years. Instead, at the end of 2003, country factors were, again and even within the presumably highly integrated European area, roughly twice as important as sector factors.

Figure 1.4: Recent Evolution of the Country/Industry Variance Ratio

Evolution of the ratio of the variance of the country effect to the industry effect for the 15 major European markets up to the end of year 2003.



Chapter 2: Financial Analysts' Performance: Sector versus Country Specialization

Forthcoming, *Review of Financial Studies*

Abstract

Brokerage houses normally structure their research activities along either country or sector lines. I investigate whether organizational structure affects the quality of financial analysts' earnings forecasts. Specifically, I compare the performance of country-specialized financial analysts with that of sector-specialized financial analysts. The former issue forecasts considerably more accurately than the latter. Country specialists benefit from an informational advantage over sector specialists. A superior knowledge of country-specific factors, as well as geographical proximity between analysts and the firms they cover, are significant determinants of this advantage.

2.1 Introduction

Financial research departments are usually structured along either country or industry lines. At one extreme, brokerage houses organize their research activities along country lines. For instance, some analysts follow UK firms, while others are restricted to German firms. These country-specialized analysts may be required to follow firms from many different economic sectors. At the other extreme, brokerage houses ignore all national dimensions and rely on global sector structures. For instance, some analysts follow firms in the banking sector, while others specialize in the technology sector, irrespective of the nationality of the firms. These sector-specialized analysts may have to deal with firms headquartered in many different countries.

Research on US firms is mostly performed by sector specialists within the US market. Conversely, research on Japanese firms is almost exclusively performed by country specialists. While brokerage houses producing research on European firms once favored country-based structures, they have shown a clear tendency to switch to more sector-oriented structures over the last decade. In today's global environment, this issue has become of critical importance. Is it better to rely on the traditional country-based approach, placing analysts close to the firms' headquarters, thereby allowing them to build strong relationships with local firms and their managers? Or should research departments be organized with an global sector perspective, with analysts focusing on big-picture industry trends and competition among firms regardless of their location? This paper focuses on European markets, where both country- and sector-based specializations coexist, and evaluates the impact of financial analysts' specialization on the accuracy of their earnings forecasts.

The results indicate that country specialists issue far more accurate earnings forecasts than their sector-specialized peers. Over the period 1994–2004, the average forecast error of sector specialists was approximately 6% larger than that of country-specialized analysts. This differential accuracy is not only statistically but also economically significant. For example, a sector-specialized analyst would have to follow a firm for more than five years to outperform an inexperienced country-specialized analyst by as much as 6%. This outperformance is robust across countries and sectors, and does not depend on firms' characteristics such as

market capitalization or level of international activities. Country specialists owe their informational advantage to their superior knowledge of country-specific factors and their geographical proximity to the firms they follow.

These results have several implications. First, they add to the literature on the determinants of analysts' coverage. According to Kini et al. (2003), if analysts tend to specialize by countries (sectors) in markets (sectors) with relatively strong national (sector-specific) influences, it is because they aim to produce high quality research. The data does not support this assertion. Over the period 1994–2004, sector-specialized analysts did not noticeably outperform country specialists in any of the sectors or the countries considered in the sample.

Second, the number of countries and industries followed by analysts are classic proxies for the complexity of their portfolios. This paper shows that specialization is more important than the mere fact that increasing the number of countries and/or industries renders their task more arduous. Hence specialization should be considered an important determinant of forecast accuracy.

Third, knowing which analysts are more likely to produce the most accurate earnings forecasts is obviously of interest to asset managers. But more importantly, it has strong implications for the overall portfolio allocation process. Academic research shows that country-specific factors remain at least as influential as industry-specific factors. Moreover, international diversification is still at least as important as industry diversification. This research further reveals that country-specialized analysts perform better than industry-specialized analysts. These three findings, put together, really indicate that managers who adopt a sector-based approach at the expense of the traditional top-down international portfolio allocation could very well be on the wrong track.

Fourth, this research is of concern to the financial analysis profession itself. Obviously, forecast accuracy is not the only force that helps to shape the organization of financial research departments. For instance, small brokerage houses may not have the financial resources to maintain offices in a number of different locations. Also, marketing

considerations may drive the choice of a particular structure. Financial analysis departments may be organized along sector lines if portfolio managers demand sector-based research. Nonetheless, results in this paper suggest that decentralized research departments organized along country lines are better at producing accurate earnings forecasts.

The paper is structured as follows. Section 2.1 reviews the relevant literature and presents testable hypotheses. Section 2.2 discusses the methodology and the data. Results are set out in Section 2.3. Section 2.4 concludes.

2.2 Background and Testable Hypotheses

2.2.1 Background

The relative performance of country- versus sector-specialized financial analysts is closely related to the issue of location. Financial analysts specializing by country can locate within the same country as the whole set of firms they follow, and even geographically close to them. Obviously, this cannot be true of sector-specialized analysts who follow firms headquartered in different countries.

Information asymmetries due to geography are real. They have been shown to explain, at least partially, the well-documented home bias puzzle; see, e.g., Brennan and Cao (1997), Coval and Moskowitz (2001), Grinblatt and Keloharju (2001), Hau (2001), Ivkovic and Weisbenner (2005). Accordingly, local or geographically proximate market participants are assumed to be better informed than foreign or more distantly located ones.

This “Geographic Information Asymmetry Hypothesis” (GIAH) has been explored in the context of financial analysts’ earnings forecasts. Orpurt (2003) makes a distinction between earnings forecasts issued by analysts located in the same country as the firm for which the forecast is issued (local analysts) and by analysts based abroad (foreign analysts). Although Orpurt’s tests cannot be directly linked to the home bias puzzle, his cross-border distinction between local and foreign analysts produces results that support the GIAH. That is, local analysts tend to issue more accurate and timelier forecasts than foreign analysts. Bae, Stulz,

and Tan (2006) look at a large sample of 32 countries and again compare the performance of local and foreign analysts. Their results support the notion that local analysts tend to issue more accurate earnings forecasts than their foreign peers. In addition, they propose a way to test whether this local advantage is due to information asymmetries between local and foreign analysts, or is simply driven by the demand for analyst services. Specifically, the local advantage should be higher in countries where foreign ownership and capital flows are lower, since the demand by foreign investors for analyst services, and therefore the resources allocated to foreign analysts, should be lower for such countries. Their results support the information-based explanation. Malloy (2005) also tests the GIAH, but with a different approach, using the geographical distance between US analysts and the firms they cover. His results are consistent with those of Orpurt (2003) and Bae, Stulz and Tan (2006). That is, geographically proximate analysts seem to benefit from an informational advantage, which translates into the production of more accurate earnings forecasts.

In some ways these results are in line with a couple of studies on other determinants of financial analysts' performance. Barker (1998) interviews UK analysts and reports that the source of information they consider most important is "direct contact with the company." Bolliger (2004) documents a decrease in the accuracy of analysts' forecasts as the international diversification of analysts' portfolios increases. He also provides evidence of a negative relationship between forecast accuracy and industry diversification, but concludes that the synergies gained by following only a few industries are "more than offset by the difficulty to produce forecasts with portfolios containing firms from several European countries."[18] He thinks this may be "partly due to a better knowledge of the various local institutional contexts." In light of the results presented above, it may also be a matter of proximity, as financial analysts who follow firms in several countries are, on average, located further away from the firms they track.

Clement (1999) reports a strong negative association between forecast accuracy and the number of industries followed by analysts. His results indicate that, all else being equal, the forecast error of an analyst who follows 8 industries (the 90th percentile value of his sample) will be 2.9% larger than that of an analyst who concentrates on a single industry. Jacob et al.

(1999) report similar results, whereas Mikhail et al. (1997) find very little evidence of a relationship between industry concentration and forecast accuracy. None of these has anything to say about the influence of the international dimension of analysts' portfolios.

In fact, the way analysts' organization affects their performance has received very little attention from academics. They rely rather on the relative importance of country and industry factors when advising how financial analysis departments should be organized. Magee (1974), among others, reports that industry-wide commonalities in earnings are large.[19] He remarks that "from the viewpoint of an investor or security analyst, such a result indicates that industry earnings outcomes have potential value for those who are able to forecast these outcomes accurately." Hence both academics and practitioners frequently argue that financial analysis should be organized along industry lines. Analysts specializing in a given industry should have superior knowledge of it, which should enable them to produce more accurate forecasts than otherwise diversified analysts.

However, the mere fact that industry membership can be shown to have a significant impact on earnings does not tell us whether structuring research departments according to this factor will enable information to be acquired and produced more efficiently, or financial analysts to issue more accurate forecasts. Therefore we cannot rely on the relative influence of country and industry factors on earnings when advocating how financial analysis should be performed. Instead, we must explicitly raise this question by examining the performance of financial analysts as a function of their specialization. In what follows, I study whether specializing in a sector gives analysts a comparative advantage enabling them to release more accurate forecasts than if they specialized in a country (and vice versa).

2.2.2 Testable Hypotheses

Financial research departments producing research on European firms have historically been organized along country lines. Many banks and brokerage houses still follow this approach. Switzerland's Bank Julius Baer, for instance, has seven research centers in various European

[18] The "diversification" of country and industry portfolios is measured by the number of countries/industries for which analysts supply forecasts over a given fiscal year.

countries and clearly relies on country-by-country structures.[20] Other brokerage houses, though, now organize research along sector lines. This tendency to switch to sector-based structures casts some doubt on the ability of country-specialized analysts to outperform sector-specialized analysts. If, as Kini et al. (2003) suggest, analysts' coverage is driven by the concern to produce high quality research, the synergies gained by specializing in a sector might very well offset the synergies gained by specializing in a country. Nonetheless, country-specialized analysts potentially benefit from a strong informational advantage owing to their location close to the firms they follow and/or their good knowledge of the firm's country-specific factors. Provided that they have incentives to issue accurate earnings forecasts, this should lead country-specialized analysts to outperform sector-specialized analysts. Therefore, I state the first hypothesis as follows:

H1: country-specialized analysts produce on average more accurate forecasts than sector-specialized analysts.

In Europe, Orpurt (2003) concludes that local financial analysts (i.e., analysts based in the same country as the firms they follow) tend to issue more accurate forecasts than foreign financial analysts (i.e., analysts based abroad). However, we cannot infer from the evidence that local analysts have an informational advantage over foreign analysts, whether the source of this advantage is being located close to the firm or a better knowledge of the country's institutional factors. In fact, if most local analysts specialized in firms headquartered within the same country, their superior performance might potentially result from informational advantages due to both proximity and their expertise in local institutional factors.

The next two hypotheses investigate whether the superior accuracy of country-specialized financial analysts is the consequence of one or both of these two potential advantages:

H2: proximity explains the superior accuracy of country-specialized analysts.

H3: a good knowledge of country-specific factors explains the superior accuracy of country-specialized analysts.

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

[20] See John Rubino, "The New Global Industry Analysis", *CFA Magazine*, July-August 2003.

In order to disentangle location and the knowledge of country-specific factors, I reason as follows. Both country and sector specialists, if they are located close to the firm for which they issue the forecast (hereafter "proximate analysts"), will obtain an informational advantage from this proximity. More distantly located analysts (hereafter "distant analysts"), whatever their specialization, do not have this particular advantage. Moreover, country-specialized analysts, whenever they are based close to or far away from the firms they follow, should profit from an informational advantage related to their superior knowledge of the country's institutional factors (assuming, of course, that they have such knowledge). Sector-specialized analysts, especially when based abroad, logically cannot enjoy this potential advantage. One might argue that locally based sector specialists may draw some advantage from their knowledge of country-specific factors. The descriptive analysis below indicates that most analysts' followings are biased towards domestic firms. Hence sector specialists may be quite well informed about their home country's fiscal policies, accounting rules, and other relevant country-specific factors. Therefore, the possibility that locally-based sector analysts may also benefit from an informational advantage due to their superior knowledge of country factors is allowed for. The following table summarizes the above discussion.

Analyst	Location	The analyst has an informational advantage due to	
		PROXIMITY	COUNTRY FACTORS
Country specialist	Proximate	YES	YES
	Distant	NO	YES
Sector specialist	Proximate	YES	YES / NO
	Distant	NO	NO

If geographical proximity is important, proximate country specialists ought to outperform more distant country specialists and proximate sector specialists ought to outperform more distant sector specialists. If knowledge of country-specific factors is a source of informational advantage, distant country specialists ought to outperform distant sector specialists. Depending on the level of country expertise of proximate sector specialists, proximate country specialists may also outperform proximate sector specialists.

2.3 Methodology and Data

2.3.1 Measuring Analysts' Specializations

Kini et al. (2003) sort analysts according to their degree of sector and country specialization. According to their classification scheme, an analyst is considered a sector specialist if all the forecasts s/he issues during a given fiscal year relate to firms of different nationalities but in the same sector. Over the same fiscal year, analysts who issue forecasts for firms active in different sectors, but headquartered in the same country, are categorized as country specialists. "Absolute" specialists are analysts who issue earnings forecasts for firms in a single sector within a single country. "Generalists" are analysts who follow firms headquartered in various countries and are active in various industries.

This classification scheme is not entirely satisfactory. Analysts who spend most of their time following firms in a single country (sector) should also be included in the country (sector) specialist group even if they issue forecasts for firms in different countries (sectors). Yet the above criterion would not identify them as specialists. In consequence, I propose another measure. It is a concentration ratio based on the Herfindahl Index (HI), which is generally used as an indicator of the amount of competition among firms in an industry. For each analyst, I compute both a sector and a country HI. Each analyst's country (sector) HI is computed as the sum over all countries (sectors) of the ratios of the number of firms followed by the analyst within a given country (sector) to the total number of firms for which the analyst issued forecasts during the fiscal year. These are formally given as:

$$HI_{a,y}^{Country} = \sum_{c=1}^{C} \alpha_c^2 \text{ and } HI_{a,y}^{Sector} = \sum_{s=1}^{S} \alpha_s^2$$

where $\alpha_c = N_{c,a,y} / N_{a,y}$ and $\alpha_s = N_{s,a,y} / N_{a,y}$. $N_{c,a,y}$ ($N_{s,a,y}$) is the number of firms in country *c* (sector *s*) for which analyst *a* issued forecasts over fiscal year *y*. $N_{a,y}$ is the total number of firms followed by analyst *a* over fiscal year *y*. A country (sector) HI has a value of 1 (i.e., its maximum value) when the analyst follows firms that are all headquartered in a single country (active in a single sector). Analysts who follow more than one, but not many countries (sectors), but 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 analysts' portfolio diversification increases.

Analysts are classified as country (sector) specialists if their country (sector) HI is larger than 0.90 and their sector (country) HI is smaller than 0.90. Analysts whose country and sector HIs are both above 0.90 are classified as "absolute" specialists. Note that the specialization measure proposed by Kini et al. (2003) is a particular case of the HI measure, where the cutoff value is set to 1.[21]

Figure 2.1 provides an illustration of the way financial analysts organize their research. On this graph, each dot represents one analyst. Each is characterized by her country and sector HIs. Approximately 70% of the 2936 analysts lie either on the upper- or right-side lines of the graph. That is, more than two thirds of analysts are either absolute, country, or sector specialists in the sense that they follow firms in only one country or sector, or both. No other pattern emerges from this figure. This confirms the fact that, in Europe, analysts tend to specialize either in a country or in a sector.

2.3.2 Measure of Financial Analysts' Performance

To gauge financial analysts' performance, I follow the classic accuracy measure based on analysts' forecast errors. Within each given fiscal year, the absolute value of the forecast error of every single earnings forecast ($AFE_{a,j,t,y}$) is given by:

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

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

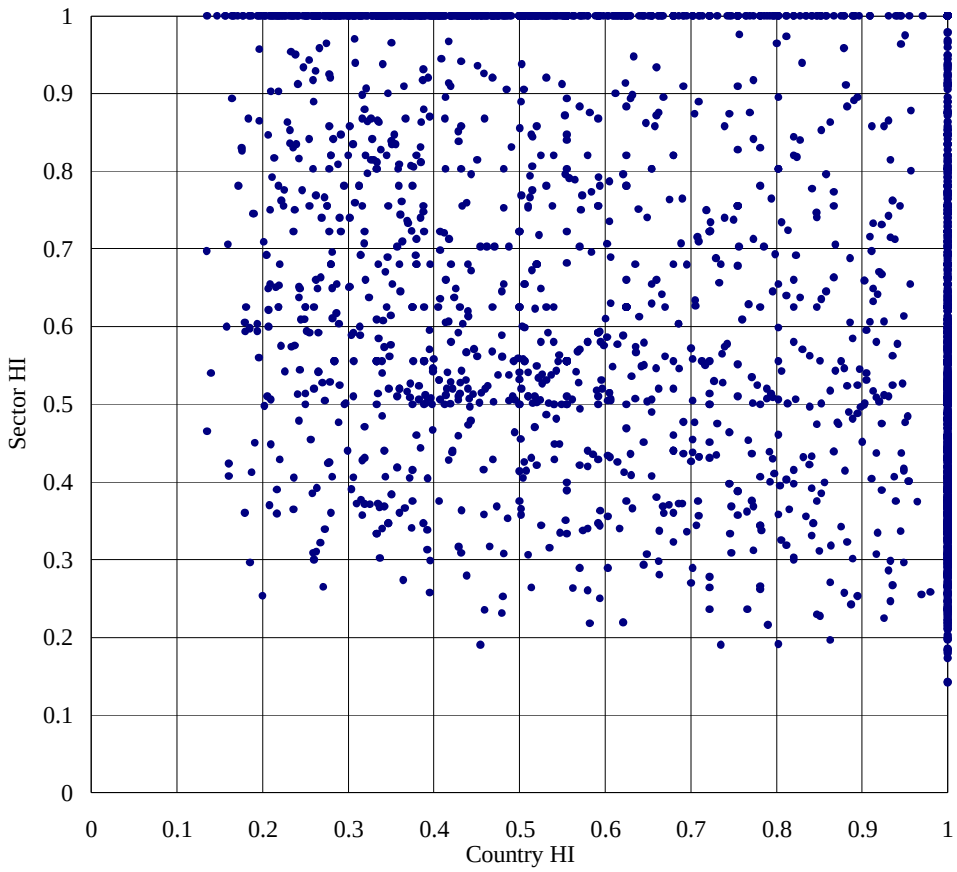
$$PDAFA_{a,j,t,y} = -\frac{DAFE_{a,j,t,y}}{\overline{AFE_{j,y}}}$$

$\overline{AFE_{j,y}}$ is the mean absolute forecast error calculated over all analysts' forecasts of firm j's earnings in fiscal year *y*. $DAFE_{a,j,t,y} = AFE_{a,j,t,y} - \overline{AFE_{j,y}}$ is the demeaned absolute forecast

error. A positive value of *PDAFA* indicates a better than average performance. A negative value of *PDAFA* indicates a worse than average performance.

Figure 2.1: Analysts' specialization in fiscal year 2001

This figure gives a picture of financial analysts' organization based on my Herfindahl Index (HI) measure. Each dot represents one of the 2936 individual analysts who issued one-year earnings forecasts for European firms during year 2001. The horizontal axis reports analysts' country HIs. The vertical axis reports analysts' sector HIs. A value close to 1 for the country (sector) HI indicates a strong concentration (i.e. specialization) of the analyst's portfolio in firms of a single country (sector). A value close to 0 for the country (sector) HI indicates a highly diversified portfolio in terms of countries (sectors).



[21] In what follows, I consider a 0.90 cutoff value. Results remain unchanged when computations are performed with thresholds set to 0.85, 0.90, or 1, and when the raw HI measures are used instead of imposing an arbitrary threshold.

2.3.3 Regression Model and Control Variables

The following pooled regression model is estimated to test whether it is advantageous for individual financial analysts to specialize by country rather than by sector:

$$(1) \qquad PDAFA_{a,j,t,y} = \alpha_{j,y} + \beta_{ABS} ABS_{a,y} + \beta_{COS} COS_{a,y} + \beta_{SES} SES_{a,y} + \sum_{l=1}^{L} \gamma_l z_{a,j,l,t,y} + \varepsilon_{a,j,t,y}$$

$PDAFA_{a,j,t,y}$ is the proportional demeaned absolute forecast accuracy measure defined above. $\alpha_{j,y}$ is a firm-year fixed effect.[22] $COS_{a,y}$ is a dummy variable that is equal to one if analyst *a* is a country-specialized analyst over fiscal year *y* and zero otherwise. $SES_{a,y}$ is a dummy variable that is equal to one if analyst *a* is a sector-specialized analyst and zero otherwise. $ABS_{a,y}$ is a dummy variable that is equal to one if analyst *a* is an "absolute" specialist and zero otherwise. The *L* control variables are represented by the *z*'s. These variables control for ability and / or skills. Indeed, it is important to make sure that the potential superiority of one analyst's specialization to another is not due to more skilled analysts concentrating in this type of specialization. The considered control variables are defined below. They are those that have been shown to explain financial analysts' forecast accuracy; see, e.g., O'Brien (1990), Stickel (1992), Mikhail et al. (1997), Clement (1999), Jacob et al. (1999), and Bolliger (2004). Two additional control variables may have an impact on the performance of country- and sector-specialized individual analysts. First, Specialization Change (*SPCHG*) is a dummy variable that equals one if the analyst was in another specialization group over the preceding fiscal year, and zero otherwise. It allows taking account of the fact that an analyst who switched from one specialization to another may need some time to adapt to his or her new position. Second, Specialization Experience (*SPEXP*) is the number of successive years the analyst has been in his or her current specialization. Analysts may benefit from a learning effect in the particular country or sector they are specialized in.

As mentioned above, the concern of not picking out fixed effects such as analysts' skills or ability when measuring the difference in performance between country and sector specialists is central. Perhaps the most important of the *L* control variables is *AvPercRank*. It is the measure of analysts' past accuracy proposed by Hong, Kubik, and Solomon (2000) and Hong

[22] Firm-year demeaning all variables is equivalent to estimating the model with a firm-year fixed effect (see Greene (2003), pp. 287-293). Owing to the huge amounts of data, I follow this approach.

and Kubik (2003). For each year and each firm for which a given analyst issues a forecast, the analyst is ranked according to her forecast accuracy relative to other analysts who issued forecasts on the same firm over the same fiscal year. Percentile ranks are constructed in order to account for differences in coverage across firms and years. Formally, the measure is given by:

$$PercRank_{a,j,y} = 100 - \left(\frac{Rank_{a,j,y} - 1}{FirmCoverage_{j,y}} \right) \times 100$$

where $Rank_{a,j,y}$ is analyst *a*'s forecast accuracy ranking for firm *j* over year *y*, and $FirmCoverage_{j,y}$ is the number of analysts who issued forecasts on firm *j* over year *y*. For each analyst in each year, $PercRank_{a,j,y}$ is then averaged across all firms covered by the analyst to provide an average measure of the analyst's forecast accuracy as follows:

$$AvPercRank_{a,y} = \frac{1}{N_{a,y}} \sum_{j=1}^{N_{a,y}} PercRank_{a,j,y}$$

where $N_{a,y}$ is the number of firms followed by analyst *a* during fiscal year *y*. The summation term is taken over these $N_{a,y}$ firms. More generally, the *L* control variables are given by:

- *NBCO* (number of countries) is the number of countries followed by the analyst.
- *NBSE* (number of sectors) is the number of sectors followed by the analyst.
- *AGE* (forecast age) is the number of days between the date at which analyst *a*'s last forecast for firm *j*'s earnings was issued and the date at which actual earnings per share were announced.
- *FEXP* (firm experience) is the number of years the analyst has been issuing forecasts of a particular firm's earnings.
- *GEXP* (general experience) is the number of years the analyst has been in the database.
- *SPEXP* (specialization experience) is the number of successive years the analyst has been classified in her current specialization.
- *SPCHG* (specialization change) is a dummy variable that equals one if the analyst was in another specialization group during the previous fiscal year.
- *BSIZE* (broker size) is a dummy variable that equals one if the analyst works for one of the brokerage houses in the top size decile. The size of the brokerage house is computed as the number of analysts employed during the fiscal year.

- *FREQ* (frequency) is the number of forecasts released by the analyst over the fiscal year.
- *AvPercRank* (Average Percentile Rank) is the measure of the analyst's past accuracy, as defined by Hong, Kubik, and Solomon (2000) and Hong and Kubik (2003).

2.3.4 Data

One year earnings per share (EPS) forecasts are taken from the I/B/E/S International Historical Detail File database. The period studied is from 1994 to 2004. The sample includes the fifteen major European markets: Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the UK. The decision to confine to European markets was dictated by the following considerations. First, the reorganization of financial research departments already referred to is mainly a European phenomenon. Second, keeping within Europe provides us with a large cross-section of country- and sector-specialized analysts. Conversely, most analysts following Japanese firms are country-specialized.[23] In the US market, analysts tend to specialize by sectors within the US.

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

I/B/E/S reports earnings forecasts released by both individual analysts and teams of analysts. As there is no additional information about how teams are structured, how many analysts they

[23] On a yearly basis over the period 1994-2001, the I/B/E/S database contained on average 206 country-specialized analysts reporting forecasts of Japanese firms' earnings, but only 2 sector-specialized analysts.

include, and what the analysts' specializations are, they are discarded from the sample. Only forecasts released by individual analysts are considered.[24] Also deleted are analysts for whom I/B/E/S does not provide a code or a name and analysts who had issued forecasts for fewer than three firms over the relevant fiscal year.

In addition, the sample is restricted to one-year earnings per share forecasts issued before the actual earnings announcement date. Forecasts for which there is no data about actual earnings or for which the currency is unknown are also eliminated from the sample. Finally, only forecasts issued for firms followed by at least three analysts are considered. Table 2.1 summarizes the resulting dataset.

