



# The effectiveness of IFRS 8: Operating Segments

Stamatina Mantziou

► **To cite this version:**

Stamatina Mantziou. The effectiveness of IFRS 8: Operating Segments. General Finance [q-fin.GN]. 2013. dumas-00934306

**HAL Id: dumas-00934306**

**<https://dumas.ccsd.cnrs.fr/dumas-00934306>**

Submitted on 21 Jan 2014

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Mémoire de recherche

# The effectiveness of IFRS 8: « Operating Segments »



Présenté par : MANTZIOU Stamatina  
Tuteur universitaire : DUMONTIER Pascal

Master 2 Recherche & Professionnel (FC)  
Master Finance  
Spécialité Empirical Finance and Accounting  
2012 - 2013



*upmf*  
Grenoble  
Université Pierre-Mendès-France  
Sciences sociales & humaines

Avertissement :

L'IAE de Grenoble, au sein de l'Université Pierre-Mendès-France, n'entend donner aucune approbation ni improbation aux opinions émises dans les mémoires des candidats aux masters en alternance : ces opinions doivent être considérées comme propres à leur auteur.

Tenant compte de la confidentialité des informations ayant trait à telle ou telle entreprise, une éventuelle diffusion relève de la seule responsabilité de l'auteur et ne peut être faite sans son accord.

## ABSTRACT

This master dissertation consists of a literature review about the role of accounting information and the companies' disclosure policies in the financial market, as well as the information asymmetry issues that may occur for a firm.

More specifically, we address the segment reporting issue. We present briefly the most important empirical research concerning segment reporting as well as the evolution of the accounting regulations proposed by the FASB and the IASB in USA and in Europe (and other countries) respectively. We focus on the changes that the IFRS 8: "Operating Segments" has brought for companies since its mandatory adoption in 2009.

Furthermore, we present a review of the most significant literature regarding Information Asymmetry issues and we present the dominant theories about the proxies for measuring the levels of information asymmetry for a firm.

Finally, we conduct a research proposal, during which we will attempt to investigate the impact of IFRS 8: "Operating Segments" on the levels of Information Asymmetry, the extent of the firms' compliance with the new regulation as well as the determinants of the voluntary adoption of IFRS 8. We believe the proposed empirical research will shed light to the effectiveness of the newly imposed regulation and will contribute to the existing literature concerning the relevance of the International Financial Reporting Standards.

## RESUME

Cette thèse de Master fait un état de l'art du rôle de l'information comptable et des politiques des sociétés en matière de divulgation de cette information sur le marché financier, ainsi que des problèmes d'asymétrie d'information pouvant survenir pour une entreprise. Plus précisément, nous abordons la question de l'information sectorielle. Nous présentons brièvement les principales recherches empiriques concernant l'information sectorielle ainsi que l'évolution des règles comptables proposées par le FASB et l'IASB aux Etats-Unis, en Europe, et dans d'autres pays. Nous nous concentrons sur les changements que la norme IFRS 8 «Secteurs opérationnels» a apporté aux entreprises depuis son adoption en 2009.

Suite à cela, nous présentons une vue d'ensemble de la littérature concernant l'asymétrie d'information et nous présentons les théories dominantes sur les moyens de mesure de l'asymétrie d'information pour l'entreprise.

Enfin, nous menons un projet de recherche au cours duquel nous étudions l'impact de la norme IFRS 8 «Secteurs opérationnels» sur les niveaux d'asymétrie d'information, le niveau de conformité des entreprises avec la nouvelle réglementation, et les facteurs déterminants pour l'adoption volontaire de la norme IFRS 8. Nous pensons que la recherche empirique proposée dans cette thèse aidera à évaluer l'efficacité de la nouvelle réglementation imposée et contribuera à la littérature existante concernant la pertinence des normes internationales d'information financière.

**Keywords:** segment reporting, information asymmetry, IFRS 8, disclosure policies

**Mots-clés:** information sectorielle, asymétrie d'information, IFRS 8, politiques de divulgation

## Table of contents

<b>INTRODUCTION</b> .....	7
<b>PART I: ACCOUNTING INFORMATION, DISCLOSURE POLICES AND SEGMENT REPORTING</b>	
1. Accounting Information and Disclosure polices .....	8
2. What is Segment Reporting? .....	9
3. How can a company define its operating segments? .....	10
4. Factors that affect Segment Reporting Choices .....	11
5. Why is Segment Reporting information useful? .....	12
6. Arguments against the disclosure of segment information .....	13
7. Forecast precision using segment information .....	14
8. Segment Reporting and Investment Decisions.....	16
9. Research on Line of Business and Geographical Segment Disclosures .....	17
<b>PART II: PRIOR AND CURRENT REGULATIONS REGARDING SEGMENT REPORTING</b>	
1. The history of operating segments disclosures .....	18
2. SFAS 131: “Disclosures about Segments of an Enterprise and Related Information” .....	18
3. IAS 14: “Segment Reporting” .....	19
4. Similarities- Differences & the introduction of IFRS 8 .....	20
<b>PART III: THE IFRS 8: OPERATING SEGMENTS</b>	
1. Core Principle- Brief Presentation .....	21
2. The IFRS 8: Operating Segments- What changes? Main differences with the IAS 14R.....	24
3. The Management approach: improvements and concerns .....	27
4. Preliminary research concerning the usefulness of IFRS 8.....	27
<b>PART IV: INFORMATION ASYMMETRY</b>	
1. A review of studies about information quality and information asymmetry .....	29
2. Information Asymmetry: main metrics, methodologies and results .....	31
2.1. Information asymmetry metrics: The Forecast Accuracy/ Forecast Error metric .	31
2.2. Information asymmetry metrics: The Bid-Ask Spread metric .....	34
2.3. Information asymmetry metrics: The R <sup>2</sup> metric .....	38