2.4 Results

2.4.1 Financial Analysts: Location and Average Characteristics

The first panel of Table 2.2 offers some interesting insights into the geographical location of financial analysts. It reports analysts' location with respect to the firms they follow. Depending on specialization, the percentage of analysts based in the home country of the firms they cover varies from 34.3% to 93.1%. That is, approximately one third of the firms for which sector-specialized analysts report earnings forecasts are headquartered in the same country as the analyst. The high percentage of domestic firms covered by country specialists indicates that country-specialized analysts tend to be located within their country of expertise. Also, analysts tend to be located geographically close to the firms they follow. For instance, almost all firms followed by sector specialists that are headquartered within analysts' home countries are also located less than 100 kilometers away from the analyst; country specialists are based less than 100 kilometers away from the headquarters of nearly 60% of the firms they cover. On average, the distance between analysts and firms is far lower for country than for sector specialists. The former are on average based 185 kilometers away from the firms they cover, whereas 676 kilometers separate sector specialists from the firms they follow.

[24] For this purpose, all records for which the analyst's name did not include a first name initial are deleted. So are all names that included "/" or "&" characters.

Table 2.1: Summary Statistics

This table reports the number of firms, forecasts, and analysts included in my sample. These numbers are split according to whether they have been issued by an absolute, country, or sector specialist, or a generalist. In panel A, the statistics are reported country by country, based on the location of the firm's headquarters. In panel B they are reported sector by sector, according to the sector firms are active in. Year-by-year statistics appear in panel C. The total number of analysts in my sample is the sum of the number of analysts in each of the four specialization groups. The sum of firms followed by absolute specialists, country specialists, sector specialists, and generalists does not equal the total number of firms, since a given firm is usually followed by more than one type of specialist.

	No. of Firms Followed by				Total No. Firms	No. of Forecasts Issued by				Total No. Forecasts	No. of Analysts				Total No. Analysts
	Absolute Special.	Country Special.	Sector Special.	General.		Absolute Special.	Country Special.	Sector Special.	General.		Absolute Special.	Country Special.	Sector Special.	General.	
Panel A: Summary Statistics By Country															
Austria	8	41	20	33	42	11	382	187	429	1009	5	49	122	204	328
Belgium	26	99	34	77	100	89	2680	723	1169	4661	18	152	332	383	747
Denmark	68	121	64	107	128	416	1853	774	1810	4853	56	130	268	386	673
Finland	66	135	45	97	135	224	4132	782	2028	7166	34	197	240	490	829
France	278	520	235	386	521	2996	21991	4520	9475	38982	277	783	1036	1587	2836
Germany	187	395	178	338	406	1644	10452	3225	7182	22503	251	643	791	1311	2370
Ireland	34	64	27	58	65	317	714	322	649	2002	37	73	128	154	306
Italy	92	177	73	108	181	1547	4351	1449	1758	9105	125	250	434	641	1258
Netherlands	93	203	98	168	204	642	11191	2211	3667	17711	99	404	695	889	1706
Norway	79	136	56	111	139	560	3010	701	1338	5609	69	208	254	325	712
Portugal	16	57	22	39	57	115	973	371	550	2009	19	104	138	196	376
Spain	90	139	76	122	140	622	5329	1416	3093	10460	99	261	421	691	1199
Sweden	131	224	105	207	227	679	4422	1753	4138	10992	110	320	460	775	1357
Switzerland	101	179	75	137	181	861	6070	1859	2151	10941	85	280	554	649	1297
UK	724	1042	505	714	1074	8774	17751	6404	9335	42264	689	837	1033	1358	2857
Panel B: Summary Statistics By Sector															
Basic Ind.	137	291	141	220	292	788	9140	3089	5175	18192	139	1926	266	984	2786
Cap. Goods	347	669	241	493	670	1564	23436	1870	9659	36529	248	2693	214	1450	3733
Cons. Discr.	17	88	16	57	88	96	3373	256	2156	5881	27	878	41	438	1205
Cons. Non-D.	203	352	145	255	354	1427	10648	2054	4351	18480	175	1685	164	755	2280
Cons. Serv.	381	706	297	551	714	4152	20047	3579	9252	37030	405	2735	348	1507	3948
Energy	43	88	54	79	89	234	2697	1060	2422	6413	39	635	108	411	1015
Finance	461	516	372	349	551	9240	7914	10961	2490	30605	696	1257	580	525	2456
Health Care	129	176	131	161	188	773	4113	1835	3414	10135	120	929	227	533	1456
Public Util.	61	127	81	115	127	418	3806	1456	3943	9623	77	1044	233	758	1739
Technology	156	416	94	334	426	441	7212	240	4133	12026	99	1399	97	966	2129
Transport.	59	105	45	93	107	380	2926	313	1802	5421	52	764	41	332	1026

(Table 2.1 continued)

Panel C: Summary Statistics By Year															
1994	167	650	215	352	672	317	3797	453	850	5417	57	393	61	98	609
1995	384	1070	301	648	1105	869	7219	751	1830	10669	152	743	112	238	1245
1996	590	1505	371	798	1558	1607	10462	1109	2246	15424	253	1064	150	265	1732
1997	710	1772	496	898	1831	2301	12862	1629	2350	19142	349	1338	206	283	2176
1998	768	1922	548	1001	1982	2406	13271	1877	2733	20287	391	1416	264	344	2415
1999	837	1886	659	1178	1962	2437	11155	2441	4291	20324	422	1348	374	572	2716
2000	752	1742	735	1221	1843	2146	8854	2724	4776	18500	403	1232	487	686	2808
2001	767	1646	818	1328	1780	2094	7139	3603	6153	18989	386	1085	582	883	2936
2002	709	1625	758	1422	1778	1950	6991	4319	8274	21534	369	1016	729	1154	3268
2003	641	1501	754	1346	1679	1817	6891	4109	8283	21100	324	923	670	1118	3035
2004	615	1475	686	1264	1643	1653	7027	3809	7250	19739	281	906	619	967	2773
Total	2027	3617	1652	2773	3701	19597	95668	26824	49036	191125	1892	4371	2043	2979	8101

The maximum distance of 17704 kilometers between analysts and the firms they cover reminds us that European firms are also followed by some overseas analysts. Nevertheless, panel B of Table 2.2 reveals that they are in fact very few. Only 1.8% of analysts following European firms are located in the US. An additional 0.7% are located outside the fifteen European countries included in the sample. In fact, research on European firms is mainly centered in the UK, where almost half of the analysts are located. Research is also extensively performed in France and Germany. These two countries house respectively 12.6% and 9.8% of analysts following European firms. A significant amount of research is also performed in Sweden and the Netherlands, where a total of almost 10% of analysts is located. The rest of the research is divided between the ten remaining European countries, with smaller markets having fewer analysts.

Panel C of Table 2.2 reports statistics on the average characteristics of analysts from different specialization groups. It shows that the average number of countries (sectors) followed by country (sector) specialists does not equal 1. It is respectively 1.07 and 1.18. This feature comes from the use of the Herfindahl-based measure for analyst specialization, which allows analysts to be considered as country (sector) specialists as long as they spend most of their time following firms headquartered (active) in a single country (sector).

An interesting output from Panel C relates to the organizational structures of brokerage houses of different sizes. Large brokerage houses rely more on sector-by-sector organizational structures. The reverse is true for small- and medium-sized brokerage houses. Only 39.7% of country specialists, but more than 75% of sector specialists, worked for large brokerage houses on average over the sample period.

Table 2.2: Summary Statistics – Analysts and Analysts' Location

This table reports summary statistics on financial analysts' locations and characteristics, split according to analyst specialization. The very first row indicates the total number of analysts in each specialization group. Panel A reports measures of analysts' locations relative to the firms they follow. The first row indicates the percentage of analysts located in the same country as the firms they follow. The second to fourth rows respectively report the average, minimum, and maximum distance between analysts and the firms they follow. The last row in this panel gives the percentage of analysts located less than 100 km away from the firms they follow. Panel B reports the percentage of analysts based in each of the fifteen countries in my sample. As research on European firms is also done outside Europe, the two last rows indicate the percentages of analysts following European firms from the U.S. and other countries worldwide. Panel C reports average characteristics of financial analyst earnings forecasts. The last two rows in this panel add up to 100%. They reveal how the different analyst specializations are distributed across large and small/medium brokerage houses.

	Absolute Spec.	Country Spec.	Sector Spec.	Generalists	All Analysts
Total Number of Analysts	1892	4371	2043	2979	8101
Panel A: Analyst-Firm Characteristics					
Perc. of within country (Local)	91.2%	93.1%	34.3%	47.2%	66.8%
Av. Distance	211	185	676	530	393
Min. Distance	0	0	0	0	0
Max. Distance	9440	17074	17040	17704	17704
Perc. of < 100km	60.0%	57.4%	25.2%	31.4%	43.1%
Panel B: Analyst Location (%)					
UK	52.5	30.0	65.9	49.4	46.5
France	9.2	14.6	9.8	13.8	12.6
Germany	9.2	12.0	6.3	10.0	9.8
Sweden	4.4	6.3	3.1	4.9	4.9
Netherlands	4.5	6.7	2.5	3.9	4.7
Spain	3.4	5.1	1.9	3.7	3.8
Switzerland	3.7	6.1	0.7	2.1	3.5
Italy	4.6	4.2	0.3	0.8	2.5
Norway	2.3	4.1	0.9	1.0	2.2
Belgium	0.6	2.6	0.6	2.1	1.7
Denmark	1.8	1.7	1.4	1.8	1.7
Finland	0.7	3.1	0.2	0.9	1.5
Ireland	1.0	1.3	0.3	1.4	1.1
Portugal	0.5	1.1	0.4	0.9	0.8
Austria	0.0	0.5	0.1	0.2	0.2
USA	1.0	0.5	4.1	2.1	1.8
Others	0.5	0.2	1.4	1.0	0.7
Panel C: Analyst Average Characteristics					
No. of Countries followed	1.07	1.07	4.09	3.80	2.20
No. of Sectors followed	1.16	4.20	1.18	3.16	3.20
No. of Firms followed	8.59	13.26	9.04	10.40	11.45
Forecast Age (Days)	109.8	105.3	104.0	103.7	105.2
Firm Experience (Years)	2.31	2.31	2.54	2.46	2.38
General Experience (Years)	3.27	3.56	4.06	4.12	3.74
Specialization Experience (Years)	1.89	2.70	2.15	2.17	2.40
Perc. of Analysts in Large Brokerage	57.3%	39.7%	75.9%	60.1%	51.8%
Perc. of Analysts in Small/Medium Brokerage	42.7%	60.3%	24.1%	39.9%	48.2%

2.4.2 Tests of H1

2.4.2.1 Main Results

Tests of analysts' forecast accuracy are based on equation (1). More precisely, the following model is estimated, with all or subsets of the control variables:

$$
\begin{aligned}
PDAFA_{a,j,t,y} = {} & \alpha_{j,y} + \beta_{ABS} ABS_{a,y} + \beta_{COS} COS_{a,y} + \beta_{SES} SES_{a,y} + \gamma_1 NBCO_{a,y} \\
& + \gamma_2 NBSE_{a,y} + \gamma_3 AGE_{a,j,t} + \gamma_4 FEXP_{a,j,y} + \gamma_5 GEXP_{a,y} + \gamma_6 SPEXP_{a,y} \\
& + \gamma_7 SPCHG_{a,y} + \gamma_8 BSIZE_{a,y} + \gamma_9 FREQ_{a,y} + \gamma_{10} AvPercRank_{a,y} + \varepsilon_{a,j,t,y}
\end{aligned} \tag{2}
$$

Table 2.3a reports the results. Whatever the specification, the coefficient on the country specialists' dummy is positive and highly statistically significant, which implies that the accuracy of financial analysts specialized by countries is superior. Financial analysts specializing by sectors are less accurate on average, as their related coefficient is negative and statistically significant in every specification. The difference in accuracy between country and sector specialists ranges from 5.80% to 7.33%. In the most comprehensive model, the difference is 5.84%. It is highly statistically significant, as indicated by the zero p-value reported in the last row but three of the table. This underlines the superiority of country-specialized analysts over sector-specialized analysts.

All significant control variables are of the expected sign. *FREQ* does not significantly impact the accuracy of analysts' earnings forecasts, while the *AGE* of the forecast is by far the most influential variable. As previously documented in the literature, the number of countries and sectors followed by financial analysts is negatively related to forecast accuracy. It should be emphasized that the coefficient on country specialization is statistically significant above and beyond the simple fact that the analysts' task is rendered more complex when they follow a large number of countries. Indeed, the coefficient on country specialization is significantly positive even when the number of countries is included as a control variable. This highlights how important it is for analysts to concentrate on a single country. It is also consistent with the existence of informational advantages due to proximity or to a good knowledge of country-specific factors.

Table 2.3a: Forecast Accuracy Regressions

Each column reports the coefficients estimated from a specific subset of the regression equation:

$$PDAFA_{a,j,t,y} = \alpha_{j,y} + \beta_{ABS} ABS_{a,y} + \beta_{COS} COS_{a,y} + \beta_{SES} SES_{a,y} + \gamma_1 NBCO_{a,y} + \gamma_2 NBSE_{a,y} + \gamma_3 AGE_{a,j,t} + \gamma_4 FEXP_{a,j,y}$$
$$+\gamma_5 GEXP_{a,y} + \gamma_6 SPEXP_{a,y} + \gamma_7 SPCHG_{a,y} + \gamma_8 BSIZE_{a,y} + \gamma_9 FREQ_{a,y} + \gamma_{10} AvPercRank_{a,y} + \varepsilon_{a,j,t,y}$$

PDAFA is the proportional demeaned absolute forecast accuracy defined in Section 2.2. It measures the accuracy of analyst *a*'s earnings forecast on firm *j* released at date *t* of fiscal year *y*. $\alpha_{j,y}$ is a firm-year fixed-effect. *ABS*, *COS*, and *SES* are dummy variables that take the value 1 if analyst *a* is respectively an absolute, a country, or a sector specialist in year *y*. *NBCO* is the number of countries followed by analyst *a* over year *y*. *NBSE* is the number of sectors followed by analyst *a* over year *y*. AGE is the number of days between the date *t* at which analyst *a* released her forecast on firm *j* and the date at which actual earnings were released. *FEXP* is the number of years analyst *a* has been following firm *j*. *GEXP* is the number of years analyst *a* has been in the I/B/E/S database. *SPEXP* is the number of successive years analyst *a* has been classified in her current specialization group. *SPCHG* is a dummy variable that equals 1 if analyst *a* was in another specialization group over the preceding year $(y-1)$. *BSIZE* is a dummy variable that equals 1 if analyst *a* works for one of the brokerage houses in the top size decile. *FREQ* is the number of forecasts issued by analyst *a* over fiscal year *y*. *AvPercRank* is as defined in Section 2.3. It is a measure of analyst *a*'s past accuracy computed over the previous fiscal year $(y-1)$. All coefficients have been multiplied by 100. Heteroscedastic consistent White t-statistics appear below their related coefficient. Statistical significance at the 1%, 5%, and 10% levels are marked ***, ** and * respectively. In the last four rows of the table, "Diff. Cou.-Sec." reports the difference between the coefficients on country and sector specialization. The statistical significance of this difference is given by the p-value reported just below. The adjusted-R^2 and the number of observations are indicated in the last two rows.

	(1)	(2)	(3)	(4)	(6)
ABS	2.5 **	4.01 ***	2.06 *	1.52	1.63
	(2.51)	(4.09)	(1.82)	(1.33)	(1.43)
COS	4.69 ***	4.86 ***	4.19 ***	3.25 ***	3.45 ***
	(7.59)	(7.99)	(5.25)	(3.94)	(4.19)
SES	-2.64 ***	-2.25 **	-3.1 ***	-2.55 ***	-2.39 ***
	(-2.93)	(-2.53)	(-3.36)	(-2.74)	(-2.58)
NBCO			-0.38 **	-0.25	-0.38 **
			(-2.06)	(-1.29)	(-1.97)
NBSE			-0.53 ***	-0.74 ***	-0.58 ***
			(-3.64)	(-4.13)	(-3.21)
AGE		-0.18 ***	-0.19 ***	-0.19 ***	-0.19 ***
		(-60.76)	(-60.88)	(-60.87)	(-60.86)
FEXP				1.08 ***	1.04 ***
				(6.45)	(6.24)
GEXP				-0.59 ***	-0.56 ***
				(-4.39)	(-4.16)
SPEXP				0.31 *	0.33 *
				(1.65)	(1.78)
SPCHG				0.91	1.08
				(1.27)	(1.5)
BSIZE				-4.46 ***	-4.46 ***
				(-9.62)	(-9.63)
FREQ				0.02	0.02
				(0.58)	(0.62)
AvPercRank					0.28 ***
					(18.34)
Diff. Cou.–Sec.	7.33	7.11	7.29	5.80	5.84
p-value	0.0000	0.0000	0.0000	0.0000	0.0000
Adj-R^2	0.00	0.03	0.03	0.04	0.04
Nb Obs.	142178	142178	142178	142178	142178

Forecast accuracy increases with firm experience. The coefficient on this control variable allows a meaningful comparison. It will be recalled that firm experience (*FEXP*) is defined as the number of years the analyst has been issuing earnings forecasts for a particular firm. It is a surrogate for the "learning-by-doing" effect. It may also proxy for analysts having easier access to private information through the relationships they may have forged with the firm's management over the years. The coefficient on *FEXP* is 1.04%. This means that every additional year of "firm experience" produces a 1.04% reduction in average forecast error. By comparison, the difference in accuracy between country and sector specialists is 5.84%. That is, more than five years (i.e., 5.84/1.04) of "firm experience" are needed to achieve a differential comparable to the superiority of country- over sector-specialized analysts.

The negative coefficient on the brokerage size variable (*BSIZE*) may appear surprising at first sight. Analysts working for large brokerage houses should be in a position to produce more accurate earnings forecasts since they have wider access to resources. Also, large brokers have the financial resources to attract and hire the most skilled analysts. However, this astonishing negative relationship is a recurrent outcome in the literature on the accuracy of financial analysts' earnings forecasts in Europe. Bolliger (2004) investigates two potential explanations. First, analysts working for large brokerage houses may be at a disadvantage relative to their peers working for small brokerage houses because the latter have a local advantage. Another possible explanation is conflicts of interest from the involvement of large brokers in investment banking. Bolliger's (2004) results indicate that the local disadvantage explains part of the bad performance of large brokerage houses, while conflicts of interest are irrelevant.

AvPercRank is highly significant, with a t-statistic of 18.34. It indicates a strong persistence in the performance of financial analysts in Europe. More importantly, the inclusion of this variable in the model does not impact the coefficient estimates on analyst specializations. This suggests that the difference in performance between country and sector specialists is not a result of skilled analysts' being concentrated in the country specialization group. Endogeneity due to a possible causal relationship between analysts' past performance and organizational design is indeed a concern. This issue is considered in section 2.4.3.3.

2.4.2.2 Country-By-Country and Sector-By-Sector Estimates

According to Kini et al. (2003), the structure of financial research departments is related to the strength of country- and sector-specific factors. In an attempt to gain synergies and produce high quality forecasts, financial analysts tend to specialize by countries in markets with strong national influences. Similarly, the likelihood of analysts' specializing by sector increases with the strength of industry factors. Thus, results so far may very well depend on each particular country or sector. If Kini et al. (2003) are correct, sector specialists should outperform country specialists in sectors with strong industry-specific influences. We should also find that country specialists perform better than average only in countries with relatively strong national factors.

Therefore, I re-estimate regression equation (2) independently for each country and each sector. Table 2.3b reports country-by-country regression results. Country specialists tend to issue more accurate forecasts than sector specialists in all countries except one. The exception is Austria, where the coefficient on the sector specialist dummy is higher than for country specialists. This difference is not statistically significant, however, as indicated by the p-value of 0.4845. In the fourteen countries where country specialists show higher forecast accuracy, the difference between the two types of analysts is statistically significant in six countries: Belgium, France, Italy, the Netherlands (marginally significant), Norway, and Spain. In these countries, the difference in accuracy between country and sector specialists ranges from 6.77% (Netherlands) to a high of 16.49% (Belgium).

Overall, these results show a general comparative advantage for country specialists.[25] Table 2.3c reports sector-by-sector results. Country-specialized analysts perform better in nine out of eleven sectors. This superior performance is statistically significant in five sectors: basic industries, consumer non-discretionary, consumer services, finance, and health care. In the two industries in which sector specialists have a coefficient larger than country-specialized

[25] If one assumes that this advantage is mostly due to country specialists being located in the same country as the firms they follow, this result contradicts Bae, Stulz, and Tan (2006), who find no local advantage for most of the countries investigated here. However, they focus on a very specific time-period. I re-estimated the model in Table 3b over their restricted sample period (2001-2003) and found no significant superiority among country specialists in any of the 15 European countries. While consistent with Bae, Stulz, and Tan (2006), this result shows that the absence of local advantages reported by Bae, Stulz, and Tan (2006) for these countries is sample-specific. Results are available from the author on request.

analysts (viz. consumer discretionary and technology) the difference is not statistically significant.

Overall, even though the superiority of country over sector specialists may be concentrated in a subset of countries and sectors, sector specialists are never significantly more accurate than country specialists. In none of the investigated countries or sectors is the coefficient on sector specialists significantly higher than the coefficient on country specialists. Country specialists, on the other hand, perform statistically significantly better in almost half of the countries and sectors. This makes it impossible to confirm Kini et al.'s (2003) conjecture that the choice between country and sector specialization is made with the aim of enhancing forecast accuracy.

2.4.2.3 Firms' Characteristics

It is often argued that multinational firms are likely to be insensitive – or at least less sensitive than domestic firms – to their home-country-specific factors. Nokia, for instance, would not be considered as a Finnish entity. As a consequence, such firms are better followed by global sector-specialized analysts. If this is correct, the superior performance of country specialists should be concentrated in firms with low levels of foreign activity. I rely on foreign sales and assets, and to a lesser extent market capitalizations, as proxies for the level of firms' international activities. This information is extracted from the Worldscope database and the following model is estimated:

$$
\begin{aligned}
PDAFA_{a,j,t,y} = {} & \alpha_{j,y} + \beta_{ABS} ABS_{a,y} + \beta_{COS} COS_{a,y} + \beta_{SES} SES_{a,y} + \beta_{ABS,Q_1} ABS_{a,y} \times Q_1 \\
& + \beta_{ABS,Q_4} ABS_{a,y} \times Q_4 + \beta_{COS,Q_1} COS_{a,y} \times Q_1 + \beta_{COS,Q_4} COS_{a,y} \times Q_4 \\
& + \beta_{SES,Q_1} SES_{a,y} \times Q_1 + \beta_{SES,Q_4} SES_{a,y} \times Q_4 + \gamma_1 NBCO_{a,y} + \gamma_2 NBSE_{a,y} \\
& + \gamma_3 AGE_{a,j,t} + \gamma_4 FEXP_{a,j,y} + \gamma_5 GEXP_{a,y} + \gamma_6 SPEXP_{a,y} + \gamma_7 SPCHG_{a,y} \\
& + \gamma_8 BSIZE_{a,y} + \gamma_9 FREQ_{a,y} + \gamma_{10} AvPercRank_{a,y} + \varepsilon_{a,j,t,y}
\end{aligned} \tag{3}
$$

where Q_1 (Q_4) is a dummy variable that equals 1 if the firm belongs to the highest (lowest) firm-level variable quartile and 0 otherwise. I estimate the model independently for each of the three firm-level variables.

Table 2.3b: Country-By-Country Forecast Accuracy Regressions

Each row reports the coefficients estimated from the following regression equation estimated on a country-by-country basis:

$$PDAFA_{a,j,t,y} = \alpha_{j,y} + \beta_{ABS} ABS_{a,y} + \beta_{COS} COS_{a,y} + \beta_{SES} SES_{a,y} + \gamma_1 NBCO_{a,y} + \gamma_2 NBSE_{a,y} + \gamma_3 AGE_{a,j,t} + \gamma_4 FEXP_{a,j,y}$$
$$+\gamma_5 GEXP_{a,y} + \gamma_6 SPEXP_{a,y} + \gamma_7 SPCHG_{a,y} + \gamma_8 BSIZE_{a,y} + \gamma_9 FREQ_{a,y} + \gamma_{10} AvPercRank_{a,y} + \varepsilon_{a,j,t,y}$$

PDAFA is the proportional demeaned absolute forecast accuracy defined in Section 2.2. It measures the accuracy of analyst *a*'s earnings forecast on firm *j* released at date *t* of fiscal year *y*. $\alpha_{j,y}$ is a firm-year fixed-effect. *ABS*, *COS*, and *SES* are dummy variables that take the value 1 if analyst *a* is respectively an absolute, a country, or a sector specialist in year *y*. *NBCO* is the number of countries followed by analyst *a* over year *y*. *NBSE* is the number of sectors followed by analyst *a* over year *y*. AGE is the number of days between the date *t* at which analyst *a* released her forecast on firm *j* and the date at which actual earnings were released. *FEXP* is the number of years analyst *a* has been following firm *j*. *GEXP* is the number of years analyst *a* has been in the I/B/E/S database. *SPEXP* is the number of successive years analyst *a* has been classified in her current specialization group. *SPCHG* is a dummy variable that equals 1 if analyst *a* was in another specialization group over the preceding year $(y-1)$. *BSIZE* is a dummy variable that equals 1 if analyst *a* works for one of the brokerage houses in the top size decile. *FREQ* is the number of forecasts issued by analyst *a* over fiscal year *y*. *AvPercRank* is as defined in Section 2.3. It is a measure of analyst *a*'s past accuracy computed over the previous fiscal year $(y-1)$. All coefficients have been multiplied by 100. Heteroscedasticity-consistent White t-statistics appear below their related coefficient. Statistical significance at the 1%, 5%, and 10% levels are marked ***, ** and * respectively. In the last four columns of the table, "Diff Cou.-Sec." reports the difference between the coefficients on country and sector specialization. The statistical significance of this difference is given by the p-value reported in the next column. The adjusted-R^2 and the number of observations are indicated in the last two columns.

	ABS	COS	SES	NBCO	NBSE	AGE	FEXP	GEXP	SPEXP	SPCHG	BSIZE	FREQ	AvPercRank	Diff. Cou.–Sec.	p-value	Adj-R^2	Nb. Obs.
Austria	73.36 **	0.62	11.74	0.99	3.16	-0.22 ***	1.31	-2.29	-6.24	-24.6 *	-9.05	0.2	0.11	-11.12	0.4845	0.04	717
	(2.07)	(0.06)	(0.96)	(0.45)	(1.04)	(-3.93)	(0.46)	(-1.01)	(-1.63)	(-1.93)	(-1.1)	(0.22)	(0.58)				
Belgium	-4.24	7.31	-9.18	-1.74	-1.19	-0.11 ***	0.39	0.2	1.01	-3.27	-2.52	0.18	0.08	16.49	0.0210	0.02	3460
	(-0.37)	(1.39)	(-1.59)	(-1.5)	(-1.13)	(-5.92)	(0.32)	(0.23)	(0.71)	(-0.67)	(-0.81)	(0.79)	(0.92)				
Denmark	-4.2	-2.61	-2.75	-1.2	-1.18	-0.21 ***	2.32 **	-1.93 **	-0.53	-2.72	-3.01	0.1	0.26 ***	0.14	0.9820	0.05	3579
	(-0.71)	(-0.7)	(-0.51)	(-1.06)	(-1.14)	(-11.6)	(2.13)	(-1.97)	(-0.43)	(-0.66)	(-1.11)	(0.38)	(3.09)				
Finland	23.42 ***	11.88 ***	9.81 **	0.01	1.51 *	-0.32 ***	0.8	-0.11	0.96	-0.07	-4.93 **	-0.61 **	0.15 **	2.07	0.6919	0.13	5296
	(2.79)	(3.3)	(2.13)	(0.01)	(1.76)	(-20.78)	(0.94)	(-0.15)	(0.99)	(-0.02)	(-2.1)	(-2.25)	(2.09)				
France	5.91 **	7.82 ***	-2.32	0.22	-0.74 *	-0.13 ***	0.76 **	-1.13 ***	1.68 ***	4.97 ***	-1.19	-0.09	0.37 ***	10.14	0.0004	0.03	29622
	(2.24)	(3.83)	(-0.98)	(0.44)	(-1.94)	(-20.91)	(2.19)	(-3.79)	(4.41)	(2.95)	(-1.32)	(-1.02)	(11.43)				
Germany	-12.67 ***	-2.33	-3.04	-0.78	0.24	-0.2 ***	0.79 *	-0.44	0.49	2.22	-7.25 ***	-0.19	0.19 ***	0.71	0.8202	0.04	16531
	(-3.13)	(-1.05)	(-1.14)	(-1.46)	(0.41)	(-20.34)	(1.65)	(-1.13)	(0.88)	(1.11)	(-5.08)	(-1.63)	(4.6)				
Ireland	-8.32	-9.54 *	-16.49 **	0.03	0.27	-0.16 ***	2.58 *	-2.33 **	0.98	3.22	-16.83 ***	-0.71	0.12	6.95	0.4005	0.05	1620
	(-0.94)	(-1.72)	(-2)	(0.01)	(0.16)	(-5.82)	(1.77)	(-2.19)	(0.62)	(0.57)	(-3.09)	(-1.6)	(0.79)				
Italy	21.69 ***	12.08 **	-1.5	0.66	-0.99	-0.11 ***	-0.82	0.17	1.08	3.48	-10.39 ***	0.6 ***	0.31 ***	13.58	0.0318	0.03	6257
	(3.71)	(2.33)	(-0.33)	(0.7)	(-1.25)	(-7.97)	(-0.98)	(0.26)	(1.27)	(0.82)	(-4.79)	(3.29)	(4.64)				
Netherlands	14.87 ***	-0.15	-6.92 **	-0.39	0.3	-0.2 ***	1.83 ***	-1.16 **	-0.9	-1.19	-3.4 **	-0.07	0.15 ***	6.77	0.0984	0.04	13028
	(3.13)	(-0.05)	(-2.13)	(-0.55)	(0.58)	(-19.12)	(2.94)	(-2.22)	(-1.27)	(-0.44)	(-2.17)	(-0.91)	(2.77)				
Norway	4.23	11.97 ***	-1.09	0.42	-1.55	-0.31 ***	0.6	0.76	-1.04	-7.03 *	-3.06	0.54 *	0.36 ***	13.06	0.0153	0.11	4404
	(0.65)	(2.75)	(-0.23)	(0.46)	(-1.36)	(-17.51)	(0.63)	(0.89)	(-0.93)	(-1.72)	(-1.13)	(1.77)	(4.73)				
Portugal	-11.29	1.77	-2.19	1.85	-7.17 **	-0.1 ***	4.07	-1.05	-10.32 **	-12.65	-38.56 ***	-0.82	0.41 ***	3.96	0.7431	0.07	1285
	(-0.65)	(0.22)	(-0.22)	(1)	(-2.51)	(-2.85)	(1.57)	(-0.47)	(-2.53)	(-1.42)	(-5.67)	(-0.9)	(2.67)				
Spain	-3.19	3.85	-8.65 *	-1.22	-1.96 **	-0.11 ***	1.71 *	-1.81 **	2.09 **	9.37 ***	-10.65 ***	0.14	0.94 ***	12.5	0.0262	0.04	7458
	(-0.56)	(0.98)	(-1.86)	(-1.58)	(-1.97)	(-8.58)	(1.93)	(-2.06)	(2.08)	(2.59)	(-5.17)	(0.73)	(9.97)				
Sweden	-11.67 **	3.54	2.49	-1.65 **	-1.56 *	-0.29 ***	0.41	-0.63	-0.85	-4.33	-3.05	0.39	0.2 ***	1.05	0.8197	0.09	7767
	(-2.18)	(1.28)	(0.63)	(-2)	(-1.68)	(-21.91)	(0.51)	(-1.12)	(-0.96)	(-1.49)	(-1.47)	(1.57)	(3.41)				
Switzerland	4.52	4.03	-1.36	0.2	-1.83 *	-0.23 ***	0.88	-0.47	0.01	-0.38	-10.9 ***	0.23	0.19 ***	5.39	0.2667	0.05	8291
	(0.83)	(0.99)	(-0.34)	(0.19)	(-1.8)	(-16.61)	(1.19)	(-0.78)	(0.01)	(-0.12)	(-4.77)	(0.88)	(2.82)				
UK	0.91	1.15	-1.37	0.36	-0.52	-0.17 ***	1.08 ***	0.15	-0.11	0.74	0.47	0.18 ***	0.12 ***	2.52	0.2291	0.03	32863
	(0.44)	(0.65)	(-0.79)	(0.92)	(-1.25)	(-29.31)	(3.5)	(0.6)	(-0.3)	(0.55)	(0.44)	(2.72)	(4.26)				

Table 2.3c: Sector-By-Sector Forecast Accuracy Regressions

Each row reports the coefficients estimated from the following regression equation estimated on a sector-by-sector basis:

$$PDAFA_{a,j,t,y} = \alpha_{j,y} + \beta_{ABS} ABS_{a,y} + \beta_{COS} COS_{a,y} + \beta_{SES} SES_{a,y} + \gamma_1 NBCO_{a,y} + \gamma_2 NBSE_{a,y} + \gamma_3 AGE_{a,j,t} + \gamma_4 FEXP_{a,j,y}$$
$$+\gamma_5 GEXP_{a,y} + \gamma_6 SPEXP_{a,y} + \gamma_7 SPCHG_{a,y} + \gamma_8 BSIZE_{a,y} + \gamma_9 FREQ_{a,y} + \gamma_{10} AvPercRank_{a,y} + \varepsilon_{a,j,t,y}$$

PDAFA is the proportional demeaned absolute forecast accuracy defined in Section 2.2. It measures the accuracy of analyst *a*'s earnings forecast on firm *j* released at date *t* of fiscal year *y*. $\alpha_{j,y}$ is a firm-year fixed-effect. *ABS*, *COS*, and *SES* are dummy variables that take the value 1 if analyst *a* is respectively an absolute, a country, or a sector specialist in year *y*. *NBCO* is the number of countries followed by analyst *a* over year *y*. *NBSE* is the number of sectors followed by analyst *a* over year *y*. AGE is the number of days between the date *t* at which analyst *a* released her forecast on firm *j* and the date at which actual earnings were released. *FEXP* is the number of years analyst *a* has been following firm *j*. *GEXP* is the number of years analyst *a* has been in the I/B/E/S database. *SPEXP* is the number of successive years analyst *a* has been classified in her current specialization group. *SPCHG* is a dummy variable that equals 1 if analyst *a* was in another specialization group over the preceding year $(y-1)$. *BSIZE* is a dummy variable that equals 1 if analyst *a* works for one of the brokerage houses in the top size decile. *FREQ* is the number of forecasts issued by analyst *a* over fiscal year *y*. *AvPercRank* is as defined in Section 2.3. It is a measure of analyst *a*'s past accuracy computed over the previous fiscal year $(y-1)$. All coefficients have been multiplied by 100. Heteroscedastic consistent White t-statistics appear below their related coefficient. Statistical significance at the 1%, 5%, and 10% levels are marked ***, ** and * respectively. In the last four columns of the table, "Diff. Cou.-Sec." reports the difference between the coefficients on country and sector specialization. The statistical significance of this difference is given by the p-value reported in the next column. The adjusted-R^2 and the number of observations are indicated in the last two columns.

	ABS	COS	SES	NBCO	NBSE	AGE	FEXP	GEXP	SPEXP	SPCHG	BSIZE	FREQ	AvPercRank	Diff. Cou.–Sec.	p-value	Adj-R^2	Nb. Obs.
Basic Ind.	6.92	6.61 **	-3.73	0.7	-0.03	-0.27 ***	0.86	-1.04 **	1.07 *	-0.67	-2.07	-0.12	0.26 ***	10.34	0.0030	0.07	13264
	(1.3)	(2.5)	(-1.37)	(1.2)	(-0.05)	(-25.82)	(1.58)	(-2.22)	(1.69)	(-0.27)	(-1.28)	(-1.03)	(5.17)				
Cap. Goods	3.52	-0.91	-2.11	-2.19 ***	0.13	-0.18 ***	0.72 *	-0.72 **	0.42	-0.84	-4.46 ***	-0.16 **	0.36 ***	1.2	0.7018	0.04	27360
	(1.07)	(-0.46)	(-0.77)	(-3.95)	(0.33)	(-26.78)	(1.83)	(-2.21)	(1)	(-0.5)	(-4.35)	(-2.01)	(9.6)				
Cons. D.	-31.77	-7.47	1.9	-2.84 *	1.16	-0.22 ***	1.45 *	-0.76	0.92	-2.87	-2.06	-0.47 **	0.34 ***	-9.37	0.2768	0.06	4488
	(-1.48)	(-1.51)	(0.26)	(-1.77)	(1.24)	(-13.47)	(1.79)	(-1.05)	(0.99)	(-0.6)	(-0.89)	(-2.45)	(4.45)				
Cons. N.D.	4.63	5.13 *	-1.48	-0.14	-1.16 **	-0.16 ***	1.47 ***	-0.5	1.08 *	8.62 ***	-4.32 ***	0.16	0.21 ***	6.61	0.0650	0.03	14356
	(1.24)	(1.89)	(-0.51)	(-0.18)	(-2.07)	(-16.91)	(2.86)	(-1.31)	(1.88)	(3.82)	(-3.02)	(1.63)	(4.4)				
Cons. Serv.	-2.72	1.48	-6.89 ***	-1.6 ***	-0.73 *	-0.14 ***	0.71 *	-0.37	0.55	3.41 **	-5.58 ***	0.08	0.31 ***	8.37	0.0019	0.03	28163
	(-1.13)	(0.76)	(-2.93)	(-3.25)	(-1.94)	(-21.19)	(1.94)	(-1.28)	(1.38)	(2.13)	(-5.42)	(1.19)	(9.17)				
Energy	-11.98	2.48	-2.88	0.17	-2.02 *	-0.23 ***	0.07	0.37	0.02	-0.67	-7.29 ***	0.18	0.4 ***	5.36	0.3592	0.05	4870
	(-1.14)	(0.53)	(-0.67)	(0.24)	(-1.95)	(-13.87)	(0.08)	(0.55)	(0.02)	(-0.16)	(-2.75)	(0.83)	(4.12)				
Finance	4.86 *	9.41 ***	0.32	-0.16	-1.87 ***	-0.18 ***	1.63 ***	-0.6	-1.32 ***	-3.74 **	-5.84 ***	0.27 ***	0.2 ***	9.09	0.0002	0.04	22210
	(1.69)	(3.41)	(0.12)	(-0.39)	(-3.31)	(-24.01)	(3.79)	(-1.53)	(-2.61)	(-2.12)	(-4.91)	(2.88)	(5.59)				
Health Care	-2.27	6.95 *	-2.13	1.7 *	-1.11	-0.18 ***	1.08	-0.29	0.96	-1.09	-3.59	0.02	0.13 *	9.08	0.0524	0.03	7447
	(-0.4)	(1.75)	(-0.64)	(1.66)	(-1.2)	(-12.58)	(1.46)	(-0.51)	(0.96)	(-0.35)	(-1.61)	(0.1)	(1.95)				
Public Util.	8.44	6.58 *	5.72	0.62	1.75 *	-0.12 ***	1.07	-0.9	1.04	5.05	-6.72 ***	-0.44 **	0.32 ***	0.86	0.8652	0.02	6856
	(1.35)	(1.84)	(1.52)	(0.87)	(1.94)	(-9.26)	(1.3)	(-1.43)	(1.23)	(1.62)	(-3.04)	(-2.33)	(4.63)				
Techno.	-3.81	-0.52	3.14	-1.46	-0.47	-0.26 ***	1.44 **	-0.16	0.3	4.08	0.13	0.03	0.23 ***	-3.66	0.7005	0.07	9067
	(-0.62)	(-0.17)	(0.34)	(-1.37)	(-0.71)	(-20)	(2.02)	(-0.29)	(0.38)	(1.51)	(0.08)	(0.17)	(4.53)				
Transport.	0.02	-2.22	-9.71	-0.25	0.35	-0.21 ***	1.21	-0.39	-0.85	-6.13	1.3	0.06	0.25 ***	7.49	0.2935	0.05	4097
	(0)	(-0.56)	(-1.48)	(-0.26)	(0.36)	(-11.72)	(1.39)	(-0.55)	(-0.75)	(-1.45)	(0.48)	(0.32)	(2.97)				

Results are reported in Table 2.4. The first column reports results relative to estimations based on quartiles constructed from market capitalizations. It shows that, if we control for firms' market capitalization, country specialists outperform sector specialists. Moreover, this result contradicts the hypothesis that the superiority of country specialists should be concentrated in small capitalization firms. In fact the reverse is true. Country specialists perform significantly worse when they issue earnings forecasts on small rather than medium or large capitalization firms. Overall, this first column reveals no obvious relationship between firms' market capitalizations and the relative performance of country- and sector-specialized analysts. Taking market capitalization as an indicator of the multinationality of a firm, one would expect country-specialized analysts to perform better with regard to low market cap firms. There is however no evidence for this. Therefore, the general premise that financial analysts should concentrate on sectors rather than countries because of the increasing level of cross-border activities appears to be incorrect.

Of course, firms' market capitalization is not a perfect measure of a firm's international activity. Therefore, I consider foreign sales in proportion to total sales and foreign assets in proportion to total assets as proxies for firms' multinational dimensions. Results are reported in the second and third columns of Table 2.4. Here again, coefficients on country specialization are higher than coefficients on sector specialization for both measures of foreign activity. The difference between the performances of the two types of analyst also remains statistically significant. Moreover, no relationship is apparent between the level of firms' foreign activity and the relative performance of country and sector specialists. This again confirms the superiority of country-specialized analysts, whatever the level of international activity of the firms they follow.

Results in this section also reveal a very important feature of my general conclusions. Just as analysts' specialization may be endogenously determined, so may location. Bae, Stulz, and Tan (2006) hypothesize that the local advantage could be higher in countries where foreign ownership and capital flows are lower, since the demand by foreign investors for analyst services, and therefore the resources allocated to foreign analysts, should be lower for such countries. As a consequence, country specialists would outperform sector specialists not because they benefit from an informational advantage, but simply because of lower demand

Table 2.4: Forecast Accuracy Regressions – Market Cap, Foreign Sales, and Foreign Assets

This table reports the coefficients estimated from the following regression:

$$\begin{aligned} PDAFA_{a,j,t,y} = {} & \alpha_{j,y} + \beta_{ABS} ABS_{a,y} + \beta_{COS} COS_{a,y} + \beta_{SES} SES_{a,y} + \beta_{ABS,Q_1} ABS_{a,y} \times Q_1 \\ & + \beta_{ABS,Q_4} ABS_{a,y} \times Q_4 + \beta_{COS,Q_1} COS_{a,y} \times Q_1 + \beta_{COS,Q_4} COS_{a,y} \times Q_4 \\ & + \beta_{SES,Q_1} SES_{a,y} \times Q_1 + \beta_{SES,Q_4} SES_{a,y} \times Q_4 + \gamma_1 NBCO_{a,y} + \gamma_2 NBSE_{a,y} \\ & + \gamma_3 AGE_{a,j,t} + \gamma_4 FEXP_{a,j,y} + \gamma_5 GEXP_{a,y} + \gamma_6 SPEXP_{a,y} + \gamma_7 SPCHG_{a,y} \\ & + \gamma_8 BSIZE_{a,y} + \gamma_9 FREQ_{a,y} + \gamma_{10} AvPercRank_{a,y} + \varepsilon_{a,j,t,y} \end{aligned}$$

Q_1 (Q_4) is a dummy variable that equals 1 if the firm belongs to the highest (lowest) firm-level variable quartile and 0 otherwise. Three firm-level variables are considered: the firm's market capitalization, the ratio of foreign sales to total sales, and the ratio of foreign assets to total assets. The model was estimated independently for each of these three firm-level variables. The results reported in the first column refer to quartiles constructed from market capitalizations. The second column refers to the ratio of foreign sales to total sales. The third column refers to the ratio of foreign assets to total assets. *PDAFA* is the proportional demeaned absolute forecast accuracy defined in Section 2.2. It measures the accuracy of analyst *a*'s earnings forecast on firm *j* released at date *t* of fiscal year *y*. $\alpha_{j,y}$ is a firm-year fixed effect. *ABS*, *COS*, and *SES* are dummy variables that have the value 1 if analyst *a* is respectively an absolute, a country, or a sector specialist in year *y*. *NBCO* is the number of countries followed by analyst *a* over year *y*. *NBSE* is the number of sectors followed by analyst *a* over year *y*. AGE is the number of days between the date *t* at which analyst *a* released her forecast on firm *j* and the date at which actual earnings were released. *FEXP* is the number of years analyst *a* has been following firm *j*. *GEXP* is the number of years analyst *a* has been in the I/B/E/S database. *SPEXP* is the number of successive years analyst *a* has been classified in her current specialization group. *SPCHG* is a dummy variable that equals 1 if analyst *a* was in another specialization group over the preceding year $(y-1)$. *BSIZE* is a dummy variable that equals 1 if analyst *a* works for one of the brokerage houses in the top size deciles. *FREQ* is the number of forecasts issued by analyst *a* over fiscal year *y*. *AvPercRank* is as defined in Section 2.3. It is a measure of analyst *a*'s past accuracy computed over the previous fiscal year $(y-1)$. All coefficients have been multiplied by 100. Heteroscedastic consistent White t-statistics appear below their related coefficient. Statistical significance at the 1%, 5%, and 10% levels are marked ***, ** and * respectively In the last four rows of the table, "Diff. Cou.-Sec." reports the difference between the coefficients on country and sector specializations. The statistical significance of this difference is given by the p-value reported just below. The adjusted-R^2 and the number of observations are indicated in the last two rows.

	Market Cap.	Foreign Sales	Foreign Assets
ABS	3.61 **	1.68	2.04
	(2.19)	(0.71)	(0.66)
COS	4.24 ***	1.58	1.24
	(3.81)	(1.24)	(0.61)
SES	0.75	-4.17 **	-3.36
	(0.55)	(-2.5)	(-1.47)
ABS × Q1 (High)	-2.8	-1.62	-6.02
	(-1.05)	(-0.4)	(-1.01)
ABS × Q4 (Low)	-7.33 ***	4.06	-0.51
	(-2.62)	(1.28)	(-0.12)
COS × Q1 (High)	-1.53	2.53	-1.35
	(-0.9)	(1.4)	(-0.46)
COS × Q4 (Low)	-4.14 ***	0.67	-3.84
	(-2.63)	(0.35)	(-1.33)
SES × Q1 (High)	-4.93 **	5.06 *	-8.11 **
	(-2.36)	(1.87)	(-2.04)
SES × Q4 (Low)	-9.16 ***	4.15	2.44
	(-2.83)	(1.45)	(0.63)
NBCO	-0.35	-0.35	-0.02
	(-1.58)	(-1.36)	(-0.05)
NBSE	-0.74 ***	-0.29	-0.82 *
	(-3.61)	(-1.23)	(-1.96)
AGE	-0.19 ***	-0.19 ***	-0.19 ***
	(-55.22)	(-47.39)	(-31.16)
FEXP	0.99 ***	1.11 ***	1.6 ***
	(5.51)	(5.36)	(5.15)
GEXP	-0.55 ***	-0.72 ***	-0.87 ***
	(-3.82)	(-4.29)	(-3.48)
SPEXP	0.42 **	0.58 **	0.32
	(2.11)	(2.48)	(0.85)
SPCHG	1.54 **	1.47	1.69
	(1.96)	(1.58)	(1.2)
BSIZE	-4.78 ***	-4.26 ***	-3.71 ***
	(-9.2)	(-6.96)	(-3.55)
FREQ	0.06	-0.02	0.1
	(1.52)	(-0.36)	(1.16)
AvPercRank	0.28 ***	0.29 ***	0.22 ***
	(16.89)	(14.61)	(6.95)
Diff. Cou.−Sec.	3.49	5.75	4.60
p-value	0.0205	0.0021	0.0789
Adj-R^2	0.04	0.04	0.04
Nb Obs.	115722	83256	35083

for analyst services in some countries because investors are home biased. The results in Table 2.4 tell against this hypothesis. Because the firms with the highest levels of foreign activities should garner the most foreign interest, one would expect large foreign resources to be expended on covering them, and this should prevent country specialists from significantly outperforming sector specialists with regard to these firms. This is not what I observe, however. Rather, my results are a further indication that location may provide analysts with a strong comparative advantage. Bae, Stulz, and Tan (2006) come to the same conclusion. Thus, while our methodological approaches are different, the results from the two studies are perfectly consistent, reinforcing the idea that local advantage can confidently be interpreted as an information asymmetry explanation.[26]

Overall, results indicate that specializing by country rather than sector brings considerable benefits in terms of forecast accuracy. Individual country-specialized analysts tend to issue more accurate forecasts than sector-specialized ones. This result is highly significant in approximately half of the countries and sectors considered in the sample. Moreover, in no country or sector is the accuracy of sector-specialized analysts superior to that of country specialists. This marked superiority of country specialists can be interpreted as an informational advantage. Potential sources of this informational advantage are investigated below.

2.4.3 Robustness Checks

2.4.3.1 Analysts' Following

Country-specialized financial analysts may concentrate on firms whose earnings are, for some reason, easier to forecast than the earnings of firms mainly followed by sector-specialized analysts. As a first check, I re-estimate equation (2), restricting the sample to firms followed by at least one country- and one sector-specialized analyst. If the former really outperform the latter, there should be no difference between the results reported above and the results from this restricted sample. Nor should there be any difference if firm-year differences were accurately controlled for. Results, reported in Table 2.5, are indeed extremely similar to those

[26] I am grateful to an anonymous referee for this suggestion.

in Table 2.3a. Here again, the p-values indicate that the difference between country and sector specialist coefficients is highly significant in all cases.

2.4.3.2 Timeliness

The forecast accuracy measure considered up to this point cannot be used in isolation to appraise financial analysts' performance. It could easily give an impression of skill in inferior analysts who herd on the forecasts released by their accurate peers. I therefore employ the timeliness measure, called "Leader-to-Follower ratio" (LFR), developed by Cooper et al. (2001). This allows me to verify that the superiority of country-specialized analysts, as so far documented, is not in fact due to herding behavior among analysts.

High values of the LFR statistics are indicative of skilled analysts. Follower analysts have lower LFR values.[27] Cooper et al. (2001) consider analysts who have a LFR ratio statistically greater than 1 to be "leader analysts" and others "follower analysts." I choose not to impose this arbitrary threshold. Instead, I compare the median LFR levels across analysts' specializations. Moreover, as LFR distributions are highly skewed, a rank sum test is performed. Table 2.6 reports the results.

The LFR difference between country-specialized and sector-specialized analysts produces reassuring results. Neither the median nor the mean LFR for country and sector specialists is statistically different. Interestingly, the LFR difference appears significantly related to one type of analyst only. Indeed, both the median and mean LFR on generalists are in all cases significantly smaller than for other types of analysts. Herding behavior may therefore exist among the European financial analyst community, but applies only to generalists, who follow firms in different countries and sectors. It does not explain the difference in accuracy between country and sector specialists documented above.