2.4. Information asymmetry metrics: The “Analyst following” metric ..... 39  
3. The impact of new regulations on the financial analysts’ information environment..... 40

**PART V: RESEARCH PROPOSAL**

1. Motivation ..... 41  
2. Research questions ..... 42  
3. Research Design and Methodology..... 44

**CONCLUSION** .....49

**REFERENCES**.....50

## **ACKNOWLEDGEMENTS**

I would like to express my sincere appreciation to my advisor professor Pascal Dumontier for his useful comments during the writing of this master dissertation. I would also like to thank the responsible of my master program professor Radu Burlacu for his support and advice during my studies. I would like to offer my special thanks to my classmates, for their friendship, their excellent cooperation and for all the good moments that we shared this past year. Finally, my deepest gratitude goes to my husband, for his eternal love and support.

## INTRODUCTION

Since the mandatory adoption of IFRS in Europe in 2005 a large number of studies have been conducted concerning the impact of the new accounting standards compared to the local standards previously existing in each country. While a huge literature regarding the IFRS as a whole already exists, not much attention has been paid on the effects of particular regulations.

This research project proposal was partly motivated by this fact. We will therefore attempt to examine the effectiveness of a particular regulation, IFRS 8: “Operating Segments” in decreasing information asymmetry. We have decided to examine this particular regulation because we believe that its implementation will change the relevance of the disclosed information by companies, given that different pieces of information are now required, compared to the previously implemented IAS 14R. During our study we will use different proxies to capture information asymmetry, such as the accuracy and dispersion of financial analysts’ earnings forecasts, the bid-ask spreads as they are formed by market makers, as well as the  $R^2$  from a modified index-model regression as a measure of opacity of financial reports.

This master dissertation will begin with an introduction to the role of the accounting information and the firms’ disclosure policies on financial markets. We will extensively discuss the importance of the information provided to users of financial statements through a firm’s segment reporting. We will then continue with a brief presentation of the regulations concerning segment reporting, giving specific details about their evolution and main characteristics. We will dedicate a special section to the presentation of IFRS 8: “Operating Segments”. Thereafter we will discuss the main proxies for capturing information asymmetry by presenting the theoretical framework as well as some dominant studies concerning this subject. We will conclude by presenting a proposal for an empirical research concerning the effectiveness of IFRS 8: “Operating Segments”.

The remaining of this dissertation is therefore organized as follows: in **Part I** we discuss the role of accounting information and more specifically of Segment Reporting and we explain why it is considered useful for users of financial statements. In **Part II** we briefly present the prior and current regulations regarding Segment Reporting. **Part III** is dedicated to the description of the basic aspects of IFRS 8. In **Part IV** we describe the most important metrics of information asymmetry. In **Part V** we present the objective of the proposed empirical research and the procedures that will be followed.



## **PART I: ACCOUNTING INFORMATION, DISCLOSURE POLICES AND SEGMENT REPORTING**

### ***1. Accounting Information and Disclosure polices***

---

It is widely discussed in the literature that accounting information disclosed by firms through their annual financial statements, their quarterly reports or of any other form, is of critical importance for several market participants, such as investors, analysts, market makers, employees and governments. It is only through the information available by a company itself that a market participant can extract enough knowledge about the company's whereabouts that will help them take financial decisions.

Several characteristics of the financial accounting information provided by companies are mandated by the International Accounting Standards Board (IASB) through the imposition of the International Financial Reporting Standards. First of all, accounting information ought to be useful to market participants in evaluating a firm's current financial position and future perspectives. It should also be relevant, comparable and easily understandable by any party that is interested in it. The financial information disclosed should also be accompanied by any explanatory information that is considered useful to financial statement users, in order to assist them in making efficient decisions. The fundamental purpose of financial reporting is therefore to provide relevant decision-making information to anyone who might need it.

*Anne Beyer, Daniel A. Cohen, Thomas Z. Lys and Beverly R. Walther (2010)* mention two important roles that the accounting information can play in the economy. First, it helps investors, shareholders and creditors to estimate the value of a company and thus its expected profitability (the “*valuation role of accounting information*”). Second, it assists investors and other creditors in monitoring the use of their investments (the “*stewardship role of accounting information*”). This dual role of accounting information arises two separate information asymmetry issues: first, firms' managers have usually more information about the company's whereabouts and potentials than other market participants. This type of information asymmetry can cause problems to outsiders in assessing correctly a company's future profitability, and thus in making profitable investment decisions. The second type of information asymmetry is associated with the fact that in many modern companies, shareholders are not necessarily managers of a firm. The problems that arise (often called also “agency problems”) are believed to decrease with the increase of the amount and the quality

of accounting information available to shareholders. The authors argue that, due to the above information asymmetry issues, regulations are often mandated. Their primary role is to secure a certain level of disclosure by companies, as well as to improve the quality of the disclosed information.

*Robert E. Verrecchia (2001)*, in his article about disclosure, highlights the importance of the association between the existence of accounting information and the economic consequences of the disclosure of such information. He argues that, in the absence of any economic incentives, financial accounting will be solely a series of bookkeeping rules, and thus will not be of any use to the market participants. He also attempts to classify disclosure research in accounting into three categories: the first one, named “*association-based disclosure*”, is related to the link between disclosure of financial information and the market participants’ financial decisions. The second category (“*discretionary-based disclosure*”) captures how “insiders” (managers and/or investors) manage private information that may have. Finally, the third category, called “*efficiency-based disclosure*” examines which types of disclosure are preferred taking into account the absence of any information before the disclosures occur.