[27] Interested readers may refer to the Appendix for a presentation of the timeliness measure.

Table 2.5: Accuracy Regressions – Firms Followed by both Country and Sector Specialists

The sample is restricted to firms followed by at least one country and one sector specialist. Each column reports the coefficients estimated from a specific subset of the regression equation:

$$PDAFA_{a,j,t,y} = \alpha_{j,y} + \beta_{ABS} ABS_{a,y} + \beta_{COS} COS_{a,y} + \beta_{SES} SES_{a,y} + \gamma_1 NBCO_{a,y} + \gamma_2 NBSE_{a,y} + \gamma_3 AGE_{a,j,t} + \gamma_4 FEXP_{a,j,y}$$
$$+\gamma_5 GEXP_{a,y} + \gamma_6 SPEXP_{a,y} + \gamma_7 SPCHG_{a,y} + \gamma_8 BSIZE_{a,y} + \gamma_9 FREQ_{a,y} + \gamma_{10} AvPercRank_{a,y} + \varepsilon_{a,j,t,y}$$

PDAFA is the proportional demeaned absolute forecast accuracy as defined in Section 2.2. It measures the accuracy of analyst *a*'s earnings forecast on firm *j* released at date *t* of fiscal year *y*. $\alpha_{j,y}$ is a firm-year fixed-effect. *ABS, COS,* and *SES* are dummy variables that take the value 1 if analyst *a* was respectively an absolute, a country, or a sector specialist in year *y*. *NBCO* is the number of countries followed by analyst *a* over year *y*. *NBSE* is the number of sectors followed by analyst *a* over year *y*. AGE is the number of days between the date *t* at which analyst *a* released her forecast on firm *j* and the date at which actual earnings were released. *FEXP* is the number of years analyst *a* has been following firm *j*. *GEXP* is the number of years analyst *a* has been in the I/B/E/S database. *SPEXP* is the number of successive years analyst *a* has been classified in her current specialization group. *SPCHG* is a dummy variable that equals 1 if analyst *a* was in another specialization group over the preceding year $(y-1)$. *BSIZE* is a dummy variable that equals 1 if analyst *a* works for one of the brokerage houses in the top size deciles. *FREQ* is the number of forecasts issued by analyst *a* over fiscal year *y*. *AvPercRank* is as defined in Section 2.3. It is a measure of analyst *a*'s past accuracy computed over the previous fiscal year $(y-1)$. All coefficients have been multiplied by 100. Heteroscedastic consistent White t-statistics appear below their related coefficient. Statistical significance at the 1%, 5%, and 10% levels are marked ***, ** and * respectively. In the last four rows of the table, "Diff. Cou.-Sec." reports the difference between the coefficients on country and sector specialization. The statistical significance of this difference is given by the p-value reported just below. The adjusted-R^2 and the number of observations are indicated in the last two rows.

	(1)	(2)	(3)	(4)	(5)
ABS	2.91 **	4.73 ***	3.77 **	2.68 *	2.78 *
	(2.08)	(3.43)	(2.35)	(1.65)	(1.71)
COS	5.04 ***	5.67 ***	6.56 ***	4.91 ***	5.26 ***
	(5.39)	(6.16)	(5.48)	(3.99)	(4.28)
SES	-3.09 ***	-2.49 **	-3.74 ***	-3.2 ***	-3.05 ***
	(-2.93)	(-2.39)	(-3.35)	(-2.84)	(-2.71)
NBCO			0.08	0.17	0.03
			(0.36)	(0.71)	(0.14)
NBSE			-0.73 ***	-1.13 ***	-0.96 ***
			(-2.99)	(-3.76)	(-3.2)
AGE		-0.18 ***	-0.18 ***	-0.18 ***	-0.18 ***
		(-40.26)	(-40.27)	(-40.27)	(-40.22)
FEXP				1.18 ***	1.1 ***
				(4.87)	(4.58)
GEXP				-0.76 ***	-0.69 ***
				(-3.94)	(-3.56)
SPEXP				0.46	0.46
				(1.61)	(1.63)
SPCHG				1.12	1.31
				(1.07)	(1.25)
BSIZE				-5.75 ***	-5.51 ***
				(-7.94)	(-7.62)
FREQ				0.05	0.07
				(0.91)	(1.27)
AvPercRank					0.31 ***
					(13.09)
Diff. Cou.−Sec.	8.13	8.16	10.30	8.11	8.31
p-value	0.0000	0.0000	0.0000	0.0000	0.0000
Adj-R^2	0.00	0.03	0.03	0.03	0.04
Nb Obs.	63843	63843	63843	63843	63843

2.4.3.3 Endogeneity

Endogeneity is potentially a serious concern in this context. It may arise from a potential causal relationship between analyst performance and specialization. For instance, the most skilled analysts may be given their choice of specialization. As nobody wants to travel further than they have to, these analysts may choose to specialize by country so they can cover their home country's firms. Inferior analysts would then have no choice other than to follow firms scattered over many different places or countries.[28] If this is the case, the superiority of country specialists would not be due to informational advantages, but simply to their superior skill. I investigate this issue in three different respects.

First, while the control variable for analysts' past accuracy (*AvPercRank*) can be seen as a measure of their skills, it also implicitly controls for this potential endogeneity problem. As the results in Table 2.3a indicate, *AvPercRank* is highly significant, but it does not affect the coefficient estimates.[29]

Second, in order to explicitly take endogeneity into account, I build on the methodology developed by Heckman (1979). I compute the inverse Mills' ratio from the estimate of a probit model where the probability of being a country specialist is modeled as a function of the analyst's 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. This Mills' ratio is then included as an additional control variable in all of the tests. Unreported results confirm that this does not change the coefficient estimates, nor does it change their statistical significance. Moreover, the Mills' ratio is never significantly different from zero.[30]

[28] I am grateful to the Editor for this suggestion, and for showing me a way of testing its validity.

[29] Note that the persistence of financial analysts' earnings forecast accuracy is highly significant in the countries studied here. Researchers working in this field should be aware of this important feature of the European market for financial analysis.

[30] As robustness checks, I also consider the probability of following a single (or restricted) number of countries against that of being a country specialist. Specifically, the left-hand side variable of the probit model is Prob(Absolute or Country specialist) instead of Prob(Country specialist). I also estimate the probit model on a year-to-year basis, including as control variables as many Mills' ratios as there are years in the sample; see Wooldridge (1995). In all cases, results remain unchanged. The consideration of endogeneity through the inclusion of Mills' ratios in the model never affects the coefficient estimates.

Table 2.6: Forecast Timeliness – Leader-to-Follower Ratios

This table reports non-parametric Wilcoxon-Mann-Whitney tests for the difference in forecast timeliness measures across different specialization groups. For each analyst *a*, who releases a forecast on firm *j*'s earnings over fiscal year *y*, timeliness is measured by the *LFR* (Leader-to-Follower Ratio), which is computed as $LFR_{a,j,y} = \frac{T^0_{a,j,y}}{T^1_{a,j,y}}$, with $T^0_{a,j,y} = \sum_{k=1}^{K}\sum_{m=1}^{M} t^0_{a,j,m,k,y}$ and $T^1_{a,j,y} = \sum_{k=1}^{K}\sum_{m=1}^{M} t^1_{a,j,m,k,y}$. T^0 and T^1 are respectively the cumulative lead- and follow-times for the *K* forecasts made by analyst *a* for firm *j* over fiscal year *y*. $t^0_{a,j,m,k,y}$ ($t^1_{a,j,m,k,y}$) denotes the number of days by which forecast *m* precedes (follows) the *k*-th forecast made by analyst *a* for firm *j*. *K* is the number of forecasts made by analyst *a* for firm *j* over fiscal year *y*. *M* is the number of forecasts made by other analysts that preceded or followed the release of the *k*-th forecast by analyst *a*. *LFR* ratios are computed for each analyst and each firm for which they issue forecasts. They are therefore firm-analyst specific measures. Mean and Median *LFR*s of the first (1) and second (2) mentioned specializations are given in columns 3, 4, 7 and 8. The difference and the p-value for the statistical significance of this difference appear in columns 5, 6, 9 and 10.

	Wicoxon-Mann-Whitney				Normal Mean Difference			
	Median (1)	Median (2)	(1) - (2)	Prob	Mean (1)	Mean (2)	(1) - (2)	Prob
Absolute Sp. - Country Sp.	0.99	0.98	0.0124	0.2028	1.26	1.21	0.0496	0.1415
Absolute Sp. - Sector Sp.	0.99	0.99	0.0071	0.2303	1.26	1.23	0.0311	0.1475
Absolute Sp. - Generalist	0.99	0.96	0.0344	0.0259	1.26	1.21	0.0503	0.0239
Country Sp. - Sector Sp.	0.98	0.99	-0.0052	0.4606	1.21	1.23	-0.0185	0.5001
Country Sp. - Generalist	0.98	0.96	0.0221	0.0461	1.21	1.21	0.0007	0.0827
Sector Sp. - Generalist	0.99	0.96	0.0273	0.0406	1.23	1.21	0.0192	0.0870

Third, based on the idea that analysts do not want to travel further than they have to, I compute the total distance between each analyst and the set of firms she follows and form deciles from this measure. The model is then estimated separately for each decile. If skilled analysts do indeed concentrate in the country specialization group, there should be no difference between the performance of country and sector specialists once total distance is controlled for. Unreported results contradict this hypothesis as country specialists outperform sector specialists in most deciles.

Overall, these three tests confirm that the documented superiority of country over sector specialists is not due to skilled analysts specializing by country. This further reinforces the idea that country specialists issue more accurate earnings forecasts because they benefit from a strong informational advantage. The following section investigates potential sources of this advantage.

2.4.4 Proximity and Institutional Factors

This section conducts tests of *H2* and *H3*. Two potential sources of financial analysts' informational advantage are examined. First, "proximity" – whether or not analysts are located close to the firms they follow. Analysts are classified in one of two groups, depending on whether they are located fewer or more than 100 kilometers away from the firms for which they issue earnings forecasts.[31] Second, "country-specific factors" – whether analysts are benefiting from an informational advantage due to a better than average knowledge of country-specific factors. As previously argued, country-specialized analysts ought logically to benefit from this particular advantage.

Data on the geographical location of financial analysts is taken from successive editions – from 1994 to 2004 – of Nelson Information's *Directory of Investment Research*. This is a yearly reference book containing the addresses and phone numbers of financial analysts worldwide. Data on the geographical location of each firms' headquarters is taken from the Worldscope database. The latitudes and longitudes needed to compute the distance between

[31] Other thresholds, such as 50, 150, and 200 kilometers were implemented, but do not change any of the conclusions.

analysts and the firms they follow are extracted manually from the website www.heavens-above.com. For each forecast reported in the I/B/E/S database, I compute the distance between the analyst who issued the forecast and the firm for which the forecast was issued.[32]

The following regression model is estimated:

$$PDAFA_{a,j,t,y} = \alpha_{j,y} + \beta^{P}_{ABS} ABS^{P}_{a,j,y} + \beta^{D}_{ABS} ABS^{D}_{a,j,y} + \beta^{P}_{COS} COS^{P}_{a,j,y} + \beta^{D}_{COS} COS^{D}_{a,j,y} + \beta^{P}_{SES} SES^{P}_{a,j,y} + \beta^{D}_{SES} SES^{D}_{a,j,y} + \sum_{l=1}^{L} \gamma_l z_{a,j,l,t,y} + \varepsilon_{a,j,t,y} \quad (4)$$

The *P* (*D*) superscript stands for Proximate (Distant) analysts. Thus $COS^{P}_{a,j,y}$ is a dummy variable that equals one if analyst *a* is a country-specialized analyst located close to (i.e., less than 100 km away from) firm *j*. $COS^{D}_{a,j,y}$ is a dummy variable that equals one if the analyst is a country-specialized analyst located more than 100 km away (distant) from firm *j*. $SES^{P}_{a,j,y}$, $SES^{D}_{a,j,y}$, $ABS^{P}_{a,j,y}$, and $ABS^{D}_{a,j,y}$ are similarly defined for "proximate" and "distant" sector and absolute specialists. The *L* control variables (*z*'s) are the same as in previous tests.

Results are presented in Table 2.7. The coefficients in the first column show that, consistent with the previous results, sector-specialized analysts tend to issue less accurate forecasts than country-specialized analysts. The difference is statistically significant, as indicated by the zero p-value.

Results from equation (4) are consistent with hypothesis *H2*. That is, proximity is a source of informational advantage. Indeed, country specialists who are located close to the firms tend to issue more accurate forecasts than those who are not. Proximate sector specialists tend to issue more accurate forecasts than more distant sector specialists. The two differentials amount to 3.08% and 9.09% respectively. Both are statistically significant with p-values of 0.0123 and 0.

[32] The formula used to compute the distance (*Dist*) between to cities *A* and *B* is:

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

where $R = 6378$ km is the radius of the earth.

Table 2.7: Forecast Accuracy Regressions – Proximity and Country Institutional Factors

The first column reports the coefficients estimated from the standard regression equation (2):

$$PDAFA_{a,j,t,y} = \alpha_{j,y} + \beta_{ABS} ABS_{a,y} + \beta_{COS} COS_{a,y} + \beta_{SES} SES_{a,y}$$
$$+\gamma_1 NBCO_{a,y} + \gamma_2 NBSE_{a,y} + \gamma_3 AGE_{a,j,t} + \gamma_4 FEXP_{a,j,y} + \gamma_5 GEXP_{a,y} + \gamma_6 SPEXP_{a,y} + \gamma_7 SPCHG_{a,y} + \gamma_8 BSIZE_{a,y} + \gamma_9 FREQ_{a,y} + \gamma_{10} AvPercRank_{a,y} + \varepsilon_{a,j,t,y}$$

The second column reports the coefficients estimated from:

$$PDAFA_{a,j,t,y} = \alpha_{j,y} + \beta^P_{ABS} ABS^P_{a,j,y} + \beta^D_{ABS} ABS^D_{a,j,y} + \beta^P_{COS} COS^P_{a,j,y} + \beta^D_{COS} COS^D_{a,j,y} + \beta^P_{SES} SES^P_{a,j,y} + \beta^D_{SES} SES^D_{a,j,y}$$
$$+\gamma_1 NBCO_{a,y} + \gamma_2 NBSE_{a,y} + \gamma_3 AGE_{a,j,t} + \gamma_4 FEXP_{a,j,y} + \gamma_5 GEXP_{a,y} + \gamma_6 SPEXP_{a,y} + \gamma_7 SPCHG_{a,y} + \gamma_8 BSIZE_{a,y} + \gamma_9 FREQ_{a,y} + \gamma_{10} AvPercRank_{a,y} + \varepsilon_{a,j,t,y}$$

PDAFA is the proportional demeaned absolute forecast accuracy defined in Section 2.2. It measures the accuracy of analyst *a*'s earnings forecast on firm *j* released at date *t* of fiscal year *y*. $\alpha_{j,y}$ is a firm-year fixed-effect. ABS^P, COS^P, and SES^P are dummy variables that take the value 1 if analyst *a* is located less than 100 kilometers away from firm *j* (i.e. is a proximate analyst) and is respectively an absolute, a country, or a sector specialist in year *y*. ABS^D, COS^D, and SES^D are dummy variables that take the value 1 if analyst *a* is located more than 100 kilometers away from firm *j* (i.e. is a distant analyst) and is respectively an absolute, a country, or a sector specialist in year *y*. *NBCO* is the number of countries followed by analyst *a* over year *y*. *NBSE* is the number of sectors followed by analyst *a* over year *y*. AGE is the number of days between the date *t* at which analyst *a* released her forecast on firm *j* and the date at which actual earnings were released. *FEXP* is the number of years analyst *a* has been following firm *j*. *GEXP* is the number of years analyst *a* has been in the I/B/E/S database. *SPEXP* is the number of successive years analyst *a* has been classified in her current specialization group. *SPCHG* is a dummy variable that equals 1 if analyst *a* was in another specialization group over the preceding year $(y-1)$. *BSIZE* is a dummy variable that equals 1 if analyst *a* works for one of the brokerage houses in the brokerage houses in the top size decile. *FREQ* is the number of forecasts issued by analyst *a* over fiscal year *y*. *AvPercRank* is as defined in Section 2.3. It is a measure of analyst *a*'s past accuracy computed over the previous fiscal year $(y-1)$. All coefficients have been multiplied by 100. Heteroscedastic consistent White t-statistics appear below their related coefficient. Statistical significance at the 1%, 5%, and 10% levels are marked ***, ** and * respectively. Coefficients and t-statistics from the first equation are reported in the first column. The p-value reported below indicates the statistical significance of the difference between *COS* and *SES*. Coefficients and t-statistics from the second equation are reported in the second column. The p-values of the difference between coefficients of interest in this second model estimate are reported at the right-hand side of the table. The coefficients on the control variables are not reported but are of the same order of magnitude as in previous estimations.

	Pooled 94-04		p-value			
	Equation [6]	Equation [7]	Prox. C. Special.	Dist. C. Special.	Prox. S. Special.	Dist. S. Special.
Country Special.	4.49 ***					
	(4.02)					
Prox. C. Special.		6.12 ***	---	0.0123	0.2733	0.0000
		(4.92)				
Dist. C. Special.		3.04 **	0.0123	---	0.6664	0.0000
		(2.32)				
Sector Special.	-2.7 **					
	(-2.23)					
Prox. S. Special.		3.95 **	0.2733	0.6664	---	0.0000
		(2.2)				
Dist. S. Special.		-5.14 ***	0.0000	0.0000	0.0000	---
		(-3.8)				
p-value	0.0000					
Adj-R^2	0.04	0.04				
Nb Obs.	71569	71569				

The country-specific factors explanation is convincing as well. As stated in hypothesis *H3*, if knowledge of country-specific factors is a source of informational advantage, one would expect distant country specialists to significantly outperform distant sector specialists and, to some extent, proximate country specialists to significantly outperform proximate sector specialists. The results support *H3*. The two coefficients on proximate and distant country specialists are both larger than their respective counterparts (i.e., proximate and distant sector specialists). When distant country specialists are compared to distant sector specialists, the difference is highly significant. For the differential accuracy between proximate country and proximate sector specialists, the p-value (0.2733) indicates that, while the coefficient on proximate country specialists is higher than that on proximate sector specialists, this difference is not statistically significant. As previously discussed, local and proximate sector specialists can be expected to have a reasonably good knowledge of their home country. Proximate country specialists issue statistically significantly more accurate forecasts than more distant sector specialists (p-value: 0), whereas the reverse is not true (p-value: 0.6664). Overall, these results indicate that proximity and a better knowledge of each country's specific factors provide convincing explanations for the superiority of country specialists over sector specialists.

2.4.5 Evolution through Time

2.4.5.1 Organization of Research Departments

Over the last decade, financial analysis departments have been refocused from country- to industry-based structures. Indeed, more and more brokerage houses now seem to favor sector-based approaches to financial research. This is apparent from Figure 2.2, which shows the percentage of country- relative to sector-specialized analysts for each of the 15 countries at two different points in time.

Figure 2.2: Evolution of the percentage of country- relative to sector-specialized analysts from 1995 to 2004

For each of the 15 European countries in the sample, the figure shows the proportion of country- relative to sector-specialized analysts. This proportion is indicated on the vertical axis. The solid bars correspond to the proportion computed in 1995. The dashed bars correspond to the proportion computed in 2004.

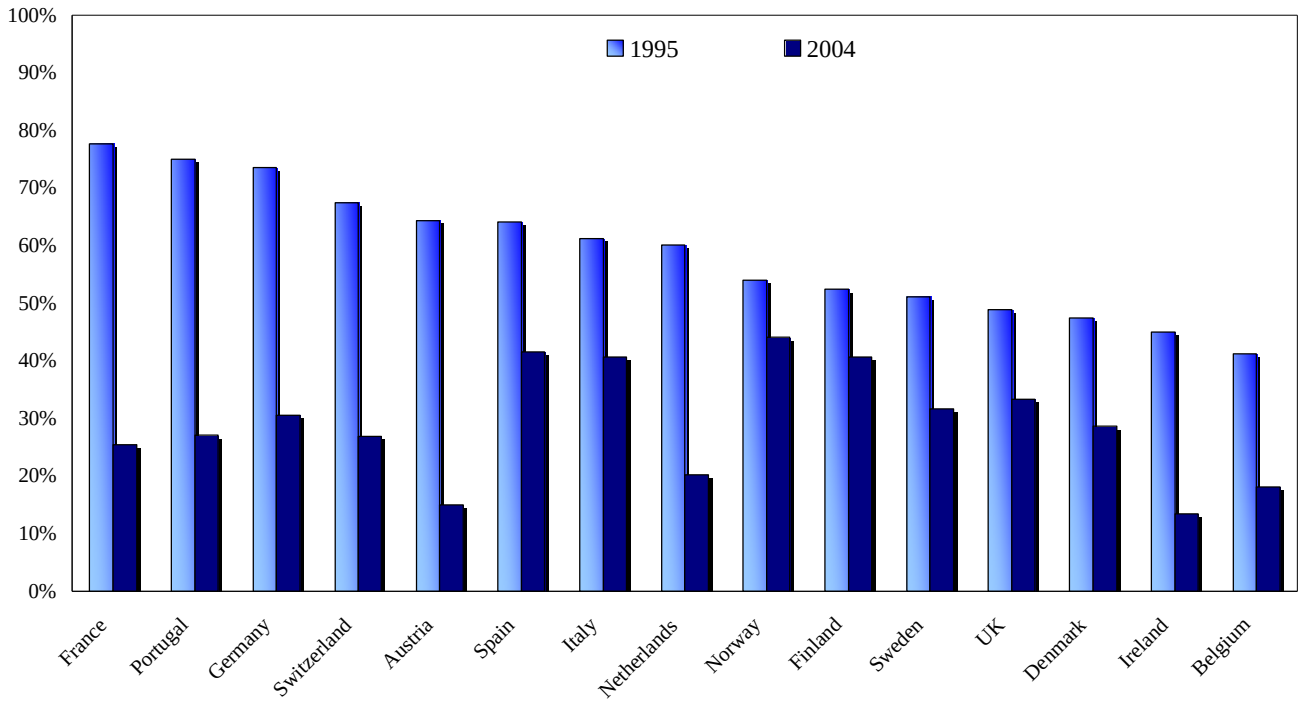


Figure 2.2 shows that, for every single European country, the number of country-specialized analysts decreased relative to the number of sector-specialized analysts between 1995 and 2004. This effect is more pronounced for some countries than for others. In 1995, French, Portuguese, and German firms were mainly followed by country specialists. There were respectively 77.6%, 75%, and 73.5% of country- relative to sector-specialized analysts. These percentage values dropped to respectively 25.4%, 27.1%, and 30.5% in 2004. In other countries, such as the UK and Belgium, there were, even in 1995, approximately as many sector as country specialists, or even more: the respective ratios were 48.8% and 41.2%. In these countries that were already dominated by more sector-oriented structures, the respective ratios decreased to 33.3% and 18.1% in 2004.[33]

[33] Unreported results show that the trend towards more sector-oriented organizations is highly significant in most European countries. Specifically, the following yearly time-series regression was estimated for each individual country:

$$PCS_{c,t} = \alpha_c + \beta_c \cdot t + \varepsilon_{c,t} \qquad t = 1, \mathrm{K}, 10$$

where $PCS_{c,t}$ is the percentage of country- relative to sector-specialized analysts in country *c* over fiscal year *t*. These estimations returned highly significant negative slope coefficients in 13 of the 15 countries. Slope

2.4.5.2 Forecast Accuracy

Country factors are important determinants of the comparative advantage of country- over sector-specialized analysts. Thus, the relative decrease in the strength of country factors compared to sector factors, documented in the literature, may explain the observed tendency to reorganize research on sector lines.[34] Indeed, brokerage houses may have been trying to take advantage of economies of scale in the acquisition and production of information offered by the growing importance of commonalities among firms in the same economic sector.

If this is so the relative advantage of country- over sector-specialized financial analysts should tend to decrease over time, as a consequence of the decrease in the importance of country factors relative to sector factors. To test this hypothesis, I re-estimate equation (2) on a year-by-year basis from 1995 to 2004. However, if the difference in performance between country and sector specialists has indeed decreased, such a test would not tell us why. Generalist analysts were used as the reference group in previous estimations. If the performance of this group of analysts was not constant over the sample period, we would be unable to decide whether it was the performance of country specialists that deteriorated or the performance of sector specialists that improved. Hence, following Suits (1984) and Kennedy (1986), a constraint is imposed on the set of specialization coefficient estimates. This constraint is formally defined as:

$$\sum_{s} \frac{N_{s,y}}{N_y} \beta_{s,y} = 0$$

where *s* refers to the analyst's specialization (i.e., Absolute, Country, Sector, or Generalist), $N_{s,y}$ is the total number of earnings forecasts released by analysts of particular specialization *s* over year *y*, and N_y is the overall number of earnings forecasts issued over fiscal year *y*. Essentially, this approach makes it possible to alter the coefficients so that they can be interpreted as deviations from the overall mean instead as deviations from the "Generalist" reference group.

coefficients were also negative, though statistically not significant, in Norway and Finland. Rank regressions delivered similar results. Results are available on request.

[34] See, e.g., Cavaglia et al. (2000) and Baca et al. (2000).

The results in Table 2.8 support the view that the difference between the performances of country and sector specialists has decreased over time. The difference in accuracy is large and highly significant in all years up to and including 2000, but decreases subsequently. While the difference continues to favor country specialists in all years – except 2001, when sector specialists outperformed country specialists – it drops to insignificance after 2001. Moreover, this decline in the differential performance is mostly due to sector specialists' becoming more accurate, while the performance of country specialists remained the same.