The disclosure of financial information can be proved useful not only to the users of financial statements, but also to the company itself. *Jan Barton and Gregory Waymire (2004)* in their study about the link between investor protection and accounting information of high quality argue that managers have incentives to disclose relevant information even in the absence of a related regulation due to the economic benefits that arise for the company by proceeding in such disclosures.

## ***2. What is Segment Reporting?***

---

Segment Reporting is referred to as the reporting for separate operating segments of a company as additional disclosures to its financial statements. It involves dividing the company into sectors and reporting financial or non-financial information for each of these parts. A company can segregate its operations in many ways, but the most common are segmentation by industry or type of business (namely Line of Business- Lob), by geographical area or by a combination of both of those.

### ***3. How can a company define its operating segments?***

---

A **Business Segment (Line of Business)** can be defined as a clearly recognizable part of a company that engages in providing an individual product or service and it is usually subject to separate *risks* and *returns* from the company's other segments.

A **Geographical Segment** consists of a part of a company that engages in providing products or services in a particular economic environment and therefore it is subject to *risks* and *returns* that are different from components of the company that operate in other economic environments.

An **operating segment** is an independent unit within a business that brings discriminated revenue and for which separate books of transactions are kept. Operating segments are considered as a part of the main company and retain accountability to company officials. The operating segments' main usage is that they provide a way for companies to track performance in different areas of the market.

*Nancy B. Nichols, Donna L. Street and Sandra J. Cereola (2012)* present in their study two additional types of segmentation, the **matrix** and the **mixed** segment reporting. The matrix segment reporting consists primarily of dividing a company in segments according to LoB (geographical) criteria and then defining geographical (LoB) secondary segments for some of them. For example, a company can recognize two lines of business with one of the lines of business disaggregated into three geographic regions. The mixed segment reporting includes both geographical and Line of Business segments on a primary basis.

According to the International Financial Reporting Standards (IFRS), an operating segment is *“a component of an entity that is a profit center, that has discrete financial information available, and whose results are reviewed regularly by the entity's Chief Operating Decision Maker (CODM) for purposes of performance assessment and resource allocation”*. A segment manager is usually responsible of reporting an operating segment's results to the chief operating decision maker. Furthermore, *“An entity's corporate headquarters is not considered an operating segment, nor are an entity's post-employment benefit plans”*.

#### ***4. Factors that affect Segment Reporting Choices***

---

Previous literature reports several factors that can affect a company's decisions related to segment reporting. According to *Don Herrmann and Wayne Thomas (1996)*, financial disclosures can be evaluated by taking into account two separate components, the *quantity* i.e. the amount of the disclosing information and the *quality* i.e. the usefulness of the information to investors. In the same study, the authors also mention four basic variables that can influence a firm's disclosure policies: the country in which a firm is domiciled, the industry in which it is considered to participate, the firm's size and the stock exchange in which the company is listed. They find out that the country and firm size are significant factors that affect a company's quality of segment disclosures, with larger firms providing higher quantity of segmental information than smaller ones. On the other hand, the industry variable seems to be insignificant, while the exchange listing variable is appeared to be important only for geographical segment disclosures. They argue that the latter result suggest that companies that seek external funds in foreign countries are more likely to increase geographical segment disclosures in order to provide better quality of information to international investors.

Apart from these factors, *Nancy B. Nichols and Donna L. Street (2007)* mention also the "level of investor protection" as an important determinant of segment disclosure. Specifically, they discriminate between three different legal systems, the French-origin, the German-origin and the Scandinavian-origin. In addition, they suggest that additional segment data may be disclosed in order to provide more information to the investors that will result to improved earnings forecasts and firm valuation. *Mary Stanford Harris (1998)* considers three main economic factors that can affect segment disclosing decisions: the operating segment's competitive environment, the motivations to disclose associated with earnings perspectives as well as the size of the company. *Rachel M. Hayes and Russell Lundholm (1996)* examine how companies choose the degree of disaggregation in segmental disclosures taking into account the fact that those disclosures are providing information to both capital markets participants and competitors. They argue that it is more likely for a firm to provide disaggregated information when a segment shows persistently high performance. Their results suggest that a company's decision about the amount of segment information disclosed depends on the company's resolution to protect its segments with the highest profits. Therefore, it seems that firms prefer to aggregate highly profitable segments with others that show lower profits, in order to repel the arrival of new competitors. *Philip G. Berger and Rebecca N. Hann (2007)*

examine two incentives of managers to conceal segments profits, taking as an opportunity the change in the US segment reporting regulations (from SFAS 14 to SFAS 131). More specifically, they investigate whether managers face *proprietary cost* and *agency cost* motives to conceal segment information. They hypothesize that when the proprietary costs are relatively high, managers will tend to avoid revealing information about segments with relatively high abnormal profits. On the other hand, when the agency costs are high, managers will withhold the segments with relatively low abnormal profits. The analysis indicates results that are consistent with the agency costs hypothesis, but shows mixed results regarding the proprietary costs hypothesis.

### ***5. Why is Segment Reporting information useful?***

---

Several market participants as well as stakeholders can be interested in the disclosure of information about a firm's operating segments.

According to the IASB, segment information is necessary to help users of financial statements to better understand the entity's past performance, to access more easily the entity's risks and returns and to make more informed judgments about the entity as a whole. It is argued that **users of financial statements** (investors, analysts, market makers, employees, governments) may be interested in the performance and prospects of one particular part of the enterprise rather than the enterprise as a whole. For example, governments will be interested in information on country level. On the other hand, **Shareholders** will be more interested in the performance of the company as a whole, since their investments concern the whole enterprise. Nevertheless, since a group is made up of its constituent parts, in order to estimate fully the performance of the whole enterprise one has to take into consideration the separate performances and prospects of each sector. It is also argued that different segments may have very different profit potentials, growth opportunities, capital needs, and degrees and types of risk. Therefore, the past performance of a company and its future prospects can usually only be understood if the user also has information about each segment of business. It will be thus more accurate to say that all the users will need **disaggregated and consolidated** information. Given the fact that large companies can have very complex and heterogeneous structures, segment information seems to be essential to users in order to understand a firm's performance and risks and analyze the firm's strategies and future potentials. Furthermore, *Teresa L. Conover and Wanda A. Wallace (1995)* show that the increase of geographic

segment information disclosed can actually lead to an increase in a company's equity market returns. They also argue that geographic segment disclosures indicate a company's international diversification, giving a good signal to investors about the company's potentials. They conclude that revealing more segmental information should be beneficial not only for investors but also for the company itself. Furthermore, according to *Dave Nichols, Larry Tunnel and Cindy Seipel (1995)*, a company's expected cash flows and therefore its value, may be affected by the economic and political environment in which it operates. Information about particular segments should therefore be of high usefulness to investors in order to assess a company's value through the prediction of its future cash flows. In addition *Ole-Kristian Hope, Wayne Thomas and Glyn Winterbotham (2006)* argue that information related to the origin of a firm's earnings should play an important role in predicting the firm's total earnings, due to the large differences in risks and in growth opportunities between countries. Given that disclosure of more disaggregated information usually leads to better understanding of a company's value and consequently to more accurate forecasts for the future, it can be argued that the more detailed the information disclosed the lower the stock price volatility. Moreover, as *Bimal K., Prodhan And Malcolm C. Harris (1989)* denote, geographical disclosures are very important for multinational firms, because those types of firms face risks that are not only related to lines of business but also to the economic environments in which they operate. Such risks include for example country-specific political and economic risks.

## 6. Arguments against the disclosure of segment information

Although the disclosure of more detailed segmental information is considered in general to contribute positively to a company's value, several objections have been made about the actual usefulness of segmental information. The most common argument against disclosures about operating segments is related to the **proprietary costs** that may occur for the company that decides to reveal the additional information. It is argued by *Nandu J. Nagarajan and Sri S. Sridhar (1996)* that companies will often choose not to disclose information that is not mandated by any regulation, in order to avoid proprietary costs that may occur. An increase in disclosure requirements may subsequently often lead a company to the disclosure of less useful information. Furthermore, **competitive harm** is considered to be an important cost associated with segment disclosures. Competitive harm was one of the most popular arguments against the introduction of SFAS 131. Opponents of the new regulation argued that

important proprietary information might be deduced from the additional segment disclosures that SFAS 131 made mandatory (Botosan C., Stanford M. -2005).

*Teresa L. Conover and Wanda A. Wallace (1995)* mention several other arguments against segmental information: “...the possibility of detrimental reactions from outside parties, user misunderstanding of accounting conventions applied in calculation of affiliate disclosure information, and the additional costs of processing information”<sup>1</sup>

*Bimal K. Prodhan and Malcolm C. Harris (1989)* discuss the role of geographical segment disclosure for multinational firms. They argue that unless geographic disclosure exists, investors will not be able to assess correctly a multinational company's risks and potentials, given the high amount of different economic environments in which it operates. Additionally, firms which operate in less risky environments will have incentive to disclose their status, in order to distinguish themselves from firms that operate in more risky environments.

## ***7. Forecast precision using segment information***

---

A very important issue under study is the role that segmental information plays on the level of financial analysts' forecast accuracy. Several studies have been conducted, especially after the introduction of regulations which introduce different approaches in segment disclosure, such as SFAS 131. For example, *Laureen A. Maines, Linda S. McDaniel And Mary S. Harris (1997)* conduct an empirical research in an attempt to investigate how the different approaches for segment reporting presented by the different regulations (SFAS 14 and SFAS 131) affect financial analysts' judgments. They conclude that analysts will consider segment information as more reliable when there is a convergence between externally and internally reported segments. This finding is consistent with the FASB and IASC's expectations about the improvements that the new approach will induce. The new regulation (SFAS 131) seems therefore to enhance the usefulness of financial information, as measured by the precision of analysts' forecasts. *Don Herrmann, Wayne B. Thomas (2000)* investigate the effectiveness of SFAS 131 in improving forecast accuracy, by providing a series of models to identify the conditions under which segment information affects financial analysts' forecasts. Under this

---

<sup>1</sup> **Conover T. and Wallace W. (1995)**, Equity Market Benefits to Disclosure of Geographic Segment Information: An Argument for Decreased Uncertainty, *Journal of International Accounting Auditing & Taxation*, 4(2):101-112.

concept, they hypothesize that forecast accuracy using segment information increases with higher disaggregation of earnings, higher predictive accuracy and lower correlation of the forecast factors as well as greater precision in computing the segment weights. The authors then examine those hypotheses under SFAS 13, in order to investigate how the new regulation affects analysts' forecast precision. They conclude that in general the introduction of SFAS 131 has improved financial analysts' forecast precision, as segment disclosures seem to be more accurate under the new regulation.