As pointed out by Barber et al. (2003), 2000 and 2001 were "disasters" for the financial analyst profession. Focusing on stock recommendations, they show that analysts were unduly optimistic about stocks that turned out to perform extremely badly and vice versa. Barber et al. argue this was chiefly due to analysts' favoring small capitalization growth stocks. Extrapolating this evidence to earnings forecasts emphasizes the need to interpret results over this two-year period with great care. Nonetheless, it remains true that even after this atypical period, earnings forecasts issued by country and sector specialists were not as different as they had been in 1994–1999.

The sample period used in the present study does not indicate whether this decline in the superior accuracy of country specialists is permanent or only temporary. The conclusions presumably are related to those in the literature on the relative importance of country and sector factors in stock returns. The consensus of this stream of research is that both the nationality and the industry in which firms are active are important determinants of stock returns; see, e.g., Heston and Rouwenhorst (1994, 1995), Beckers et al. (1996), and Griffin and Karolyi (1998). A more recent result, first reported by Cavaglia et al. (2000) and Baca et al. (2000), is that industry factors are becoming more significant owing to global sector convergence rather than a weakening of country factors.

A few points are worth mentioning here. First, even if industry factors grew to be as important as country factors in the late 1990s, it is hard to tell whether this change is permanent or not. Brooks and Del Negro (2002) show that it is probably mainly due to the impact of the Information Technology "bubble". Adjaouté and Danthine (2003) show that the strength of

both industry and country factors follows cycles;[35] see also Catao and Timmermann (2003). Bekaert et al. (2005) show that this growing influence of industry relative to country factors mainly results from an increase in underlying factor volatilities: globalization has not altered the domination of country factors over sector factors. All these results suggest that the decrease in the relative importance of country over sector factors is only temporary.

If the comparative advantage of country-specialized financial analysts is mainly due to their ability to take advantage of economies of scale linked to the relative strength of these factors, research organized along country lines should continue to outperform sector-based research in the future. Moreover, even if country-specific influences continue to diminish, my view is that financial research organized along country lines should still be beneficial. Accounting standards have still not been fully harmonized, even at the European level. There also remain significant differences among European countries' regulations. Moreover, proximity is an important determinant of financial analysts' performance. This is confirmed by analysts' behavior. Sector specialists, who should by definition hold internationally diversified portfolios, tend to bias their research efforts towards firms headquartered within their home countries. Country specialists should therefore still be able to take advantage of the comparative advantages provided by country-specific institutional factors and geographical location.

The relative decline in the superiority of country specialists may owe something to the evolution of research departments into more sector-oriented organizational structures. It may be that analysts who left the country specialization group were, on the whole, the most skilled of the country specialists, perhaps because it was the larger and more attractive brokerage houses that reorganized their research departments into more sector-oriented structures. Assuming that only the most talented analysts get jobs in such institutions, it may have been only skilled country specialists who gradually changed specialization over time. This would have left only inferior analysts in the country specialists' group, which could explain why its performance as a group has declined.

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

Table 2.8: Accuracy Regressions – Year-by-Year Analysis

Each row reports the coefficients on *COS* and *SES* from the following regression equation estimated on a year-by-year basis:

$$PDAFA_{a,j,t,y} = \alpha_{j,y} + \beta_{ABS} ABS_{a,y} + \beta_{COS} COS_{a,y} + \beta_{SES} SES_{a,y} + \gamma_1 NBCO_{a,y} + \gamma_2 NBSE_{a,y} + \gamma_3 AGE_{a,j,t} + \gamma_4 FEXP_{a,j,y} + \gamma_5 GEXP_{a,y} + \gamma_6 SPEXP_{a,y} + \gamma_7 SPCHG_{a,y} + \gamma_8 BSIZE_{a,y} + \gamma_9 FREQ_{a,y} + \gamma_{10} AvPercRank_{a,y} + \varepsilon_{a,j,t,y}$$

$$s.t. \sum_s \frac{N_{s,y}}{N_y} \beta_{s,y} = 0$$

where *s* is analyst type (i.e. Absolute, Country, Sector, Generalist), $N_{s,y}$ is the total number of earnings forecasts released by analysts with a particular specialization *s* over year *y*, and N_y is the overall number of earnings forecasts issued over fiscal year *y*. *PDAFA* is the proportional demeaned absolute forecast accuracy as defined in Section 2.2. It measures the accuracy of analyst *a*'s earnings forecast on firm *j* released at date *t* of fiscal year *y*. $\alpha_{j,y}$ is a firm-year fixed effect. *ABS*, *COS*, and *SES* are dummy variables that have the value 1 if analyst *a* was, respectively, an absolute, a country, or a sector specialist in year *y*. *NBCO* is the number of countries followed by analyst *a* over year *y*. *NBSE* is the number of sectors followed by analyst *a* over year *y*. AGE is the number of days between the date *t* at which analyst *a* released her forecast on firm *j* and the date at which actual earnings were released. *FEXP* is the number of years analyst *a* has been following firm *j*. *GEXP* is the number of years analyst *a* has been in the I/B/E/S database. *SPEXP* is the number of successive years analyst *a* has been classified in her current specialization group. *SPCHG* is a dummy variable that equals 1 if analyst *a* was in another specialization group over the preceding year $(y-1)$. *BSIZE* is a dummy variable that equals 1 if analyst *a* works for one of the brokerage houses in the top size decile. *FREQ* is the number of forecasts issued by analyst *a* over fiscal year *y*. *AvPercRank* is as defined in Section 2.3. It is a measure of analyst *a*'s past accuracy computed over the previous fiscal year $(y-1)$. All coefficients have been multiplied by 100. Heteroscedastic consistent White t-statistics appear below their related coefficient. Statistical significance at the 1%, 5%, and 10% levels is marked ***, ** and * respectively. The coefficients on the control variables are not reported but are of the same order of magnitude as in previous estimates. The first column reports the coefficient on *COS*. The second column reports the coefficient on *SES*. The third column computes the difference between *COS* and *SES*. The fourth column indicates the p-value for the statistical significance of this difference. The last column reports the adjusted-R^2 of the regression.

	COS	SES	Diff. Cou.-Sec.	p-value	Adj-R^2
1995	2.87 **	-11.90	14.76 **	0.0129	0.05
	(2.21)	(-1.16)			
1996	3.31 ***	-13.75	17.06 ***	0.0012	0.06
	(3.14)	(-1.5)			
1997	0.74	-4.94 **	5.68	0.1073	0.02
	(0.29)	(-2.24)			
1998	1.52	-6.21	7.73 **	0.0397	0.03
	(1.04)	(-1.45)			
1999	3.63 ***	-9.07	12.70 ***	0.0000	0.04
	(5.92)	(-1.22)			
2000	2.51	-6.82	9.33 **	0.0296	0.05
	(1.56)	(-1.11)			
2001	-1.70	2.06	-3.76 **	0.0291	0.07
	(-1.58)	(1.21)			
2002	0.98	-3.64	4.62	0.3260	0.05
	(0.01)	(-1.19)			
2003	1.17	-0.43	1.59	0.8785	0.04
	(0.04)	(-0.15)			
2004	1.59	-2.68	4.27	0.1762	0.04
	(0.48)	(-1.28)			
Pooled	1.97 ***	-4.57 ***	6.54 ***	0.0000	0.04
	(3.89)	(-2.72)			

However, additional unreported tests do not support this view.[36] First, the re-organization from country- towards more sector-oriented structures is not specific to large brokers. This evolution has been similar for both large and smaller brokerage houses. What makes these two groups different is that the former have always had relatively more sector specialists, while the latter had almost exclusively country specialists and still rely heavily on country-by-country structures. Second, if my hypothesis is valid, country specialists who have never changed specialization (i.e., analysts who remained country specialists from the very beginning to the very end of their presence in the database) should not be performing well, since good performers should be concentrated among country specialists who changed specialization at some point in time. Estimating the model on a restricted sample, retaining as country specialists only those who remained such throughout their presence in the database, returns results that contradict the hypothesis. These "all-time" country specialists behave very like the overall sample of country specialists in terms of forecast accuracy. Unreported results suggest that "all-time" country specialists may even perform better than their peers who changed specialization. This conclusion is further reinforced by the fact that I failed to find any cross-sectional relationship between the declining superiority of country specialists and the declining proportion of country relative to sector specialists.[37]

2.5 Conclusion

Financial research is usually performed either by countries or by sectors. In Europe, both specializations co-exist. In today's environment, in which firms compete on an international basis, the issue of how financial research departments should be structured has become of critical importance. While there has been a general tendency over the last decade to switch from country-based to more sector-oriented structures, there is no consensus about which approach is best.

[36] Results are available from the author on request.

[37] I performed different tests in order to check for the existence of such a relationship. Most notably, I ran cross-sectional regressions of the differential performance of country and sector specialists (evaluated country-by-country on a year-to-year basis) on the proportion of country and sector specialists in each country (also evaluated on a year-to-year basis). Results are unreported but are available from the author on request.

This paper compares the accuracy of earnings forecasts issued by country-specialized and sector-specialized financial analysts. The results show that country specialists issue far more accurate earnings forecasts than sector-specialized financial analysts. Moreover, sector specialists did not significantly outperform country specialists in any of the eleven sectors or the fifteen European countries considered over the period 1994–2004. This last result invalidates the conjecture that organizational structures are decided upon with the aim of producing high quality research.

Large multinational companies have to be evaluated in a global context. As a consequence, it is often argued that such firms should be followed by sector- rather than country-specialized financial analysts. Results reported in this paper refute this assertion. Indeed, no relationship is apparent between the relative accuracy of country and sector specialists and firms' characteristics such as the firms' market capitalizations or their level of international activities. Finally, this paper brings evidence that country specialists' informational advantage is drawn from both geographical proximity and a good knowledge of country-specific factors, such as language, culture, and accounting rules.

Overall, these results suggest that the reorganization of financial analysis departments towards more sector-oriented structures may have been driven by other objectives than the desire to boost the accuracy of earnings forecasts. Other explanations are possible. First of all, an organization structured along sector lines is likely to make the acquisition and production of information less costly, since it enables financial analysis to be centralized in a single location. Marketing considerations may have induced brokerage houses to specialize by sectors in order to meet the needs of portfolio managers, who now seem to care more about industry than international diversification; see Galati and Tsatsaronis (2001).

Whatever the underlying reason, one may wonder why brokerage houses continue to organize research in a way that reduces earnings forecast accuracy. The results indicate a diminution in the relative outperformance of country specialists over time. If this change were to be permanent, brokerage houses would simply be slightly ahead of the curve in their research reorganization efforts.[38] Conversely, several influences, like differences in cultural and

[38] This hypothesis was suggested by an anonymous referee.

institutional factors, or the advantage brought by proximity, suggest that this change may only be temporary. If this is so, country specialists will continue to outperform sector specialists in the future. These competing hypotheses call for further exploration.

Appendix: Timeliness Measure

Cooper et al. (2001) argue that forecast revisions by skilled analysts, which they call leader analysts, should be followed closely by forecasts made by other analysts, called follower analysts. There are mainly two reasons for this. First, skilled analysts have an incentive to release forecasts before competing analysts since part of their revenue is based on the trading volume generated by their research. Second, analysts' compensation is also based on the accuracy of their forecasts[39]. Less skilled or less informed analysts may therefore wait for the release of forecasts made by skilled analysts to beneficiate from the superior information of the latter in order to increase the accuracy of their own forecasts. To the contrary, skilled analysts have no incentive to issue forecast revisions in response to forecasts released by other analysts. Therefore, Cooper et al. (2001) propose to proxy for financial analysts' performance by a measure of the timeliness of their earnings' forecasts. They develop the "Leader-to-follower ratio" test statistics (which they denote *LFR*)

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

for analyst *a*, who releases forecasts on firm *j*'s earnings over fiscal year *y*. This ratio is therefore firm-analyst specific. T^0 and T^1 are respectively the cumulative lead- and follow-times for the *K* forecasts made by analyst *a* on firm *j* over fiscal year *y*. They are formally defined by:

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

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

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

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

follow the release of the *k*-th forecast by analyst *a*. LFR ratios are computed for each analyst and each firm for which they issue forecasts. Cooper et al. (2001) compute the average ratio across all the firms a particular analyst follows. They consider analysts having a ratio statistically significantly bigger than 1 as leader analysts and others as follower analysts.

Chapter 3: The Value of Analysts' Recommendations and the Organization of Financial Research

(in collaboration with Carolina Salva)

Abstract

Brokerage houses usually organize their research activities along country or economic sector dimensions. We evaluate which research structure provides most value to investors. To this end, we study the relative information content of stock recommendations issued by country-specialized analysts versus those issued by sector-specialized analysts. Our findings reveal that the former issue more valuable recommendations. The strength of country-specific commonalities explains at least part of the out performance of country-specialized financial analysts. Surprisingly, while analysts' geographical location has been shown in the literature to be a determinant of earnings forecast accuracy, it is not a source of a comparative advantage when it comes to stock recommendations.

3.1 Introduction

Brokerage houses usually organize their research activities along country or economic sector dimensions. Units of production are financial analysts who dedicate their time and effort to issue earnings forecasts and stock recommendations on the set of firms they follow. There are probably different forces at work that shape how analysts' research is structured. Commonalities across firms, the information environment, customer needs, and cost considerations are such factors. No matter what drives analyst specialization, huge amounts of money are invested every day on the basis of analysts' recommendations. This makes it important to understand which organization structure provides investors with most value.

The information environment and the existence of commonalities across firms are significant determinants that shape the structure and quality of financial research.[40] The quality of analysts' recommendations is influenced by the availability and quality of information and by the models that are used to interpret this information. Information complementarities can facilitate the process of analyzing firms and contribute to a better understanding of firms' economics. It provides a rationale for why analysts tend to specialize and choose portfolios of firms that share certain commonalities. According to Kini et al. (2003), 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 in an attempt to produce high quality research.

The importance of adapting financial research to customer needs is emphasized in Rubino (2003).[41] Customer needs refers to the way fund managers structure their investment process. Investors who consider 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 have reached a high level of integration rely on sector diversification. For that purpose, they tend to privilege global sector-based approaches.

[40] Berger et al. (2002), Petersen and Rajan (2001), and Stein (2002) focus on the importance of the information environment in the organization of financial intermediaries.
[41] John Rubino, "The New Global Industry Analysis", *CFA Magazine*, July-August 2003.

Sector-by-sector analysis is more appropriate in order to meet the specific needs of these fund managers.

The forces and constraints that shape how financial research is organized may impact brokerage houses in different ways. In this paper, we evaluate which research structure provides most value to investors. We explore whether stock recommendations issued by country-specialized analysts contain more information than recommendations issued by sector-specialized analysts, or vice versa.[42] We focus our analysis on financial research performed on European equities, for which both country-based research and sector-based research coexist.[43]

Our findings show that stock recommendations issued by country specialists contain more information than those released by sector specialists. Interestingly, the market does not seem to recognize the informational advantage of country specialists. At the time of the recommendation release, the stock price reaction is similar when the recommendation is issued by a country or a sector specialist. The additional information brought by country specialists is slowly incorporated into prices, with a drift lasting up to 120 trading days (approximately 6 calendar months). Conversely, there is no drift after recommendations issued by sector specialists. We interpret this delayed price reaction as evidence of greater information content since it is related to the type of analyst, not to the type of firm. Risk shifting, for example, is not a plausible explanation, as for any given firm the drift is stronger after a recommendation issued by a country specialist than after a recommendation issued by a sector specialist.

We explore whether the comparative advantage of country specialists results from information complementarities and economies of scale in gathering and processing information, such as country factors, governance regimes, financial disclosure environments and geographical proximity to the firm. Commonalities across firms may stem from shared country of domicile. Firms within a country share the same reporting and governance systems

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

[43] 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. (2003). To the contrary, research on European firms, even though biased towards country-based structures, is performed by both country and sector specialists. Approximately 30%, respectively 70%, of the 6587 analysts considered in our sample where sector, respectively country, specialists.

and are subject to similar economic forces. High quality institutional structures (i.e. high quality disclosure, good governance, which translates into more transparency) have a positive impact on the information environment and may require less country-specific knowledge. Also, with an enhanced information environment, the role of geographical 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 the quality of legal protection of shareholders hardly explain the country specialists' advantage.

Country specialists' advantage may result from a geographical advantage. These analysts are on average based closer to the firms they follow and may therefore have a better access to private information. They are also in general based within the same country as the set of firms they follow, thus increasing cultural and institutional proximity. Though, none of these two dimensions of proximity is a source of a comparative advantage. Our results indicate that neither being located close, or being located within the same country as the firm constitutes an important determinant of the additional information contained in stock recommendations issued by country-specialized analysts.

We then investigate whether country specialists draw their comparative advantage from recommendations issued on firms headquartered in countries with strong common economic forces. Results indicate that part of the additional information conveyed by country specialists' stock recommendations can be explained by this factor. Country-specific variables therefore appear as 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 of information.

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 hard to disentangle the individual effect of each of them. For instance, countries with low accounting standards are likely to be those with 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 per se of the comparative advantage of country specialists. Instead, our results

may more likely indicate under which conditions country specialists bring more information than their sector peers. All of these conditions may not be mutually exclusive.

The paper is organized as follows. Section 3.2 presents a brief review of the extant literature on the value of stock recommendations. In section 3.3, we discuss the objectives and constraints that shape brokerage houses' organization of research on European equities. Section 3.4 introduces the data and the methodology. In section 3.5, 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 3.6 is devoted to explanations of the comparative advantage that country specialists seem to have over sector specialists. We conclude in section 3.7.

3.2 The value of stock recommendations and its determinants

Stock recommendations constitute a final output of analyst research and reflect analysts' overall opinion about the value of stocks relative to their market price. Elton, Gruber, and Gultekin (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 that is further used as input when issuing stock recommendations. As Schipper (1991) emphasizes, analyst earnings forecasts are just one more ingredient when evaluating 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.[44]

There is limited evidence on the value of analyst recommendations in Europe. In the U.S., however, 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 at the time recommendations are released and in the months after. Womack (1996)

[44] 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.

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 (2003) who extend the investigation to the G7 countries. They report that, although abnormal returns are highest in the U.S., recommendation changes significantly impact 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.

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 reputation. And it is negatively related to the size of the firm. Asquith et al. (2005) report a similar result and show that the price reaction around recommendations' releases is negatively related to the number of analysts following the firm. Ivkovic and Jegadeesh (2004) show that the stock price reaction is weaker when recommendations are released immediately after earnings announcement dates. They conclude that financial analysts add more value through gathering information than through the interpretation of this information. Boni and Womack (2004) are supportive of this evidence, as they show that price reactions to analyst recommendations generally increase with time from the last scheduled earnings announcement. Loh and Mian (2006) results are consistent with the notion that the value of analysts recommendations is founded in economic rationale and not on other ad hoc firm characteristics.[45] The common theme of the above mentioned studies is that stock recommendations are valuable because analysts enjoy superior information with respect to the market as a result of their gathering or interpretation skills.

Other studies focus on the analysis of the information content of earnings forecasts. 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

[45] 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.

European markets, Orpurt (2003) shows that financial analysts located within the same country as the firms they follow issue on average more accurate earnings forecasts than analysts based abroad. Enlarging the investigation to a sample of 32 countries, Bae et al. (2005) confirm this finding. Malloy (2005) examines another geographical 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 a strong out-performance of proximate over further away located analysts. Physical proximity, as well as being located within the same country as 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.

3.3 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 that are 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 used as input rather that the interpretation that is done of it.

To exploit economies of scale in gathering information, Kini et al. (2003) 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 firms' earnings and value 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 factor driving future earnings.

The organization of research may also be shaped by other forces and constraints. Actually, despite Kini et al. (2003) predictions, 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 which have important country factor commonalities and vice versa. It is probable that analysts' weigh forces and constraints beyond economies of scale in gathering and interpreting information when choosing their portfolios.

If some analysts have portfolios that are more focused in benefiting from the information environment than others, then it is plausible that the quality of their 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 of the true value of the firm. For example, if the earnings of a given firm are largely driven by country economic forces, we would expect country specialists to benefit from economies of scale in using country-specific information and issue superior forecasts and recommendations. In Chapter 2, we showed that country specialists issue on average more accurate earnings forecasts. Yet, better accuracy needs not necessarily translate into more informative recommendations.[46] 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 they follow. Indeed, Demirakos et al. (2004) remark that analysts tailor their valuation methodology to the industry in which the firms operate. They also note that the focus depends on the industry.[47] It is also possible that less accurate earnings forecasts translate into more informative stock recommendations because recommendations may include additional pieces of information in addition to the information attached to forecasts. For example, recommendations follow with a justification on the part of analysts for their view while forecasts do not. 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 analysts' earnings forecasts accuracy because there is information that is excluded or simplified due to processing limitations and time constraints. So it may well be that it also has implications for the value of stock recommendations; see Plumlee (2003), Haw et al. (1994), Lang and Lundhom (1996), Duru

[46] 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). Cornell (2001) and Bradshaw (2004).

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

and Reeb (2002), Clement (1999), Clement et al. (2003). An important source of complexity for country specialists lies in the fact that they follow different sectors. Therefore there may be a limit to the sector-specific information that 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 process 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 to assess the investment potential of a firm than sector specific information then sector specialists may be at a disadvantage.

Several studies provide evidence that country factors are important. These studies stress that there still exists numerous divergences among national markets. Since the mid-nineties and the works by Heston and Rouwenhorst (1994, 1995), there has been a lot of work 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 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 nineties. However, as is apparent in the work by 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-seventies. Our reading of this literature is that country-specific factors still exist and may even have strong impacts on firms' earnings and stock prices. Thus, these studies suggest that country commonalities across firms are important; therefore, country specialists could draw an advantage with respect to sector specialists.

Despite of 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 from a survey conducted on behalf of Merrill Lynch which shows that in year 2000, 75% of surveyed fund managers answered that sector diversification was their primary objective. And only 10% gave priority to the international diversification approach. If investor needs are

important in shaping analysts' portfolios then their preferences may tend to influence the structure of financial research.

3.4 Data and Experiment Design

3.4.1 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 issue the recommendation. We focus on the 15 major European markets. Namely, these are Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the U.K.. As we 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.[48]

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 where each firm operates. Eleven sectors are defined: Finance, Health Care, Consumer Non-Durables, Consumer Services, Consumer Durables, Energy, Transportation, Technology, Basic Industries, Capital Goods, and Public Utilities. We exclude from the sample firms for which I/B/E/S does not provide us with a country, an industry or the name of the analyst that issues the recommendation.

Market data such as stock prices, dividends, risk-free interest rates, and firms' market capitalization is 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 additional restrictions in our final sample which includes only firms with available price and recommendations data in both I/B/E/S and Datastream databases.

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

Other sources are used to obtain further relevant data and control variables that we introduce in following sections. The Worldscope database provides us with data relative to the geographical location of firms' headquarters. Financial analysts' addresses are found in different editions – from 1994 to 2003 – of the Nelson Information's Directory of Investment Research. 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 relative to accounting standards and shareholder protection used by La Porta et al. (1998) from the Center for International Financial Analysis and Research.

3.4.2 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 which is generally used as an indicator of the amount of competition among firms in an industry. This ratio allows us to classify as sector (country) specialists those analysts that concentrate in following firms within the same sector or industry (country). It is possible that sector (country) specialists issue also 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 sector specialist an analyst who follows 10 firms in the same sector and 1 firm in a different sector. An alternative classification could consist in defining sector (country) specialists only those analysts following firms in a single sector (country). But this measure would be much more restrictive and would not consider the analyst in our example to be 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 $\bullet_c = N_{c,a,y} / N_{a,y}$ and $\bullet_s = N_{s,a,y} / N_{a,y}$. $N_{c,a,y}$ $(N_{s,a,y})$ 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 one single country. Similarly, a sector HI takes value of 1 when the analyst follows firms that are active in one single sector. Analysts who follow also 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 analysts' portfolio diversification increases.

Each analyst is classified as country specialist if her country HI is larger than 0.90 and her sector HI is smaller than 0.90. Each analyst is classified as sector specialist if her sector HI is larger than 0.90 and her country HI is smaller than 0.90.[49] For the purpose of our analysis we only take analysts that are either country or sector specialists. We drop analysts that follow many countries and many sectors and analysts that mainly follow only one sector in one country.

3.4.3 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 to be the interval [-200,-11] with respect to the announcement date. Abnormal returns are the prediction errors from the one-factor WLS 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 Maynes and Rumsey (1993) 'trade-to-trade' approach. They show that the use of 'trade-to-trade' returns leads to correct estimations for all levels of trading frequency.

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

The trade-to-trade approach uses multiperiod 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,n_t} is the last quoted price before the non-trading interval, in Euro currency. The abnormal return is computed as the difference between the actual return and the expected return over the event window as follows:

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

where R_{m,n_t} is the market index return over the nontrading period that matches the stock return. α_{i,n_t} and β are the WLS coefficients calculated over the estimation window. The errors from the 'trade-to-trade' adjusted one-factor model are heteroskedastic with variance $n_t\sigma_i^2$. In order to correct for heteroskedasticity, the data is divided by the square root of n_t (weights).

Once we have obtained abnormal returns we cumulate them over the following intervals [–1,+1], [+2,+20], [+21,+60] and [+61,+120] and we obtain *CABNRET*, *CABNRET20*, *CABNRET60* and *CABNRET120* correspondingly. *CABNRET* will allow us to evaluate the market reaction at the time stock recommendations are issued. The other measures will provide us with some insight on whether there is a price drift that follows recommendation issuances.

3.4.4 Cross-sectional regression tests

This section introduces 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 two variables. *RECCHG* is a dummy variable indicative of whether the newly issued recommendation is an upgrade or a downgrade relative to the last recommendation previously released by the same analyst on the same firm. In some instances, analysts discontinue their coverage of a firm for quite long periods of time. Given that, a recommendation is included in the final sample only if there is a previous recommendation issued by the same analyst on the same firm that is no more than 360 days old. While brokers

usually rely on home-made classifications 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 Buys, Buys, Hold, Sell, and Strong Sell recommendations. The difference between the new and old recommendations can therefore take discrete values that range from –4 to +4. Our second variable, *MAGNIT*, is aimed at capturing the influence of the magnitude of the recommendation change. It is a dummy variable that takes the value 1 if the absolute value of this difference is greater or equal to 3. Our baseline regression model is as follows:

$$CABNRET_{[t_0;t_1]} = \beta_1 \cdot RECCHG + \beta_2 \cdot MAGNIT + \gamma \cdot Controls + \varepsilon \quad (1)$$

If recommendation changes convey information that impact stock prices, we expect either or both β_1 and β_2 to be significantly different from zero. As both coefficients are dummies, they are expected to be positive in the case of recommendation upgrades, and negative in the case of recommendation downgrades. Also, as we estimate our model separately for upgrades and downgrades, it turns out that *RECCHG* is the constant term in the regression model.

In order to test whether country-specialized financial analysts issue more informative stock recommendations, we expand our baseline regression model and estimate the following cross-sectional equation:

$$\begin{aligned} CABNRET_{[t_0;t_1]} = {} & \beta_1 \cdot RECCHG + \delta_1 \cdot RECCHG \cdot COUNTRYSP \\ & + \beta_2 \cdot MAGNIT + \delta_2 \cdot MAGNIT \cdot COUNTRYSP + \gamma \cdot Controls + \varepsilon \end{aligned} \quad (2)$$

where *COUNTRYSP* equals 1 if the analyst is a country 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 additional information brought by country specialists, neither δ_1 nor δ_2 should statistically differ from zero. Our null hypothesis is therefore stated as $H_0: \delta_1 = \delta_2 = 0$. However, if country specialists benefit from an informational advantage, these coefficients are expected to be significantly positive for upgrades and negative for downgrades. Formally, this would imply the following alternative hypothesis: $H_a: \delta_1 > 0, \delta_2 > 0$.

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 relative to the earnings announcement date, and firm market capitalization. As country specialists follow far smaller firms than their sector-specialized peers, we also

consider the Amihud illiquidity measure as an additional control. The first three are constructed from the information made available by I/B/E/S. Firms' market capitalization and the Amihud illiquidity measures are computed with data taken from TF Datastream.

Stickel (1995) argues that large brokerage houses have the resources to disseminate more efficiently stock recommendations to investors. Also, in large brokerage houses, analysts have more resources to gather and process information. It is therefore likely that their outputs 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. The number of analysts employed by brokerage houses over a given year is used as a surrogate for marketing ability. We follow Stickel (1995) in that we consider two dummy variables: *SMALLBRK* is a dummy variable that takes the value 1 if the broker is in the lowest size deciles and 0 otherwise. *LARGEBRK* is a dummy that is equal to 1 if the broker is in the highest size deciles and 0 otherwise.

Large firms are in general more actively followed by financial market participants. Therefore, the marginal information brought to the market by recommendations issued on large firms is likely to be of lesser investment value compared to the recommendations issued on less frequently investigated firms. Stickel (1995) motivates the use of the firms' market capitalization as a proxy for their information environment. Another measure that is commonly used as a surrogate for a firm's information environment is the number of analysts following the firm. In fact, as is noted by Asquith et al. (2005), both variables proxy for the firm specific information environment that less actively followed firms may have compared to more widely followed firms. We consider both of them. For each recommendation, *NUMANA* is the number of analysts who issued at least one recommendation on the firm over the 360 days preceding the recommendation release. We follow Stickel (1995) in our definition of the firm size variable and compute two dummies. *SMALLCAP* takes the value 1 if the firm is in the lowest capitalization deciles and 0 otherwise. *LARGECAP* is equal to 1 if the firm is in the largest capitalization deciles and 0 otherwise.

Ivkovic and Jegadeesh (2004) show how the price reaction depends on whether the recommendation precedes or follows the earnings announcement date and also on how close the recommendation is issued with respect to the earnings announcement date; see also Boni

and Womack (2004). We include a set of 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 1 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 1 if the recommendation was issued within the 10 days following an earnings announcement date. Finally, the variable *CAGE* (i.e. "Contemporaneous" to an earnings announcement) is set equal to 1 if the recommendation was released on the same day as the earnings announcement. The use of these three control variables has a double objective. They are aimed at controlling for the varying level of information content of recommendations reported by Ivkovic and Jegadeesh (2004) and Boni and Womack (2004). 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.

Country specialists tend to follow smaller firms. While our sample is biased towards large capitalization stocks due to data availability requirements, low trading activities among small firms may impact our results. Therefore we include an additional variable to control for this potential drawback. This variable, *ILLIQ*, is the Amihud illiquidity measure. It is an average of the ratio of the absolute value of daily stock return to daily trading volume. For each stock *i* in year *y*, it is formally given by:

$$ILLIQ_{iy} = \frac{1}{D_{iy}} \sum_{d=1}^{D_{iy}} \frac{\left| R_{iyd} \right|}{VOLD_{iyd}}$$

where D_{iy} is the number of trading days for which data is available for stock *i* in year *y*, R_{iyd} is the stock *i*'s return on day *d* of year *y*, and $VOLD_{iyd}$ is the day *d* volume in dollars of stock *i*. We refer the reader to Amihud (2002, p. 34) for a detailed description of the measure.

3.5 Descriptive Statistics and Basic Results

3.5.1 Descriptive Statistics

Table 3.1 reports key sample statistics. The first column refers to the whole sample. The second and third columns refer to country and sector specialists correspondingly. This allows us to compare the main characteristics of the portfolios of these two types of analysts. 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 8 firms. To the same extent, the average number of yearly recommendations is equivalent for both types of analysts. Country and sector specialists issue respectively an average of 17.1 and 18.2 recommendations per year. 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 indeed superior to the average of 16 for country specialists.

The fifth 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 one single country, but who may also follow a small number of foreign firms. The same remark holds true for sector specialists who follow an average of 1.09 sectors. In fact, there are sector specialists following up to 6 industries over a given year but who concentrate their efforts in firms within a single sector.

The average number of sectors followed by country specialists is 3, 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 with respect to both the country and the sector dimension.

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 their sector counterparts. Figure 3.1 provides additional evidence on the size distribution of firms followed by each type of analysts. It confirms that country specialists focus on smaller firms. The distribution for sector specialists is clearly shifted to the right, which indicates that larger firms are more actively followed by this type of analysts.

Table 3.1: Descriptive Statistics

This table presents average values of various characteristics of analysts' portfolios and research activities, depending on specialization. We include all analysts following European firms regardless of their location. That is, analysts may be located anywhere in the world, while firms are headquartered within Europe. However, to reach a clear picture of analyst portfolios' characteristics, a worldwide sample of firms is considered in some instances. The reason is that sector specialists do not (always) restrict to European firms and the comparison with country specialists would be worthless if one considered European firms only. "Av. number of firms", "Av. number of recommendations", "Av. number of countries", and "Av. number of sectors" respectively 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. 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. "Av. number of analysts per firm" is an indication of the average number of analysts who follow a given firm on a yearly basis. "Av. firm size" is the average market capitalization of firms in analysts' portfolios. "Av. market size" is the average size of the national markets followed by analysts. *ACTG* is a measure of the quality of accounting standards. *ANTIDIR* can take values ranging between 0 and 5 and is a measure of the strength of laws and regulations in each country, which aim is to protect minority shareholders. "Av. distance" is the average number of kilometers between analysts and the firms they follow. "Local" stands for analysts located within 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 remaining. The percentage of analysts in large and small/medium brokerage houses indicates for which type of brokers financial analysts work (i.e. large or small/medium). On the contrary, "brokerage structure", which is reported in the last two rows of the table, indicates which type of analysts large and small/medium brokerage houses tend to employ.

Stat	All Analysts	Country Specialists	Sector Specialists
Av. number of firms	8.1	8.4	7.9
Av. number of recommendations	17.0	17.1	18.2
Av. number of countries	1.60	1.04	3.33
Av. number of sectors	2.69	3.22	1.09
Av. number of analysts per firm	18.7	16.0	27.2
Av. firm size (millions EUR)	7818.9	4911.0	17152.0
Av. market size (billions EUR)	867	869	864
Av. ACTG	69.3	69.2	69.3
Av. ANTIDIR	3.0	3.0	2.9
Av. distance (kilometers)	307	176	595
Perc. of local analysts	65.4%	87.8%	41.3%
Perc. of foreign analysts	34.6%	12.2%	58.7%
Perc. of analysts in large brokerage	60.0%	51.3%	81.1%
Perc. of analysts in small/medium brokerage	40.0%	48.7%	18.9%
Large brokers' structure	100.0%	58.4%	41.6%
Small/medium brokers' structure	100.0%	85.1%	14.9%

Geographical location is also among the key determinants that differentiate country and sector specialists. 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

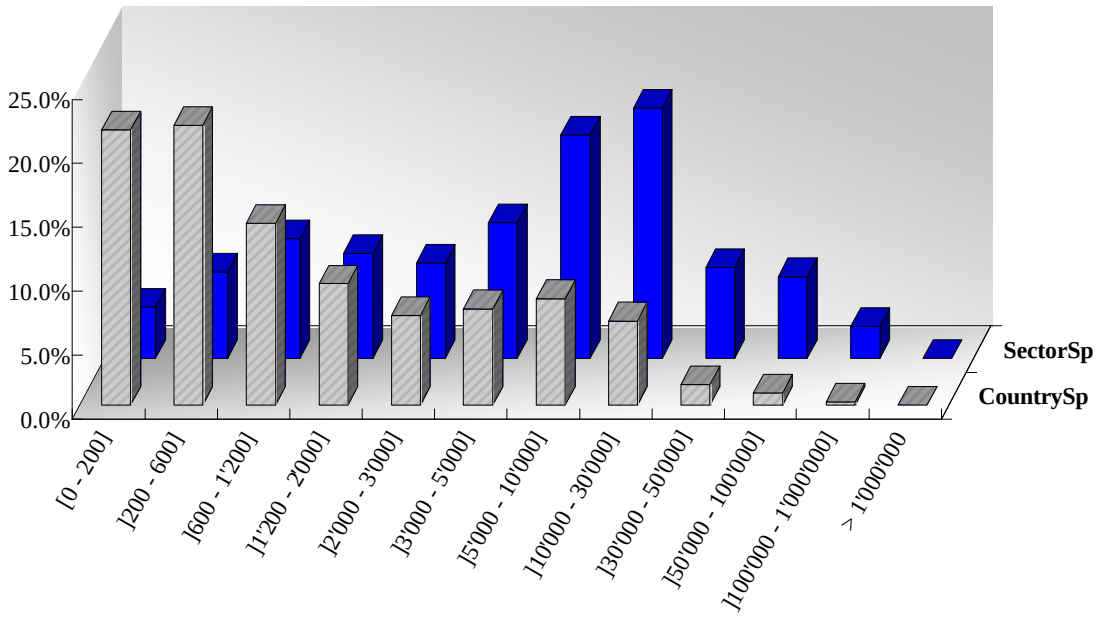
based within their country of expertise. Indeed, 87.8% of them are located within the same country as the firms they follow. Perhaps more interestingly, the percentage of local sector specialists reveals that 41.3% of the recommendations issued by sector specialists relate to local firms. Although they follow more than three countries on average, sector specialists seem to tilt their activities towards domestically headquartered firms.

The type of brokerage houses country and sector specialists work for also delivers interesting insights. Whereas country specialists are almost equally spread across large and small/medium brokerage houses (51.3% of them are working for large brokerage houses), 81.1% of sector specialists belong to large brokerage houses. An interesting statistic is provided by the two last rows of the table. These lines show how brokers organize research in general. It indicates that small- and medium-sized brokerage houses are mainly country-focused. On average, 85.1% of the analysts employed by these institutions are country specialists. In large brokerage houses, the country dimension is less pronounced with approximately only half of the analysts being country specialists.

Table 3.2 Panel A presents the main statistics of interest on a country-by-country basis. Panel B presents the same statistics by sectors. Surprisingly, Panel A shows that the percentage of recommendations issued by country relative to sector specialists is similar across countries. On average, between 69.3% and 83.3% of the recommendations are issued by country specialists. The only exception is Ireland, where the total number of recommendations spreads out equally between country and sector specialists. We are therefore unable to confirm the Kini et al. (2003) prediction according to which financial analysts are more likely to specialize by country in countries were national commonalities are largest. These percentages are more widely dispersed in the sector-by-sector analysis of panel B. The percentages of country relative to sector specialists range from 68.8% in the Health Care sector to 96.5% in the Technology sector. An exception is the Financial sector, which is mostly followed by sector specialists. The very high proportion of country specialists in the Technology sector is surprising. A potential explanation may rely in the fact that firms in the technology sector are mostly small capitalization stocks. As small firms tend to be more actively followed by country specialist, this may indeed explain why country specialists so sturdily dominate in the technology sector.

Table 3.2 also gives strong support to the firm size characteristic already reported at the global level. Indeed, the small firm bias of country relative to sector specialists is not peculiar to a specific country or sector. Country specialists follow smaller firms than sector specialists in every single country and sector. On average, firms followed by country specialists are three times smaller than firms followed by sector specialists.

Figure 3.1: Market cap distribution of firms followed by country and sector specialists



Firm size (in millions of EUR)					CountrySp (%)	SectorSp (%)
[	0	;	200	]	21.6	4.0
]	200	;	600	]	21.9	6.8
]	600	;	1'200	]	14.2	9.4
]	1'200	;	2'000	]	9.5	8.2
]	2'000	;	3'000	]	7.0	7.5
]	3'000	;	5'000	]	7.6	10.6
]	5'000	;	10'000	]	8.3	17.5
]	10'000	;	30'000	]	6.6	19.6
]	30'000	;	50'000	]	1.6	7.1
]	50'000	;	100'000	]	1.0	6.4
]	100'000	;	1'000'000	]	0.3	2.5
> 1'000'000					0.0	0.0

The country-by-country average distance for sector specialists ranges from 334 to a high 1349 kilometers. The average distance between sector specialists and the firms they follow is highest for Austria, Finland, and Portugal. Also, the percentage of local sector specialists is relatively low in these countries, as it is below 3.1%. To the contrary, the average distance for sector specialists in large markets such as France, Germany, and the U.K. is respectively 385, 668, and 353 kilometers. The percentage of local sector specialists is also far more important than in small markets. Altogether, this may reveal the fact that large brokerage houses are reluctant to implement business branches in small markets.

In table 3.3, we report the distribution of recommendations. We first remark that the conclusions are not much different than what is 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. This type of recommendations yet occurs slightly more often in Europe than in the U.S. as they represent 6.3% of the total number of recommendations issued over the sample period.

Our aim in constructing this table was to check whether there were significant differences in the behavior of both types of country and sector specialists. It could be that potential conflicts of interest may affect country and sector specialists differently, or that one group is more optimistic than the other. If country analysts have a better access to private information, they may be tempted to issue positively biased forecasts in order 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 analysts generally work for larger banks and brokerage houses, which are more likely to be active in the investment banking industry.

Table 3.3 indicates that there does not seem to be a difference in the behavior of the two groups of analysts. In fact, country specialists tend to issue more extreme recommendations than sector specialists. They 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.

Table 3.2: Country-by-country and sector-by-sector descriptive statistics

This table reports statistics of interest on a country-by-country (panel A) and a sector-by-sector (panel B) basis. In both panels, the second column 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 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 respectively country and sector specialists' portfolios. Columns 9 and 10 indicate the average distance (in kilometers) that separates respectively 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

Country	Total nb of Anal.	Total nb of recommendations				Av. firm size (in mio EUR)		Av. distance (in kilometers)		Perc. of local analysts (in %)	
		Ctry Spec.	(%)	Sect. Spec.	(%)	Ctry Spec.	Sect. Spec.	Ctry Spec.	Sect. Spec.	Ctry Spec.	Sect. Spec.
Austria	189	1423	71.0	582	29.0	759.8	1649.8	507	1349	55.6	0.0
Belgium	516	5399	78.1	1510	21.9	2222.1	9594.8	43	357	84.5	2.3
Denmark	401	4130	73.2	1515	26.8	9279.8	32966.9	190	629	67.9	11.3
Finland	413	6278	82.4	1337	17.6	2820.3	7501.1	138	1212	88.8	1.8
France	1816	38980	83.3	7817	16.7	3627.4	14069.1	169	385	90.6	22.2
Germany	1510	21929	76.1	6893	23.9	4829.8	14516.0	283	668	82.1	15.6
Ireland	205	598	48.7	629	51.3	1791.5	6462.1	165	531	52.2	4.1
Italy	748	8874	73.5	3198	26.5	2907.0	8413.2	225	982	84.9	2.6
Netherlands	1097	18923	82.2	4095	17.8	5560.1	17168.4	98	334	81.1	10.6
Norway	439	4918	77.6	1419	22.4	10641.7	26369.0	182	895	91.0	10.1
Portugal	259	2690	75.4	880	24.6	1234.0	5265.1	1014	1338	72.1	3.1
Spain	710	9139	72.6	3441	27.4	2967.1	11083.8	250	1101	84.5	9.7
Sweden	785	7273	69.3	3222	30.7	23873.2	48257.4	173	974	89.7	19.1
Switzerland	804	8013	69.7	3482	30.3	10336.2	41192.2	154	760	88.0	2.9
U.K.	2017	51390	79.8	13046	20.2	2425.5	11445.1	126	353	97.8	82.0
All countries	6587	189957	78.2	53066	21.8	4911.0	17152.0	176	595	87.8	41.3

Panel B

Sector	Total nb of Anal.	Total nb of recommendations				Av. firm size (in mio EUR)		Av. distance (in kilometers)		Perc. of local analysts (in %)	
		Ctry Spec.	(%)	Sect. Spec.	(%)	Ctry Spec.	Sect. Spec.	Ctry Spec.	Sect. Spec.	Ctry Spec.	Sect. Spec.
Finance	1892	15987	41.5	22540	58.5	7565.1	18205.4	153	586	89.0	41.3
Health Care	1179	8239	68.8	3732	31.2	8411.9	28476.7	199	562	87.0	40.4
Cons. Non-Dur.	1863	21144	84.4	3919	15.6	3346.0	11843.8	185	338	86.4	46.3
Cons. Services	3108	40121	85.8	6667	14.2	3479.6	7838.9	162	416	91.0	48.5
Cons. Durables	1014	7078	94.1	444	5.9	10328.1	21250.6	232	874	88.9	25.9
Energy	777	5154	72.8	1930	27.2	22322.0	54528.3	128	572	89.3	41.9
Transportation	771	5489	85.5	930	14.5	2345.3	2901.0	180	575	94.7	44.9
Technology	1539	15165	96.5	544	3.5	978.8	1118.4	170	917	91.6	39.0
Basic Industries	2311	19013	75.3	6247	24.7	3279.9	7509.3	168	871	89.4	39.8
Capital Goods	3032	44456	92.9	3397	7.1	3865.2	17580.7	178	597	89.2	39.6
Public Utilities	1285	8111	74.9	2716	25.1	13846.7	33823.5	237	993	90.0	26.5
All sectors	6587	189957	78.2	53066	21.8	4911.0	17152.0	176	595	87.8	41.3

Table 3.3: Recommendations' distribution

This table reports the distribution of stock recommendations for each type of analysts' specialization. It indicates the percentages of Strong Buys, Buys, Hold, Sell, and Strong Sell recommendations issued by all analysts (irrespective of specialization), country, and sector specialists. The last but one 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 Spec.	Sector Spec.	Diff. C.-S. Spec.	p-value
Strong Buy	18.9	20.1	15.1	5.0	0.0000
Buy	26.4	25.9	27.9	-2.0	0.0000
Hold	37.2	36.4	39.9	-3.5	0.0000
Sell	11.3	11.1	11.7	-0.6	0.0683
Strong Sell	6.3	6.5	5.4	1.1	0.0000
Total	100.0	100.0	100.0	0.0	-

3.5.2 Does the information content of recommendations depend on specialization?

Before going through the investigation of whether the information content of recommendation depends on analysts being 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 regression equation (1).

Results are presented in Table 3.4. Panel A refers to upgrades, while panel B reports results for downgrades. This table reveals the important need to control for broker size, firm size, the firms' information environment, and whether earnings announcements have been made around the recommendation release. As reported in the context of the U.S. market, the initial stock price reaction and the subsequent drift are positively related to recommendation upgrades and negatively to downgrades. The patterns are quite different, though, if one refers to upgrades or downgrades. For the former, there is an initial stock price reaction of 0.26% due to the direction of the recommendation change but no drift is apparent. To the contrary, the magnitude of the recommendation change does not appear to have any initial impact, but shows a highly significant positive abnormal return from the third to sixth month after the recommendation is issued. For recommendation downgrades, the direction seems to convey a

lot of information, which is only slowly incorporated into prices. Surprisingly, there is no significant reaction at the time of the recommendation release, but the cumulative abnormal returns in the periods [2;20], [21;60], and [61;120] are respectively –1.47%, –2.08%, and –1.23%. Consistent with large brokerage houses having more marketing resources, the initial stock price reaction is relatively stronger when the recommendation is released by an analyst working for such an institution. This confirms Stickel (1995)'s results in the context of the U.S. market. However, there is a noticeable mean reverting effect in the long run in the case of recommendation upgrades. Controlling for firm size and, to a lesser extent the number of analysts, is extremely important. For these two variables, the drift is strong and highly statistically significant. This supports the notion that the firms' information environment may play a role in the strength of market participants' reaction to newly issued recommendations. Also, there is statistically more information in recommendations that just precede earnings announcement dates. As is apparent in panel A, the market does not seem to trade on this information. The initial price reaction is nil, but there is a significant drift over the three months subsequent to the recommendation release. Among the variables aimed at capturing differences due to contemporaneous earnings announcements, *CAGE* appears to be the most significant one. Indeed, recommendations issued on the same day as earnings announcement look as if they conveyed significantly more information than recommendations issued at other times. Most probably, this result reinforces the idea that one has to control for contemporaneous earnings announcements in order to avoid the confounding effects of these two simultaneous pieces of information brought to the market.

Overall, Table 3.4 confirms that recommendations on European firms, as in the U.S. market, do convey valuable information. Also, most of the characteristics considered, which have been shown to significantly impact the information content of recommendations within the U.S. market, turn out to be significant in the European context as well. In all the regression models that we estimate in the rest of the paper, we include all of these variables as controls.

We previously discussed that analysts' portfolios were shaped by the information environment and the existence of common forces driving firm's earnings. We also argued that there were other forces at work affecting how analysts define their portfolios. If this is the case, the composition of analysts' portfolios and particularly analysts' specialization may be important in determining the relative level of information contained in stock

Table 3.4: Stock Price Reaction

This table reports the results relative to the estimation of the following model, with and without control variables:

$$CABNRET_{[t_0;t_1]} = \beta_1 \cdot RECCHG + \beta_2 \cdot MAGNIT + \gamma \cdot Controls + \varepsilon$$

The first 4 columns report results relative to the estimation of the model without control variables. The subsequent 4 columns relate to estimations including the whole set of control variables. All coefficients are expressed as percentages. $CABNRET_{[t_0;t_1]}$ is the cumulative abnormal return computed over different time windows, with values of t_0 and t_1 expressed in days. The model is successively estimated for $CABNRET_{[-1;+1]}$, $CABNRET_{[+1;+20]}$, $CABNRET_{[+21;+60]}$, and $CABNRET_{[+61;+120]}$. It is also estimated separately for recommendation upgrades and downgrades. *RECCHG* is a dummy variable that takes the value 1 if the recommendation is an upgrade or a downgrade relative to the previously issued recommendation by the same analyst on the same firm. Since the model is estimated separately for upgrades and downgrades, this variable acts as a constant term. *MAGNIT* is a dummy variable equal to 1 if the absolute value of the difference between the recommendation grade and the grade of the previously issued recommendation by the same analyst on the same firm is greater or equal to 3. The set of control variables includes: *SMALLBRK* and *LARGEBRK*. *SMALLBRK* is a dummy variable that takes the value 1 if the brokerage house the analyst works for is in the lowest size deciles and 0 otherwise. *LARGEBRK* is a dummy that is equal to 1 if the brokerage house is in the largest size deciles and 0 otherwise. *SMALLCAP* and *LARGECAP* are similarly defined for evaluated firms. *SMALLCAP* takes the value 1 if the firm is in the lowest capitalization deciles and 0 otherwise. *LARGECAP* is equal to 1 if the firm is in the largest capitalization deciles and 0 otherwise. *NUMANA* is the number of analysts having issued recommendations on the recommended firm over the last 360 days. *PAGE* is a dummy variable that takes the value 1 if the recommendation 'P'recedes an earnings announcement's date by less than 10 days and 0 otherwise. *FAGE* is a dummy variable that takes the value 1 if the recommendation 'F'ollows an earnings announcement's date by less than 10 days and 0 otherwise. *CAGE* is a dummy variable that takes the value 1 if the recommendation is issued contemporaneous (i.e. on the same day), to an earnings announcement. *ILLIQ* is the Amihud illiquidity measure. It is computed as in Amihud (2002, p. 34). We also report in the bottom of the table the p-value for the statistical test of the joint hypothesis: $\beta_1 = \beta_2 = 0$. t-statistics are reported into parenthesis below their corresponding coefficient. For readability, we also mention statistical significance at the 1%, 5%, and 10% levels with respectively ***, **, and *.