The majority of researchers conclude that the disclosure of financial accounting information, especially of high quality, generally reduces uncertainty in the markets about a company's perspectives, permitting financial analysts to make more accurate earnings forecasts. Moreover, it seems that additional disclosure cannot harm financial analysts' ability to successfully predict earnings, unless these disclosures are intended to mislead the markets.

Analysts' forecasts accuracy and/or forecasts errors have been widely used in the literature as a means of measuring earnings predictability under several circumstances, for example after the imposition of a new regulation. For example, *Ole-Kristian Hope, Wayne B. Thomas and Glyn Winterbotham (2006)* in their study concerning the impact of segment information on the ability of financial analysts to predict earnings, attempt a comparison of results for companies that continued to disclose geographic segment earnings and companies that stopped disclosing this information after the implementation of SFAS 131. They conclude that the imposition of the new regulation did not have a significant effect on the geographical disclosure the two groups of companies, thus the sample firms' geographical disclosure policies did not affect financial analysts' earnings forecasts.

*Ramji Balakrishnan, Trevor S. Harris and Pradyot K. Sen (1990)* in their article about the predictive ability of geographic segment disclosures argue that if geographical data are not appropriately disclosed, forecasts using this information may be less accurate than forecasts that are made using solely consolidated information. They also mention that companies may have incentives to distort their geographic data in the case, for example, that the managers wish to "*prevent tax disputes resulting from international transfer-pricing questions*"<sup>2</sup>.

*Kochanek (1974)* examines the impact of segment reporting on firms' earnings forecasts and stock price variations. He argues that if segmental information is actually useful to investors

---

<sup>2</sup> **Balakrishnan R., Harris T. and Sen P. (1990)**, The Predictive Ability of Geographic Segment Disclosures, *Journal of Accounting Research* Vol. 28 No. 2



in analyzing the earnings prospects of a company's different segments, the earnings forecasts for the whole company will thus be more accurate. His empirical research confirms his hypothesis. In a related study, *Bruce A. Baldwin (1984)* attempts to investigate whether the use of segment data improves the analysts' predictive ability. To that end, the author estimates the change in analysts' forecast accuracy before and after the implementation of the SEC's Line of Business disclosure requirements in 1971. He finds out that forecasts became more accurate in the period after the regulation, especially for multisegment firms without previous segment disclosures. On the other hand, *Vivek Mande and Richard Ortman (2002a)* in their study about the effect of segment reporting on analysts' forecasts in the Japanese market, report that the introduction of segment reporting has increased the forecasting of sales for well-diversified firms, but has not significantly improved forecast accuracy. In addition, another study by the same authors indicates that Japanese analysts are concerned that firms do not provide relevant and useful segmental information, due to lack of consistent segment definition and useful audit mechanisms *Vivek Mande and Richard Ortman (2002b)*.

### ***8. Segment Reporting and Investment Decisions***

---

It is shown in many studies that segment reporting can be useful to analysts and investors in order to take investment decisions. *Maines L., McDaniel L. and Harris M. (1997)* mention two kinds of investment judgments that can be influenced by segment reporting. *Quantitative* judgments made by analysts include forecast earnings, stock price estimations and buy or sell recommendations. *Qualitative* analysts' judgments may involve analysts' general opinions about a company's perspectives. *Hussain Simon (1997)* also mentions the significant role of segment reporting in analysts' earnings forecasts. The author however underlines the importance for a disaggregation that is relevant. To that end, segments should be organized in a way that they produce useful information for analysts and investors. Given the above constraint, researchers argue that the role of segmental disclosure can be detrimental for analysts' and investors' predictive ability, leading to better investment decisions and therefore more effective markets.

## ***9. Research on Line of Business and Geographical Segment Disclosures***

---

Most of the research already done in the field of segment reporting concerns the Line of Business information disclosed by firms. Specifically, a large number of studies are dedicated to the effects of the Securities and Exchange Commission (SEC) regulation about LoB segment reporting that became mandatory in 1971. Empirical research suggests that the higher disclosure of LoB information usually leads to a significant increase in a company's beta, (*Ajinkya; 1981 and Collins and Simonds; 1979*). Researchers have also reported that annual and quarterly earnings forecasts accuracy has been increased with the addition of LoB sales data, compared to consolidated data. More specifically, *Kinney (1971)* finds out, using a small sample of firms for the period 1968-1969, that segment-based predictions of earnings are more accurate, compared to predictions based on consolidated data. *Collins (1976)* extends the work of Kinney by using data disclosed under the LoB reporting requirements that were introduced by the SEC in 1971. The findings of this study are similar to those of Kinney, suggesting that information based on LoB segment reporting generates more accurate earnings forecasts compared to forecasts based solely on consolidated data.

Regarding Geographical segment information, the literature suggests that the disclosure of such information also leads to an increase in the beta of companies, suggesting a sharp stock market reaction to geographical data (*Prodhan; 1986, Prodhan and Harris; 1989*). Analysts' earnings forecasts seem to improve as well with the addition of geographical segment information. For example, *Clare B. Roberts (1989)* investigates, using a sample of UK companies, whether geographical segment information combined with external data about the areas in which a company operates can generate more accurate earnings forecasts, compared to those based in consolidated data only. The author concludes that forecasts for both sales and earnings based on segmental information seem to outperform those based on consolidated information only.

*Conover T. and Wallace W. (1995)* mention several reasons that may lead companies to withhold geographic segment information. They denote that, while a firm may have incentive to release this kind of information in order to give a signal to the market that it is diversified, at the same time a firm may worry that it reveals too much private information to its competitors. In addition, *Don Herrmann and Wayne B. Thomas (1997)* argue that companies

are likely to garble country level disclosures by choosing to disclose more information about their operations in highly developed countries compared to undeveloped ones.

## **PART II: PRIOR AND CURRENT REGULATIONS REGARDING SEGMENT REPORTING**

### ***1. The history of operating segments disclosures***

---

The first accounting regulation concerning segment reporting was published by the FASB in December 1976 under the name Statement of Financial Accounting Standard- *SFAS No14: Financial Reporting for Segments of a Business Enterprise*. SFAS 14 was replaced by *SFAS 131: “Disclosures about Segments of an Enterprise and Related Information”* in 1997, in an attempt to address the existing regulation’s main limitation of reporting fewer operating segments to external users of information. The new regulation’s main purpose was to enable the users of financial statements to the same amount of information as the company’s management. The International Accounting Standards Board introduced segment reporting for the first time with the International Accounting Standard- *IAS 14: “Segment Reporting”* in 1981, a regulation which was revised in 1997. Under IAS 14 companies were required to report segment information either in Line of Business or in geographical sectors. Moreover, each segment had to be characterized by its own profitability and risk. The IAS 14 was replaced by the *IFRS 8: “Operating Segments”* in January 2009, in an attempt of the IASB to converge with the SFAS 131 currently applied in the USA.

### ***2. SFAS 131: “Disclosures about Segments of an Enterprise and Related Information”***

---

The Statement of Financial Accounting Standard No 131 (SFAS 131: *“Disclosures about Segments of an Enterprise and Related Information”*) has basically replaced the previously existing SFAS 14, which represented an approach similar to the one of IAS 14. The new standard, issued in June 1997, introduced clearly the **“management approach”** according to which segments are identified on the basis of the internal management practices of a company. The companies that have to comply with the new regulation are thus obliged to

provide information about their operating segments as defined for internal decision making purposes. The previous standard on the other hand, required disclosure of disaggregated information by Line of Business or by geographical area, but gave companies the flexibility to decide in which way they would identify their reportable segments. Another important goal of the new standard was to increase the relevance of segment reporting, mainly by allowing users to assess the performance of individual operating segments in the same way the firm's management does.

SFAS 131 was partly introduced as a response to financial analysts' complaints that the previous regulation allowed too much flexibility regarding the discrimination of reportable operating segments and that this flexibility was used by some companies to avoid providing additional information regarding their operating segments. Specifically, paragraph 12 of SFAS 14 states: "...*determination of an enterprise's industry segments must depend to a considerable extent on the judgment of the management of the enterprise.*"<sup>3</sup> However the opponents of the new regulation argued that additional disclosures would impose extra competitive costs on firms.

### ***3. IAS 14: "Segment Reporting"***

---

The IAS 14: *Segment Reporting* was issued by the International Accounting Standards Committee (IASC) in August 1981. After a number of changes of the standard the IASC issued a revised IAS 14 Segment Reporting (IAS 14R) in August 1997. IAS 14R became effective for fiscal years beginning on or after July 1, 1998. This regulation required information to be disclosed according to business segment (i.e. products and services) *or* geographical areas of operation. The business segment was defined as a specific part of the company that provides different products or services and becomes subject to separate risks and returns from any other parts of the company. The motives behind this revised version of the regulation was to push companies towards increasing the number of reportable segments and avoiding the aggregation of dissimilar segments, by providing more specific guidance for how business segments should be identified.

---

<sup>3</sup> SFAS 14, Financial Accounting Standards Board, December 1976

The IAS 14R clearly distinguished between business segments and geographical segments but, as mentioned before, allowed managers to decide the way of identification of operating segments. More specifically, data on both business segments and geographical segments had to be disclosed, with one of these being considered as the primary basis and the other as secondary basis. Other changes that the revision brought include the increase of the amount of information to be disclosed for primary segments and the fact that IAS14R provided more specific instructions in determining reportable segments (*Jenice Prather-Kinsey and Gary K. Meek; 2004*).

An important disadvantage of this regulation was that it generated many concerns about how a “business segment” was defined. Moreover, it has become clear that some companies interpreted their business as being a single business segment and did not provide any disaggregated information.

#### 4. Similarities- Differences & the introduction of IFRS 8

According to the International Accounting Standards Board, the IAS 14R and the SFAS 131 differed in three main aspects:

1. *Identification of segments:* While the IAS 14 required the separation of a company in segments according to the nature of business or the geographic regions, SFAS 131 requires operations to be reported ‘*through the eyes of management*’, meaning that the different segments reported in financial statements should be the same that are used internally in the company.
2. *Measurement basis:* IAS 14 required the amounts disclosed to be consistent with the measurements used for the rest of the IFRS financial statements. Under SFAS 131 the measurement of the items reported has to be based on the principles of measurements used internally in the company.
3. *Reported line items:* IAS 14 required a company to disclose specifically identified line items for each reported segment, while SFAS 131 requires a firm to report the line items that are regularly reported internally for the firm’s strategic requirements.

(*Source: Post-implementation review: IFRS 8 Operating Segments, IASB, July 2012.*)

The main purpose in the introduction of IFRS 8 was to address these differences. As we can observe from the above differences, a very important change from the IAS 14 was the adoption of the “**Management-perspective approach**”, already applied in SFAS 131. This approach mainly consists of allowing investors and other users of financial statements to see the company’s operations through the eyes of management and thus enabling them to understand the risks that managers face each day and to assess how well those risks are managed.