Panel A: UPGRADES

Dep. Variable	CABNRET	CABNRET20	CABNRET60	CABNRET120	CABNRET	CABNRET20	CABNRET60	CABNRET120
RECCHG	0.43 ***	0.32 ***	0.42 ***	-0.05	0.26 ***	0.36	0.37	-0.16
	(13.31)	(4.2)	(3.63)	(-0.32)	(2.4)	(1.4)	(0.87)	(-0.28)
MAGNIT	0.06	0.07	0.49	2.15 ***	0.13	0.14	0.34	2.48 ***
	(0.37)	(0.22)	(0.95)	(3.13)	(0.78)	(0.4)	(0.63)	(3.37)
SMALLBRK					-0.12	0.07	-0.02	-0.58
					(-1.1)	(0.28)	(-0.05)	(-1.08)
LARGEBRK					0.26 ***	0.33 **	0.15	-1.07 ***
					(3.68)	(2.04)	(0.6)	(-3.21)
SMALLCAP					-0.12	0.55	3.87 ***	6.57 ***
					(-0.53)	(1.05)	(4.54)	(6.01)
LARGECAP					-0.12	-0.63 ***	-1.79 ***	-2.33 ***
					(-1.44)	(-3.43)	(-6.17)	(-6.16)
Ln(NUMANA)					0.05	0.01	0.33 *	0.81 ***
					(0.92)	(0.07)	(1.75)	(3.41)
PAGE					-0.09	1.62 ***	1.24 *	-1.55
					(-0.42)	(3.5)	(1.65)	(-1.6)
FAGE					0.64 ***	0.27	0.06	-0.94
					(3.87)	(0.72)	(0.1)	(-1.32)
CAGE					1.33 ***	1.97 **	2.19 *	-1.99
					(2.52)	(2.27)	(1.87)	(-1.28)
ILLIQ					0.08 *	-0.07	-0.12	-0.35 *
					(1.77)	(-0.66)	(-0.72)	(-1.68)
p-value (β_1=0, β_2=0)					*0.0369*	*0.3386*	*0.5449*	*0.0034*
Adj-R^2	-0.01%	-0.01%	0.00%	0.06%	0.33%	0.23%	0.67%	0.98%
Nb Obs.	15068	15061	14876	14453	14076	14069	13884	13461

Panel B: DOWNGRADES

Dep. Variable	CABNRET	CABNRET20	CABNRET60	CABNRET120	CABNRET	CABNRET20	CABNRET60	CABNRET120
RECCHG	-0.34 ***	-0.37 ***	-0.26 **	-0.10	-0.11	-1.47 ***	-2.08 ***	-1.23 *
	(-10.62)	(-4.67)	(-2.12)	(-0.64)	(-0.99)	(-4.85)	(-4.13)	(-1.79)
MAGNIT	-0.07	-0.19	-0.44	-0.21	-0.05	-0.30	-0.60	-0.50
	(-0.39)	(-0.47)	(-0.65)	(-0.26)	(-0.26)	(-0.71)	(-0.84)	(-0.59)
SMALLBRK					0.10	0.28	0.18	-0.10
					(0.96)	(0.98)	(0.44)	(-0.18)
LARGEBRK					-0.18 ***	-0.16	-0.13	-0.63 *
					(-2.5)	(-0.94)	(-0.48)	(-1.8)
SMALLCAP					-0.03	2.23 ***	4.87 ***	8.95 ***
					(-0.14)	(4.05)	(5.57)	(7.99)
LARGECAP					0.13 *	-0.44 **	-1.21 ***	-2.08 ***
					(1.68)	(-2.19)	(-3.7)	(-4.76)
Ln(NUMANA)					-0.10 **	0.59 ***	1.03 ***	1.09 ***
					(-2.09)	(4.44)	(4.6)	(3.59)
PAGE					0.09	0.38	1.38 *	-1.25
					(0.38)	(0.72)	(1.87)	(-1.25)
FAGE					-0.20	0.93 ***	1.01	-0.14
					(-1.05)	(2.36)	(1.54)	(-0.16)
CAGE					0.15	-0.74	1.83	-5.34 ***
					(0.27)	(-0.7)	(1.51)	(-2.74)
ILLIQ					-0.03	-0.16	-0.17	-0.73 ***
					(-0.61)	(-1.57)	(-1.05)	(-3.62)
p-value (β_1=0, β_2=0)					*0.5779*	*0.0000*	*0.0001*	*0.1486*
Adj-R^2	-0.01%	0.00%	0.00%	-0.01%	0.05%	0.35%	0.60%	1.17%
Nb Obs.	15610	15604	15486	15086	14572	14568	14450	14049

recommendations. Actually, we expect that recommendations issued by analysts whose portfolios benefit most from the existence of commonalities among firms are those that are more informative of the true value of the firm. Having shown that European stock recommendations significantly impact prices, we now turn to the analysis of whether recommendations issued by country and sector specialists provide investors with differing levels of information.

In order to test for the information content of recommendations depending on analysts' specialization, we estimate regression equation (2). Table 3.5 panels A and B presents the results for upgrades and downgrades respectively. These two panels show that, in both cases of upgrades and downgrades, the initial stock price reaction does not depend on whether the recommendation was issued by a country or a sector specialist. Thus, the market does not react significantly differently to recommendations issued by country and by sector specialists at the time of the recommendation release. However, we observe that the price continues to drift only for recommendations that are issued by country specialists. For upgrades, the magnitude of the recommendation change seems to be driven by the additional information brought by country specialists. In the case of downgrades, the only statistical difference relates to the direction of the revision. Economically, the additional drift related to the magnitude of recommendation downgrades issued by country specialists is large. Though, it is not statistically significant.[50]

Country specialists bring additional information that is not incorporated into prices at the time of the recommendation release. 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, which is slowly incorporated into prices. This delayed price response could be due to 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 that one could draw from exploiting the information. It is not possible for us to distinguish between these two possible explanations and it is beyond the scope of the paper. What we rule out is the possibility that the price drift is due to a change in

[50] All of our results hold when the regressions are estimated using a Jacknife procedure, which we implemented as a robustness check.

Table 3.5: Country versus Sector Specialization and Stock Price Reaction

This table reports the results relative to the estimation of the following model:

$$CABNRET_{[t_0;t_1]} = \beta_1 \cdot RECCHG + \delta_1 \cdot RECCHG \cdot COUNTRYSP + \beta_2 \cdot MAGNIT + \delta_2 \cdot MAGNIT \cdot COUNTRYSP + \gamma \cdot Controls + \varepsilon$$

All the coefficients reported in the table are expressed as percentages. $CABNRET_{[t_0;t_1]}$ is the cumulative abnormal return computed over different time windows, with values of t_0 and t_1 expressed in days. The model is successively estimated for $CABNRET_{[-1;+1]}$, $CABNRET_{[+1;+20]}$, $CABNRET_{[+21;+60]}$, and $CABNRET_{[+61;+120]}$. It is also estimated separately for recommendation upgrades and downgrades. *RECCHG* is a dummy variable that takes the value 1 if the recommendation is an upgrade or a downgrade relative to the previously issued recommendation by the same analyst on the same firm. Since the model is estimated separately for upgrades and downgrades, this variable acts as a constant term. *MAGNIT* is a dummy variable equal to 1 if the absolute value of the difference between the recommendation grade and the grade of the previously issued recommendation by the same analyst on the same firm is greater or equal to 3. *COUNTRYSP* is a dummy variable that takes the value 1 if the analyst is a country-specialized financial analyst and zero otherwise. The set of control variables includes: *SMALLBRK* and *LARGEBRK*. *SMALLBRK* is a dummy variable that takes the value 1 if the brokerage house the analyst works for is in the lowest size deciles and 0 otherwise. *LARGEBRK* is a dummy that is equal to 1 if the brokerage house is in the largest size deciles and 0 otherwise. *SMALLCAP* and *LARGECAP* are similarly defined for evaluated firms. *SMALLCAP* takes the value 1 if the firm is in the lowest capitalization deciles and 0 otherwise. *LARGECAP* is equal to 1 if the firm is in the largest capitalization deciles and 0 otherwise. *NUMANA* is the number of analysts having issued recommendations on the recommended firm over the last 360 days. *PAGE* is a dummy variable that takes the value 1 if the recommendation 'P'recedes an earnings announcement's date by less than 10 days and 0 otherwise. *FAGE* is a dummy variable that takes the value 1 if the recommendation 'F'ollows an earnings announcement's date by less than 10 days and 0 otherwise. *CAGE* is a dummy variable that takes the value 1 if the recommendation is issued contemporaneous (i.e. on the same day), to an earnings announcement. *ILLIQ* is the Amihud illiquidity measure. It is computed as in Amihud (2002, p. 34). We also report in the bottom of the table the p-value for the statistical tests of the joint hypotheses: $\beta_1 = \beta_2 = 0$ and $\delta_1 = \delta_2 = 0$. t-statistics are reported into parenthesis below their corresponding coefficient. For readability, we also mention statistical significance at the 1%, 5%, and 10% levels with respectively ***, **, and *.

Panel A: UPGRADES

Dep. Variable	CABNRET	CABNRET20	CABNRET60	CABNRET120
RECCHG	0.39 ***	0.24	0.21	0.18
	(2.66)	(0.73)	(0.39)	(0.25)
RECCHG×COUNTRYSP	-0.11	0.10	0.12	-0.35
	(-1.33)	(0.51)	(0.41)	(-0.89)
MAGNIT	-0.17	-0.55	-1.70 *	-0.68
	(-0.54)	(-0.81)	(-1.88)	(-0.48)
MAGNIT×COUNTRYSP	0.38	0.87	2.60 ***	4.01 ***
	(1.03)	(1.1)	(2.34)	(2.42)
SMALLBRK	-0.10	0.05	-0.06	-0.56
	(-0.98)	(0.2)	(-0.14)	(-1.04)
LARGEBRK	0.24 ***	0.35 **	0.18	-1.13 ***
	(3.22)	(2.09)	(0.69)	(-3.23)
SMALLCAP	-0.12	0.56	3.88 ***	6.56 ***
	(-0.54)	(1.06)	(4.55)	(6)
LARGECAP	-0.13	-0.61 ***	-1.75 ***	-2.36 ***
	(-1.62)	(-3.24)	(-5.91)	(-6.16)
Ln(NUMANA)	0.04	0.02	0.35 *	0.80 ***
	(0.75)	(0.17)	(1.85)	(3.32)
PAGE	-0.09	1.61 ***	1.21	-1.58
	(-0.43)	(3.48)	(1.62)	(-1.63)
FAGE	0.64 ***	0.26	0.06	-0.95
	(3.86)	(0.72)	(0.1)	(-1.34)
CAGE	1.33 ***	1.98 **	2.20 *	-1.96
	(2.52)	(2.28)	(1.89)	(-1.27)
ILLIQ	0.08 *	-0.07	-0.12	-0.35 *
	(1.79)	(-0.67)	(-0.74)	(-1.67)
p-value (β_1=0, β_2=0)	*0.0289*	*0.5862*	*0.1699*	*0.8753*
p-value (δ_1=0, δ_2=0)	*0.3087*	*0.4112*	*0.0397*	*0.0496*
Adj-R^2	0.33%	0.23%	0.68%	1.00%
Nb Obs.	14076	14069	13884	13461

Panel B: DOWNGRADES

Dep. Variable	CABNRET	CABNRET20	CABNRET60	CABNRET120
RECCHG	-0.04	-0.99 ***	-1.20 **	-0.76
	(-0.3)	(-2.69)	(-2.03)	(-0.97)
RECCHG×COUNTRYSP	-0.06	-0.43 **	-0.80 ***	-0.42
	(-0.69)	(-2.13)	(-2.66)	(-1.08)
MAGNIT	0.48	0.54	1.41	-0.04
	(1.32)	(0.69)	(1.08)	(-0.02)
MAGNIT×COUNTRYSP	-0.64	-1.00	-2.40	-0.53
	(-1.51)	(-1.08)	(-1.55)	(-0.27)
SMALLBRK	0.11	0.34	0.32	-0.03
	(1.07)	(1.21)	(0.75)	(-0.06)
LARGEBRK	-0.19 ***	-0.25	-0.29	-0.72 **
	(-2.56)	(-1.4)	(-1.04)	(-1.97)
SMALLCAP	-0.03	2.23 ***	4.87 ***	8.95 ***
	(-0.14)	(4.05)	(5.57)	(7.98)
LARGECAP	0.12	-0.54 ***	-1.39 ***	-2.16 ***
	(1.44)	(-2.59)	(-4.16)	(-4.85)
Ln(NUMANA)	-0.11 **	0.55 ***	0.96 ***	1.05 ***
	(-2.18)	(4.16)	(4.31)	(3.48)
PAGE	0.09	0.38	1.39 *	-1.25
	(0.39)	(0.73)	(1.88)	(-1.25)
FAGE	-0.19	0.94 ***	1.03	-0.14
	(-1.03)	(2.38)	(1.56)	(-0.16)
CAGE	0.15	-0.74	1.84	-5.33 ***
	(0.27)	(-0.69)	(1.52)	(-2.74)
ILLIQ	-0.03	-0.16	-0.17	-0.73 ***
	(-0.6)	(-1.54)	(-1.01)	(-3.6)
p-value (β_1=0, β_2=0)	*0.4120*	*0.0250*	*0.0869*	*0.6218*
p-value (δ_1=0, δ_2=0)	*0.1922*	*0.0333*	*0.0038*	*0.4993*
Adj-R^2	0.06%	0.37%	0.66%	1.16%
Nb Obs.	14572	14568	14450	14049

the underlying risk since the delayed price reaction is related to the type of analyst and not to the type of firm. Indeed, results remain similar when one restricts the sample to the subset of firms that are followed by both country and sector specialists.

3.6 Explaining the differential information content

In the previous section, we documented that country specialists issue more valuable recommendations than sector specialists. This result could be attributed to the existence of commonalities across firms that are followed by country analysts. It could also be due to economies of scale that they draw when evaluating country factors. In particular, country factors may stem from particularities in institutional, accounting, fiscal, legal, or cultural aspects that make countries to differ. Advantages linked to geographical location could also provide country specialists with the opportunity of producing higher quality recommendations. In what follows, we explore these possibilities.

In order to do so, we expand our initial model in the following way:

$$\begin{aligned} CABNRET_{[t_0;t_1]} = {} & \beta_1 \cdot RECCHG \\ & + \delta_1 \cdot RECCHG \cdot COUNTRYSP + \zeta_1 \cdot RECCHG \cdot COUNTRYSP \cdot FACTOR \\ & + \beta_2 \cdot MAGNIT \\ & + \delta_2 \cdot MAGNIT \cdot COUNTRYSP + \zeta_2 \cdot MAGNIT \cdot COUNTRYSP \cdot FACTOR \\ & + \gamma \cdot Controls + \varepsilon \end{aligned}$$

where *FACTOR* relates to the different variables we will consider as potential explanatory factors. As in previous sections, we estimate the model separately for recommendation upgrades and downgrades. This approach allows us to test whether the comparative advantage of country specialists is most apparent in certain institutional settings, or relates to specific analyst characteristics. We hypothesize that country specialists may draw this advantage from recommendations on firms located in countries with poorer institutions, because they benefit from a physical location advantage, or because they focus on firms headquartered in countries with strong national-specific forces. One therefore states our null hypothesis as $H_0 : \zeta_1 = \zeta_2 = 0$.

3.6.1 Institutional Factors

High quality institutional structures (i.e. high quality disclosure and legal system, good governance, etc.) have a positive impact on the information environment and may require less country specific knowledge.[51] A system with high quality institutions is consistent with improved corporate governance and greater disclosure and transparency. It could be that high quality institutions (quality disclosure and corporate governance) impact the economies of scale that can be drawn by specialization and a good understanding of country institutions. Another possibility is that better disclosure and governance implies 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 largest 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 to understand 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. 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 relative to the market diminishes. If these institutional particularities play a role in the way that analysts can process information and benefit from economies of scale, then we expect to find that the information advantage of country over sector specialists occur 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 that we have documented. Following the corporate governance literature, we define a variable *PROT* as a measure for the quality of legal protection offered to minority investors in a given country. It is the anti-director rights index as presented in La Porta et al. (1998). 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 *ACTG* index produced

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

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.[52] Specifically, we define a "low protection" (*LOWPROT*) dummy variable that equals 1 if the anti-director rights index is below the sample median value and 0 otherwise. We also define a dummy variable for low disclosure, *LOWACTG*, which equals 1 if the *ACTG* index is below the sample median and 0 otherwise. Also, we consider total market capitalization as a proxy that captures the extent to which each specific country's financial market is developed. This variable has been widely used to proxy for the quality of the information environment. We divide our sample into high and low national market capitalization, and set the dummy variable *LOWMKTSIZE* equal to 1 if market capitalization is below the median and zero otherwise. Therefore, we successively set *FACTOR = LOWACTG, LOWPROT, and LOWMKTSIZE*.

Results are presented in Table 3.6, panels A and B. Once again, panel A presents results relative to upgrades, while downgrades are apparent in panel B. Also, we do not report the coefficients on control variables to avoid presenting extensive tables. Referring to estimations relative to both accounting index and to anti-director rights, we first remark that the initial stock price reaction does not depend on whether recommendations are issued in high or low accounting index or anti-director right countries. In fact, the overall information content of stock recommendations issued by country specialists is similar in countries with high and low quality of institutions. Indeed, none of the coefficients on *LOWACTG* and LOW*PROT* is statistically significant in the post recommendation periods. Country specialists issue more valuable stock recommendations in both low accounting standards and low shareholder protection countries, and none of this outperformance can be explained on this dimension.

The last section in both panels focus on the breakdown according to the stock market capitalization of the country where the firm is located. This can be considered as 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 drag benefits from commonalities that may supposedly be large. Results show that,

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

Table 3.6: Institutional Factors

This table reports the results relative to the estimation of the following model:

$$CABNRET_{[t_0;t_1]} = \beta_1 \cdot RECCHG + \delta_1 \cdot RECCHG \cdot COUNTRYSP + \zeta_1 \cdot RECCHG \cdot COUNTRYSP \cdot FACTOR + \beta_2 \cdot MAGNIT + \delta_2 \cdot MAGNIT \cdot COUNTRYSP + \zeta_2 \cdot MAGNIT \cdot COUNTRYSP \cdot FACTOR + \gamma \cdot Controls + \varepsilon$$

All the coefficients reported in the table are expressed as percentages. $CABNRET_{[t_0;t_1]}$ is the cumulative abnormal return computed over different time windows, with values of t_0 and t_1 expressed in days. The model is successively estimated for $CABNRET_{[-1;+1]}$, $CABNRET_{[+1;+20]}$, $CABNRET_{[+21;+60]}$, and $CABNRET_{[+61;+120]}$. It is also estimated separately for recommendation upgrades and downgrades. *RECCHG* is a dummy variable that takes the value 1 if the recommendation is an upgrade or a downgrade relative to the previously issued recommendation by the same analyst on the same firm. Since the model is estimated separately for upgrades and downgrades, this variable acts as a constant term. *MAGNIT* is a dummy variable equal to 1 if the absolute value of the difference between the recommendation grade and the grade of the previously issued recommendation by the same analyst on the same firm is greater or equal to 3. *COUNTRYSP* is a dummy variable that takes the value 1 if the analyst is a country-specialized financial analyst and zero otherwise. *FACTOR* is successively set equal *LOWACTG*, *LOWPROT*, and *LOWMKTSIZE*. The table is split into three parts, each of them relating to one of these three variables. *LOWACTG* is a dummy variable equal to one if the recommended firm is headquartered in a country with a level of accounting standards' quality below its sample median (i.e. low quality accounting standards country). *LOWPROT* is a dummy variable equal to one if the recommended firm is headquartered in a country with a level of minority shareholder protection below its sample median (i.e. low protection countries). *LOWMKTSIZE* is a dummy variable equal to one if the recommended firm is headquartered in a country whose total market capitalization is below the sample median (i.e. smallest national markets) The whole set of control variables is included in the model, but results are not presented for succinctness. We also report in the bottom of every part of the table the p-value for the statistical tests of the joint hypotheses: $\zeta_1 = \zeta_2 = 0$. t-statistics are reported into parenthesis below their corresponding coefficient. For readability, we also mention statistical significance at the 1%, 5%, and 10% levels with respectively ***, **, and *.

Panel A: UPGRADES

Dep. Variable	CABNRET	CABNRET20	CABNRET60	CABNRET120
Low Accounting Standards				
RECCHG	0.38 ***	0.23	0.23	0.19
	(2.62)	(0.68)	(0.43)	(0.27)
RECCHG×COUNTRYSP	-0.07	0.19	-0.04	-0.45
	(-0.77)	(0.94)	(-0.11)	(-1.1)
RECCHG×COUNTRYSP×LOWACTG	-0.13	-0.28	0.46	0.32
	(-1.55)	(-1.45)	(1.55)	(0.81)
MAGNIT	-0.18	-0.56	-1.69 *	-0.68
	(-0.55)	(-0.82)	(-1.87)	(-0.47)
MAGNIT×COUNTRYSP	0.28	0.92	2.80 **	3.85 **
	(0.7)	(1.08)	(2.29)	(2.17)
MAGNIT×COUNTRYSP×LOWACTG	0.30	-0.15	-0.59	0.50
	(0.79)	(-0.19)	(-0.45)	(0.29)
p-value(ζ_1=0, ζ_2=0)	*0.2681*	*0.3053*	*0.2968*	*0.6421*
Low Shareholder Protection				
RECCHG	0.39 ***	0.24	0.20	0.17
	(2.66)	(0.73)	(0.38)	(0.24)
RECCHG×COUNTRYSP	-0.10	0.12	-0.01	-0.39
	(-1.06)	(0.58)	(-0.02)	(-0.97)
RECCHG×COUNTRYSP×LOWPROT	-0.07	-0.06	0.44	0.17
	(-0.76)	(-0.32)	(1.45)	(0.42)
MAGNIT	-0.17	-0.55	-1.69 *	-0.68
	(-0.55)	(-0.81)	(-1.86)	(-0.48)
MAGNIT×COUNTRYSP	0.36	0.84	2.45 **	3.88 **
	(0.92)	(1)	(2.04)	(2.22)
MAGNIT×COUNTRYSP×LOWPROT	0.07	0.10	0.57	0.50
	(0.18)	(0.12)	(0.42)	(0.27)
p-value(ζ_1=0, ζ_2=0)	*0.7485*	*0.9493*	*0.2637*	*0.8567*
Small National Markets				
RECCHG	0.34 ***	0.18	0.07	0.14
	(2.35)	(0.53)	(0.12)	(0.19)
RECCHG×COUNTRYSP	-0.14	0.06	0.04	-0.39
	(-1.61)	(0.32)	(0.15)	(-0.99)
RECCHG×COUNTRYSP×LOWMKTSIZE	0.28 ***	0.42	0.88 **	0.42
	(2.35)	(1.58)	(2.13)	(0.75)
MAGNIT	-0.17	-0.54	-1.69 *	-0.68
	(-0.53)	(-0.8)	(-1.86)	(-0.48)
MAGNIT×COUNTRYSP	0.30	0.69	2.22 *	4.48 ***
	(0.8)	(0.85)	(1.95)	(2.63)
MAGNIT×COUNTRYSP×LOWMKTSIZE	0.51	1.16	2.51	-3.33
	(0.96)	(1.08)	(1.39)	(-1.58)
p-value(ζ_1=0, ζ_2=0)	*0.0203*	*0.0953*	*0.0174*	*0.2694*

Panel B: DOWNGRADES

Dep. Variable	CABNRET	CABNRET20	CABNRET60	CABNRET120
Low Accounting Standards				
RECCHG	-0.05	-1.03 ***	-1.23 **	-0.78
	(-0.35)	(-2.77)	(-2.07)	(-0.98)
RECCHG×COUNTRYSP	-0.02	-0.29	-0.70 **	-0.38
	(-0.24)	(-1.34)	(-2.18)	(-0.91)
RECCHG×COUNTRYSP×LOWACTG	-0.10	-0.40 *	-0.27	-0.12
	(-1.22)	(-1.89)	(-0.82)	(-0.28)
MAGNIT	0.48	0.54	1.41	-0.04
	(1.32)	(0.68)	(1.08)	(-0.03)
MAGNIT×COUNTRYSP	-0.76 *	-0.81	-1.71	-0.27
	(-1.68)	(-0.8)	(-1.02)	(-0.13)
MAGNIT×COUNTRYSP×LOWACTG	0.33	-0.52	-1.87	-0.71
	(0.71)	(-0.52)	(-1.11)	(-0.36)
p-value(ζ_1=0, ζ_2=0)	*0.4212*	*0.1084*	*0.3093*	*0.8772*
Low Shareholder Protection				
RECCHG	-0.05	-1.00 ***	-1.19 **	-0.76
	(-0.31)	(-2.7)	(-2.02)	(-0.96)
RECCHG×COUNTRYSP	-0.04	-0.32	-0.80 ***	-0.40
	(-0.42)	(-1.51)	(-2.53)	(-0.98)
RECCHG×COUNTRYSP×LOWPROT	-0.07	-0.36 *	0.00	-0.09
	(-0.79)	(-1.66)	(-0.01)	(-0.19)
MAGNIT	0.48	0.53	1.41	-0.05
	(1.32)	(0.67)	(1.08)	(-0.03)
MAGNIT×COUNTRYSP	-0.61	-0.65	-1.86	-0.15
	(-1.38)	(-0.66)	(-1.14)	(-0.07)
MAGNIT×COUNTRYSP×LOWPROT	-0.10	-1.17	-1.75	-1.24
	(-0.2)	(-1.11)	(-0.98)	(-0.59)
p-value(ζ_1=0, ζ_2=0)	*0.6872*	*0.0843*	*0.6042*	*0.7977*
Small National Markets				
RECCHG	-0.02	-0.97 ***	-1.16 **	-0.79
	(-0.15)	(-2.64)	(-1.99)	(-1.02)
RECCHG×COUNTRYSP	-0.04	-0.40 **	-0.77 ***	-0.46
	(-0.41)	(-1.98)	(-2.56)	(-1.16)
RECCHG×COUNTRYSP×LOWMKTSIZE	-0.22 *	-0.23	-0.28	0.29
	(-1.84)	(-0.78)	(-0.57)	(0.44)
MAGNIT	0.48	0.54	1.41	-0.04
	(1.31)	(0.68)	(1.07)	(-0.02)
MAGNIT×COUNTRYSP	-0.71	-1.24	-2.15	-0.26
	(-1.63)	(-1.3)	(-1.37)	(-0.13)
MAGNIT×COUNTRYSP×LOWMKTSIZE	0.46	1.37	-1.25	-1.56
	(0.8)	(0.98)	(-0.53)	(-0.57)
p-value(ζ_1=0, ζ_2=0)	*0.1654*	*0.5206*	*0.6857*	*0.8092*

mostly for upgrades, the information content of recommendations issued by country specialists is more pronounced in small markets. Interestingly, investors seem to rely more on recommendations issued by country specialists in these markets, as the initial stock price reaction is significantly more positive after a recommendation upgrade released by a country specialist in a small market. There is also some evidence of a post-recommendation drift, with a statistically significant coefficient of 0.88% in the [+21;+60] period.