More analytically,

1. The new regulation, similarly to the SFAS 131, introduced the “**Management Approach**” in identifying the different operating segments. This means that the operating segments presented in financial statements should be the same as the ones used for internal management purposes.
2. IFRS 8 required **application in a broader scope**. Entities that hold assets in a fiduciary capacity have to produce segment reports under the new standard, unlike the requirements under IAS 14.
3. Regarding the amount of the information disclosed, the new regulation seems to require the **disclosure of additional segment information** compared to the IAS 14.
4. Nevertheless, under IFRS 8, **more detailed information** has to be provided, but only to the extent that it is regularly provided to the chief operating decision-maker.

## PART III: THE IFRS 8: OPERATING SEGMENTS

### 1. Core Principle- Brief Presentation

- ✓ According to the regulation’s **Core Principle**, as published by the IASB: “*An entity shall disclose information to enable users of its financial statements to evaluate the nature and financial effects of the business activities in which it engages and the economic environments in which it operates*” (Source: IFRS 8: Operating Segments Technical Summary).

By examining the above statement, one can safely conclude that the new regulation was built in order to enhance the general orientation of the International Financial Reporting Standards

to engage companies in producing financial statements that will be more useful the users. In order to achieve this goal, the regulation requires that the information disclosed has to be the same as reported to internal management. The need of an individual or group of people, usually referred to as Chief Operating Decision Maker (CODM) is therefore emanated from the implementation of this standard.

- ✓ According to the regulation’s official description, **the IFRS should apply to:**
  - the separate or individual financial statements of an entity and
  - the consolidated financial statements of the group

For all companies whose securities are traded in the public market (listed companies).

The table below provides us the most important dates in the history of IFRS 8:

<b>The history of IFRS 8</b>	
<b>19 January 2006</b>	IASB issues the Exposure Draft (ED) 8 “Operating Segments”
<b>30 November 2006</b>	Issuance date of IFRS 8
<b>1 January 2007</b>	Mandatory adoption of IFRS 8
<b>1 January 2009</b>	Effective date of IFRS 8, it replaced IAS 14
<b>16 April 2009</b>	IFRS 8 amended for Annual Improvements to IFRSs 2009 about disclosures of segment assets
<b>1 January 2010</b>	Effective date of the April 2009 amendments to IFRS 8

### Quantitative thresholds:

The new regulation requires that the identification of “*reportable segments*” will take place based on quantitative thresholds of revenue, profit or loss, and assets. More specifically, an operating segment is considered as reportable if the segment’s revenue, profit or loss and total assets exceed 10 percent of the respective values for all operating segments. In addition, a company is allowed to combine two or more segments that do not meet the quantitative thresholds, in order to create one reportable segment, in the condition that the segments

combined have similar economic characteristics, follow similar production processes and operate in similar regulatory environments.

### *Disclosure requirements:*

---

According to IFRS 8, required disclosures include:

- General information about how the entity identified its operating segments.
- Information about the reported segment profit or loss.
- Reconciliations of the totals of segment revenues, reported segment profit or loss, segment assets, segment liabilities and other material items to corresponding items in the entity's financial statements.

In addition, IFRS 8 requires some entity-wide information for all companies, regardless the number of operating segments reported. This information concerns products and services, geographical areas and important customers, and is mandatory for all entities, even if they report just one operating segment. The above information is required only if it is not already provided as segmental information.

### *Transition and Effective Date:*

---

The International Accounting Standards Board (IASB) issued IFRS 8 in 2006. The new regulation became mandatory for companies in the European Union for accounting periods beginning after January 2009. During 2009 the standard was amended for Annual Improvements mainly concerning the disclosures of segment assets. The amendments of IFRS 8 became effective from January 2010. The IASB permitted earlier implementation of the standard, but if an entity decided to follow the new regulation before January 2009 it had to make the corresponding disclosure.



## ***2. The IFRS 8: Operating Segments- What changes? Main differences with the IAS 14R***

---

As the existing literature suggests, IFRS 8 was introduced under the general concept of an attempt held by the Financial Accounting Standards Board (FASB) and the International Accounting Standards Board (IASB) in order to converge accounting standards between USA and the countries in which IFRS is applied. The IFRS 8 basically replaced the previous IAS 14R. The main purpose of this replacement was to create a standard which will be closer to the SFAS 131: “*Disclosures about Segments of an Enterprise and Related Information*” already applied in the USA.

Regarding the incentives that led the IASB to replace IAS 14R, it seems that it was anticipated that under the new regulation more companies would engage in segment reporting. In addition, the new regulation was believed to help the increase in the disclosed segment information for firms which have already applied IAS 14R.

The main **change** that the IFRS 8 introduced, compared to its predecessor IAS 14R, is indisputably the introduction of the *management approach*. According to this approach, companies are required to disclose segmental information based on parts of the company that the management uses in making decisions about operating matters. In other words, it is mandatory for companies to report in their financial statements the same segments that they use internally for making allocation decisions. The IAS 14R on the other hand, required the disclosure of two kinds of segments, business and geographical, based on the disaggregation of information reported in financial statements. Furthermore, the amounts of segment profit or loss, assets and liabilities to be disclosed for each segment are calculated, according to IFRS 8, with the same measures used for reporting to the Chief Operating Decision Maker (CODM) for deciding the distribution of sources and assessing the performance of each segment. The preparation of segment information according to IAS 14R was done based on the usual accounting rules for preparing financial statements.

Other changes that the new regulation has brought compared to IAS 14R include requirements for more qualitative disclosures (such as the determinants of identification of operating segments), and the discrimination between interest revenues and interest expenses.