Overall, these results suggest that institutional factors may explain part, but not all, of the informational advantage of country specialists over sector specialists. Results relative to the quality of accounting standards and shareholder protection do not show any significance. This should not come as a surprise. European markets are to some extent similar in this respect. For instance, all firms within European Union now have to produce their financial reports according to the IFRS standards. Yet, country specialists issue more informative recommendations in small countries. Overall, it does not provide a complete explanation for the comparative advantage of country specialists, as the information content of stock recommendations issued by country specialists remains higher than for sector specialists even in large markets.

3.6.2 Proximity Factors

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 worldwide countries, their results show that local analysts issue on average more accurate earnings forecasts than their foreign peers.[53] In the context of European markets, Orpurt (2003) reports a similar result. Malloy (2005) studies the difference of accuracy between analysts located close to the firms they follow and those located further away. He concludes that, within the U.S., geographically proximate analysts issue on average more accurate earnings forecasts. While Malloy focuses on physical proximity and uses measures that capture distance between analysts and firms, Bae et al. (2005) and Orpurt (2003) focus on different measures of proximity; that is, local versus foreign analysts. Being local reflects not

[53] While this is true on average for the 32 considered countries, their results are not supportive of a local advantage for the European countries in their sample. However, one cannot draw any conclusive evidence for this result as their sample is restricted to a very short and specific time-period: 2001-2003.

only physical proximity but also other dimensions of proximity such as cultural, economic or institutional. These papers do not target to evaluate which dimension of proximity is relevant, probably because data availability on physical distance is 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, based on whether they are located within the same country as the firms they follow, or they are located abroad. These two geographical dimensions do not have the same implications in terms of sources of information advantage. In the first case, analysts may have a better access to private information, as they are located close to the firms' headquarters. They can visit the firm on regular basis and build solid relationships with firms' management. In the second case, the advantage that local analysts may have is more likely related to a better knowledge of country characteristics. One may think of language, fiscal policies, regulations, 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. In order to compute the variables that relate to these two geographical dimensions, we proceed as follows. We first take from I/B/E/S analysts' names and the brokerage house 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.[54] We define a dummy variable called *LOWDIST* that equals 1 if the analyst is located less than 100 kilometers away from the firm and 0 otherwise.[55] 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 compute *LOCAL*, a dummy variable that equals 1 if the analyst and the firm are located in the same country and 0 otherwise.

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

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

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

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

Results for upgrades and downgrades are reported in Table 3.7, panels A and B respectively. Surprisingly, within country location does not appear as a potential explanation for the outperformance of country specialists. At a first sight, it may even appear as a disadvantage. Indeed, results in panel A report a large negative drift of –2.45% over the time-window [+21;+60] related to the direction of the recommendation revision. Though, coefficients on the magnitude of recommendation revisions are economically large and of the expected sign in both the upgrade and downgrade case. They are respectively 0.67%, 1.87%, 1.17%, and 5.38% over the four successive time-windows for upgrades and –0.56%, –0.18%, –2.68%, and –5.38% in the downgrade case. The lack of statistical significance of these results may come from the strong reduction in size of the sample, coupled with the fact that only a small proportion of country specialists are located abroad.

Results relative to proximity, as defined by analysts being located geographically close to the firms, also lack of statistical significance. They certainly suffer from the same data availability problem. As such, they do not seem to be a source of advantage. Both proximate and more distant country specialists outperform sector specialists. Also, the coefficients on these two types of country specialists are close to each other in all of the four time periods.

3.6.3 Country Factors

Country factors represent common economic forces driving firms' future earnings beyond those only related 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 from stock index returns "pure" country factors. This methodology 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 is 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 the median country factor are classified as high country factor recommendations. The dummy variable *HIGHFACTOR* takes the value 1 for recommendations issued in these countries and 0 otherwise.

Table 3.7: Proximity Factors

This table reports the results relative to the estimation of the following model:

$$CABNRET_{[t_0;t_1]} = \beta_1 \cdot RECCHG + \delta_1 \cdot RECCHG \cdot COUNTRYSP + \zeta_1 \cdot RECCHG \cdot COUNTRYSP \cdot FACTOR + \beta_2 \cdot MAGNIT + \delta_2 \cdot MAGNIT \cdot COUNTRYSP + \zeta_2 \cdot MAGNIT \cdot COUNTRYSP \cdot FACTOR + \gamma \cdot Controls + \varepsilon$$

All the coefficients reported in the table are expressed as percentages. $CABNRET_{[t_0;t_1]}$ is the cumulative abnormal return computed over different time windows, with values of t_0 and t_1 expressed in days. The model is successively estimated for $CABNRET_{[-1;+1]}$, $CABNRET_{[+1;+20]}$, $CABNRET_{[+21;+60]}$, and $CABNRET_{[+61;+120]}$. It is also estimated separately for recommendation upgrades and downgrades. *RECCHG* is a dummy variable that takes the value 1 if the recommendation is an upgrade or a downgrade relative to the previously issued recommendation by the same analyst on the same firm. Since the model is estimated separately for upgrades and downgrades, this variable acts as a constant term. *MAGNIT* is a dummy variable equal to 1 if the absolute value of the difference between the recommendation grade and the grade of the previously issued recommendation by the same analyst on the same firm is greater or equal to 3. *COUNTRYSP* is a dummy variable that takes the value 1 if the analyst is a country-specialized financial analyst and zero otherwise. *FACTOR* is successively set equal *LOCAL* and *LOWDIST*. The table is split into two parts, each of them relating to one of these two variables. *LOCAL* is a dummy variable equal to one if the analyst is located within the same country as the recommended firm. *LOWDIST* is a dummy variable equal to one if the analyst is located less than 100 kilometers away from the recommended firm. The whole set of control variables is included in the model, but results are not presented for succinctness. We also report in the bottom of every part of the table the p-value for the statistical tests of the joint hypotheses: $\zeta_1 = \zeta_2 = 0$. t-statistics are reported into parenthesis below their corresponding coefficient. For readability, we also mention statistical significance at the 1%, 5%, and 10% levels with respectively ***, **, and *.

Panel A: UPGRADES

Dep. Variable	CABNRET	CABNRET20	CABNRET60	CABNRET120
Local Analysts				
RECCHG	0.53 ***	0.36	-0.05	0.70
	(2.53)	(0.75)	(-0.07)	(0.66)
RECCHG×COUNTRYSP	-0.02	0.16	2.62 ***	-0.22
	(-0.06)	(0.22)	(2.38)	(-0.16)
RECCHG×COUNTRYSP×LOCAL	-0.06	0.12	-2.45 **	-0.29
	(-0.19)	(0.17)	(-2.21)	(-0.21)
MAGNIT	-0.17	-0.70	-1.12	-0.33
	(-0.4)	(-0.73)	(-0.93)	(-0.16)
MAGNIT×COUNTRYSP	-0.50	-1.43	0.68	-0.39
	(-0.4)	(-0.52)	(0.12)	(-0.08)
MAGNIT×COUNTRYSP×LOCAL	0.67	1.87	1.17	5.38
	(0.56)	(0.7)	(0.21)	(1.13)
p-value(ζ_1=0, ζ_2=0)	*0.8548*	*0.7302*	*0.0850*	*0.5228*
Proximate Analysts				
RECCHG	0.45 **	0.23	-0.31	0.29
	(2.08)	(0.47)	(-0.38)	(0.28)
RECCHG×COUNTRYSP	-0.07	0.10	0.28	-0.31
	(-0.45)	(0.31)	(0.54)	(-0.46)
RECCHG×COUNTRYSP×LOWDIST	0.14	0.29	0.00	0.25
	(1.08)	(0.95)	(0.01)	(0.38)
MAGNIT	0.14	-0.83	-0.54	-0.56
	(0.34)	(-0.81)	(-0.46)	(-0.27)
MAGNIT×COUNTRYSP	-0.62	-0.15	2.37	1.73
	(-0.95)	(-0.1)	(1.18)	(0.57)
MAGNIT×COUNTRYSP×LOWDIST	0.69	0.79	-1.79	5.24 *
	(1.09)	(0.59)	(-0.84)	(1.84)
p-value(ζ_1=0, ζ_2=0)	*0.2302*	*0.4533*	*0.6919*	*0.1319*

Panel B: DOWNGRADES

Dep. Variable	CABNRET	CABNRET20	CABNRET60	CABNRET120
Local Analysts				
RECCHG	-0.18	-1.26 **	-0.82	-1.35
	(-0.79)	(-2.26)	(-0.91)	(-1.1)
RECCHG×COUNTRYSP	-0.10	-0.49	-0.85	-1.39
	(-0.37)	(-0.67)	(-0.87)	(-1.05)
RECCHG×COUNTRYSP×LOCAL	-0.02	0.13	-0.29	0.75
	(-0.08)	(0.18)	(-0.3)	(0.56)
MAGNIT	0.97 *	0.46	2.28	-0.17
	(1.95)	(0.42)	(1.4)	(-0.07)
MAGNIT×COUNTRYSP	-0.47	-0.81	-1.91	4.14
	(-0.45)	(-0.4)	(-0.82)	(1.05)
MAGNIT×COUNTRYSP×LOCAL	-0.56	-0.18	-2.68	-5.38
	(-0.57)	(-0.1)	(-1.25)	(-1.52)
p-value(ζ_1=0, ζ_2=0)	*0.8228*	*0.9837*	*0.2953*	*0.3161*
Proximate Analysts				
RECCHG	-0.17	-1.24 **	-1.35	-1.10
	(-0.72)	(-2.1)	(-1.41)	(-0.84)
RECCHG×COUNTRYSP	-0.13	-0.68 *	-1.14 **	-1.34 *
	(-0.87)	(-1.93)	(-2.06)	(-1.84)
RECCHG×COUNTRYSP×LOWDIST	0.00	0.45	0.25	1.19 *
	(-0.01)	(1.33)	(0.47)	(1.66)
MAGNIT	1.02 *	1.10	1.81	-0.17
	(1.9)	(1.06)	(1.08)	(-0.07)
MAGNIT×COUNTRYSP	-1.63 **	-0.80	-3.77	-2.51
	(-2.19)	(-0.55)	(-1.52)	(-0.8)
MAGNIT×COUNTRYSP×LOWDIST	1.05	-1.52	-0.64	1.77
	(1.57)	(-1.04)	(-0.25)	(0.61)
p-value(ζ_1=0, ζ_2=0)	*0.2766*	*0.3104*	*0.8851*	*0.1492*

Table 3.8: Country Factors

This table reports the results relative to the estimation of the following model:

$$CABNRET_{[t_0;t_1]} = \beta_1 \cdot RECCHG + \delta_1 \cdot RECCHG \cdot COUNTRYSP + \zeta_1 \cdot RECCHG \cdot COUNTRYSP \cdot FACTOR + \beta_2 \cdot MAGNIT + \delta_2 \cdot MAGNIT \cdot COUNTRYSP + \zeta_2 \cdot MAGNIT \cdot COUNTRYSP \cdot FACTOR + \gamma \cdot Controls + \varepsilon$$

All the coefficients reported in the table are expressed as percentages. $CABNRET_{[t_0;t_1]}$ is the cumulative abnormal return computed over different time windows, with values of t_0 and t_1 expressed in days. The model is successively estimated for $CABNRET_{[-1;+1]}$, $CABNRET_{[+1;+20]}$, $CABNRET_{[+21;+60]}$, and $CABNRET_{[+61;+120]}$. It is also estimated separately for recommendation upgrades and downgrades. *RECCHG* is a dummy variable that takes the value 1 if the recommendation is an upgrade or a downgrade relative to the previously issued recommendation by the same analyst on the same firm. Since the model is estimated separately for upgrades and downgrades, this variable acts as a constant term. *MAGNIT* is a dummy variable equal to 1 if the absolute value of the difference between the recommendation grade and the grade of the previously issued recommendation by the same analyst on the same firm is greater or equal to 3. *COUNTRYSP* is a dummy variable that takes the value 1 if the analyst is a country-specialized financial analyst and zero otherwise. *FACTOR* is here set equal *HIGHFACTOR*, which is a dummy variable equal to one if the recommended firm is headquartered in a country with a level of country-specific factors above the sample median value of country-specific factors. The whole set of control variables is included in the model, but results are not presented for succinctness. We also report in the bottom of every part of the table the p-value for the statistical tests of the joint hypotheses: $\zeta_1 = \zeta_2 = 0$. t-statistics are reported into parenthesis below their corresponding coefficient. For readability, we also mention statistical significance at the 1%, 5%, and 10% levels with respectively ***, **, and *.

Panel A: UPGRADES

Dep. Variable	CABNRET	CABNRET20	CABNRET60	CABNRET120
High Country Factors				
RECCHG	0.39 ***	0.25	0.21	0.15
	(2.66)	(0.74)	(0.4)	(0.21)
RECCHG×COUNTRYSP	-0.12	0.19	0.08	-0.55
	(-1.34)	(0.91)	(0.25)	(-1.33)
RECCHG×COUNTRYSP×HIGHFACTOR	0.02	-0.25	0.11	0.58
	(0.25)	(-1.3)	(0.37)	(1.48)
MAGNIT	-0.17	-0.55	-1.70 *	-0.67
	(-0.54)	(-0.81)	(-1.88)	(-0.47)
MAGNIT×COUNTRYSP	0.19	1.09	1.50	3.70 **
	(0.47)	(1.28)	(1.21)	(2.08)
MAGNIT×COUNTRYSP×HIGHFACTOR	0.43	-0.47	2.54 *	0.62
	(1.16)	(-0.56)	(1.96)	(0.36)
p-value(ζ_1=0, ζ_2=0)	*0.4443*	*0.2920*	*0.1044*	*0.2617*

Panel B: DOWNGRADES

Dep. Variable	CABNRET	CABNRET20	CABNRET60	CABNRET120
High Country Factors				
RECCHG	-0.04	-0.99 ***	-1.18 **	-0.77
	(-0.26)	(-2.67)	(-2)	(-0.97)
RECCHG×COUNTRYSP	0.03	-0.33	-0.55 *	-0.42
	(0.29)	(-1.56)	(-1.71)	(-1.02)
RECCHG×COUNTRYSP×HIGHFACTOR	-0.23 ***	-0.26	-0.67 **	0.00
	(-2.81)	(-1.25)	(-2.11)	(0)
MAGNIT	0.48	0.54	1.40	-0.04
	(1.31)	(0.68)	(1.07)	(-0.03)
MAGNIT×COUNTRYSP	-0.81 *	-1.55	-3.15 *	-1.18
	(-1.73)	(-1.52)	(-1.9)	(-0.57)
MAGNIT×COUNTRYSP×HIGHFACTOR	0.45	1.39	1.96	1.58
	(1.04)	(1.4)	(1.16)	(0.8)
p-value(ζ_1=0, ζ_2=0)	*0.0168*	*0.2335*	*0.0803*	*0.7173*

We hypothesized that country specialists may draw their relative advantage from countries were commonalities among firms are large. If this is the case, recommendations issued by country specialists on firms in countries with high country factors should convey more information than recommendations issued by country specialists in countries with low country factors. Results are reported in Table 3.8. They hardly confirm our hypothesis. In the upgrade case, country specialists do significantly better in countries with high commonalities than in low country factor markets. The coefficient on recommendation direction for the periods [+21;+60] and [+61;+120] are respectively 0.83% and 0.84%. The latter, though, is only marginally statistically significant. Recommendation downgrades lead to the opposite conclusion. The only single case in which country specialists in high country factor markets differ from country specialists in low country factor markets is for recommendation magnitude over the period [+21;+60]. However, they return a surprising significantly worse 2.43%, a result which is hard to reconcile with our hypothesis.

Similar to the institutional and geographical factors considered as potential explanations for the relative superiority of country over sector specialists, we also hardly find that pure country factors may provide even a partial explanation. Indeed, both recommendations issued for firms in countries with high country factors as well as those issued for firms in countries with

low country factors convey valuable information. And coefficients are rarely significantly larger when pure country factors are high.

3.7 Conclusion

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. Given that both structures coexist, our goal is to evaluate which 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 and sector specialists. We show that the former outperform the latter, in the sense that their recommendations convey more information to the market.

We investigate potential sources of the information advantage that country specialists enjoy. Results show that the country-specific institutional setting provides a weak explanation for the outperformance of country specialists. Indeed, these analysts do not issue relatively more informative stock recommendations in countries with weak accounting standards and shareholder protection. Also, both geographical and cultural proximity do not provide analysts with any comparative advantage. On the other hand, our results suggest that country specialists extract their advantage from the recommendations they issue on firms headquartered in small national markets. This is consistent with another of our findings. The relative outperformance of country specialists is highest in countries with relatively strong country-specific factors.

The information advantage of country specialists is not only short-lived. There is an incomplete price reaction at the time the recommendation is released that continues to drift up to 60 days. This delayed price response could be due to 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 that one could draw from exploiting the information. It is not possible for us to distinguish between these two possible explanations and it is beyond the scope of the paper. What we rule out is the possibility that the price drift is due to a change in the underlying risk since the delayed price reaction is related to the type of analyst and not to the type of firm.

Conclusion

Financial research constitutes the core of the active management process. Arguably, the choice of structuring research along country or sector lines should be determined so as to maximize analysts' ability to issue valuable forecasts. Whether value is highest when research is organized by sectors instead of countries is a question that has surprisingly received very little attention in the literature. In fact, academics usually rely on the study of the relative importance of country and sector factors in stock returns to advocate the way financial research departments should be structured.

This literature usually focuses on the risk structure of stock equities and brings extensive evidence that both country and industry factors remain determinant characteristics of stock returns' variance. Though, the importance of industry factors has sharply increased relative to country factors over the late nineties. This recent rise in the relative importance of sector factors, however, appears mostly related to the atypical behavior of the Technology, Media, and Telecommunication sectors at the turn of the millennium. The most recent results in the literature evidence that country factors remain probably stronger determinants of stock returns, while it may depend on the considered geographic region. In Europe for instance, it is hard to tell whether industry factors have surpassed country factors. I explored this issue in Chapter 1 and confirmed these results. That is, while the strength of country factors in Europe appears relatively low compared to non-European countries, it probably remains as high as the strength of industry factors on a statistical basis.

It is not clear, therefore, whether country-specific influences will remain the predominant source of stock return variation. But the documented rise in the relative importance of sectors led many authors to advocate the relevance of sector-based approaches for both portfolio diversification and financial analysis. Also, practitioners now consider industry, rather than country, as the most relevant characteristic. They attach importance to the industrial composition of their portfolios and demand brokerage houses for industry-by-industry research. The latter have acknowledged this demand and now tend to organize their activities along sector lines.

I argue that the relative strength of country and sector factors in stock returns – while an evident proxy for the importance of commonalities among firms – is irrelevant to determine which of an organization of research along sector or country lines is more efficient in terms of analysts' forecast quality. There are, for instance, important analyst characteristics that determine the accuracy and relevance of their forecasts that are completely neglected in the study of country and sector influences: analysts' location is one such important factor. It is strongly linked to country versus industry analyst specialization. Indeed, country specialists are in general based within the same country as the set of firms they follow, while sector specialists are not, for the evident reason that they follow firms headquartered in different countries. But it is, to a large extent, unrelated to the notion of country- versus industry-specific influences.

Thus, it is not because country (sector)-specific influences are strongest that analysts specialized by countries (sectors) should outperform their sector (country)-specialized peers. As a consequence, I explicitly raised this issue in Chapters 2 and 3. In fact, I asked questions such as: Does earnings forecast accuracy differ across analyst specializations? Do stock recommendations issued by analysts of one particular specialization type provide investors with more valuable information? If analyst performance differences exist, what may potentially explain them: country-specific features, analyst location, or firms' characteristics? Are investors aware of these differences? Do they react differently to forecasts issued by country or sector specialists?

The results from Chapters 2 and 3 support the notion that organizing research departments along country lines enhances the quality of analysts' forecasts. Country specialists issue both more accurate earnings forecasts and more informative stock recommendations. Moreover, country-specific factors in a broad sense explain at least part of this outperformance. The value conveyed by country specialists' stock recommendations is highest in small countries and countries with relatively strong country-specific influences. Also, analysts benefit from a comparative advantage when located within the same country as the firms they follow.

Because brokerage houses continue reorganizing research along sector lines – which produces lower quality forecasts – one could think that my results may somehow hurt the brokerage industry's reputation. This is not, however, the interpretation one should have out of these results. First of all, brokerage houses may simply be ahead of the curve in their research

reorganization efforts, as sector specialists could become more accurate than country specialists in the future. As I argued in Chapter 2, there are reasons to believe that these results are time-varying. Indeed, I showed that the accuracy advantage of country specialists diminished over the last years of my sample. To the same extent that it is still hard to figure out whether the relative decrease in the importance of country factors is a temporary or a permanent phenomenon, more research is needed to determine whether country specialists will continue to outperform their sector-specialized peers in the future. One possible way to dealing with this issue – which would also constitute an interesting extension of my research – would be to determine whether there exists a positive relationship between the relative strength of country-specific factors and the relative better accuracy of country specialists. Indeed, part of the forecast error may come from analysts being unable to accurately predict country- and sector-wide evolutions, as well as the idiosyncratic firm-specific part. Elton et al. (1984), for instance, examine the level of aggregation at which forecast errors are made. They report that analysts highly misestimate the differential performance of individual industries. Also, errors made at the individual firm level reflect analysts' inability to predict how much a given firm earnings will differ from its industry average. Their results further indicate that errors made at the economy level are in fact rather small, as they explain less than 3% of the total forecast error. The largest proportion of error comes from the firm-specific component, which accounts for almost 70% of the total error. The forecast of industry-wide earnings also represent a significant part of earnings forecast errors, as it corresponds to roughly 30% of the total forecast error. An interesting extension would be to investigate whether forecast errors made by country and sector specialists occur at different levels in an international set up.

Second of all, there are presumably many additional determinants, above and beyond forecast quality, that shape the organization of financial research departments. One, and certainly the most influential one, is the shift in the asset allocation paradigm that as taken place over the last decade. If investors now demand for sector-by-sector analysis, brokerage houses undoubtedly have to supply sector-by-sector analysis. However, there are reasons to question whether this last remark could not rationally be taken the other way around. The benefits, in terms of risk reduction, of portfolio diversification across countries seem roughly equivalent as those allowed by sector-based diversification. In fact, academic researches usually conclude that diversifying both across countries and sectors yields the highest benefits in terms of risk reduction; see e.g. Ehling and Ramos (2006). Country-specific factors, however, appear as powerful determinants of analyst forecasts' quality. Therefore, the question could

be: Shouldn't portfolio managers still rely on the traditional top-down country-based approach, since financial analysis undertaken along country lines returns more accurate and informative forecasts?

Another direction that would deserve additional research is the fact that most of the value brought by country specialists seems to relate to small and presumably less actively followed firms. This may prevent investors from taking full advantage of analysts' forecasts because of prohibitive transactions costs. Another issue, which is somehow related to the previously discussed question of whether analysts forecast more accurately earnings at the economy or the industry level, concerns analysts' stock picking skills within countries or sectors. Specifically, are country (sector) specialists able to adequately pick subsequent outperforming and underperforming stocks within their country (sector) of expertise? Boni and Womack (2004) find that the informative value of stock recommendations on U.S. firms is highly enhanced when taking an industry perspective. That is, analysts appear as extremely skilled stock pickers within their industry of expertise, while strategies constructed on the basis of their recommendations hardly outperform when industry is ignored. In the U.S., financial analysts are usually specialized in one domestic economic sector. The extension of the Boni and Womack (2004)'s study to the European case would bring interesting insight on the sources of country and sector specialists' skills.

As I show that country specialists' stock recommendations convey valuable information, while sector specialists do not, one may also reasonably wonder why sector specialists exist. I already partly answered this question when discussing customer needs, that is, the fact that portfolio managers now mostly think in terms of sectors rather than countries. However, this issue is in fact far more general. Several studies report that forecast accuracy improves when analysts restrict their attention to fewer firms, industries, or countries. While some – essentially small – brokerage houses may not have any alternative, large brokers astonishingly assign their analysts to cover a relatively high number of firms, industries, or countries. What is the role of these analysts who cover many sectors and countries, while other analysts, presumably more accurate because they have less complex portfolios, already cover the same firms? Also, what is the importance attached by investors to these particular analysts' forecasts, and how do they react to the information released by these analysts are additional questions that may deserve further investigation.

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