Finally, in the case that a company reports a single segment, information about the company's products or services, geographical areas and major customers is required under the new regulation.

The main **contributions** of the new regulation as they were issued by the European Commission, based on consultation and research, can be summarized as follows:

- IFRS 8 addresses the needs of financial statements' users for increased disaggregated information disclosures while keeping the same levels of consolidated information as the preceding regulation.
- The introduction of the "Chief Operating Decision Maker" (CODM) concept by the IFRS 8 does not seem to impose problems in companies, at least in the European Union countries.
- IFRS 8 seems to introduce relevant segment reporting rules for not only big listed companies but also for smaller ones. Given that all listed companies, regardless of size, are obliged to provide the same level of segment information under the new regulation, there is no need for special rules about segment reporting for small listed companies.
- Apart from the above arguments, the most relevant question regarding the adoption of IFRS 8 would probably be: why the IASB chose to introduce the "*management-perspective*" approach? According to the IASB, this "Management Approach" was adopted in order to help the investors better understand the procedures followed by the managers in order to make financial decisions and to eliminate potential risks. Furthermore, it was argued that this approach will make the preparation of statements easier and less costly, as the information disclosed was already prepared for internal use.

A synopsis of the key differences between IAS 14R and IFRS 8 is provided in the table:

	<b>IAS 14R</b>	<b>IFRS 8</b>
<b>Segment Identification</b>	Primary and secondary segments are identified based on a “risks and rewards” qualification.	Requires identification of operating segments based on the internal reporting of financial information to the chief operating decision maker (management approach). The reporting of mixed operating segments is now allowed.
<b>Measurement of segment information</b>	Provides specific definitions about how to measure segment revenues, results, assets and liabilities	Segment information is measured the same way as reported to management. No specific definition about how to measure segment revenues, results, assets and liabilities, but explanations on how this information is calculated is required.
<b>Disclosures</b>	No such disclosures required	Requires disclosure about factors used to identify the operating segments and explanations on the types of products or services from which the reportable segment derives its revenues
<b>Entity-wide information</b>	No entity-wide information is required	Geographical information and information about major customers has to be provided by all entities

### ***3. The Management approach: improvements and concerns***

---

Several advantages as well as concerns have been expressed regarding the usefulness of the “management approach” introduced primarily in the SFAS 131, and adopted by the IFRS 8.

*Don Herrmann and Wayne B. Thomas (2000)* argue that the management approach should be less “expensive” for companies, as it includes information already prepared for internal-reporting purposes. *Pontus Troberg, Juha Kinnunen, Harri J. Seppänen (2010)* report that the management approach is not the only factor that can lead to higher cross-segment diversity. They argue that other determinants apart from the management approach must exist, that lead to higher diversity across reporting segments in the United States. *Nancy B. Nichols and Donna L. Street (2007)* mention that, according to the IASC and the FASB, the management approach would allow less freedom for companies in defining business segments and thus would be less subjective than the IAS 14R approach in terms of segment identification. They also argue, based on previous studies that the introduction of the management approach would lead to a general increase in the reported segments. *Jack W. Paul and James A. Largay (2005)* attempt to examine the introduced “management approach” from the users’ perspective, based on a comparison between the SFAS 14 and the SFAS 131. They find out that despite the increase of the number of segment information disclosed, significant differences in the ways companies disclose this information seem to exist, and this fact does not facilitate the potential usefulness of the management approach for users. Nevertheless, many concerns about the “management approach” have been expressed, considering primarily the “competitive harm” that may occur by disclosing too much internal information. More specifically, companies are worried about the fact that the disclosure of certain internal information will increase the proprietary costs and will give an advantage to the company’s competitors.

### ***4. Preliminary research concerning the usefulness of IFRS 8***

---

Given the fact that IFRS 8 became mandatory for IFRS adopters from January 2009, not much research has yet been done concerning the usefulness of the new regulation. We mention below the most important published articles and working papers on this field:

*Louise Crawford, Heather Extance, Christine Helliard and David Power (2012)* attempt to investigate the impact of the new regulation in UK, addressing two research questions: whether disclosure of segments has changed after the adoption of IFRS 8 in UK as well as whether financial statement users consider that IFRS 8 provides more useful segmental information compared to IAS14R. Their main findings show that the newly introduced “management approach” did not lead to a decline in the number of segments for which companies provide information. In addition, the authors suggest that segmental information seem to be proven useful for decision making, especially among investors.

*Nancy B. Nichols, Donna L. Street and Sandra J. Cereola (2012)* investigate how the adoption of the new regulation has changed the reporting of different segments by large European Companies (Blue Chips). In this study the authors basically provide descriptive statistics in order to capture the main changes that the new standard induced. They report findings concerning several aspects of changes, such as the number of reportable segments, the consistency of segment information with the introductory annual report, changes in information about sales and profitability, segment assets and liabilities, the extent of voluntary disclosures as well as the disclosure of the identity of the CODM. The main empirical results of this study suggest that under IFRS 8 there is a significant increase in the average operating segments reported, although most of the sample’s companies reported the same number or fewer segments. However, the average amount of reportable items of segment information has decreased. Moreover, companies seem to report more than one measure of segment profitability under the new regulation, and the segment information is usually consistent with the consolidated financial statements. Finally, it is shown that after the adoption of IFRS 8 there has been a significant improvement in the quality of geographic segment information disclosed contradicting, as the authors mention, the claims of the regulation’s critics.

*Grégory Heem and Pascale Taddei Valenza (working paper)* provide an analysis of the changes in the information disclosed in business segments after the adoption of IFRS 8, based on a sample of CAC 40 companies. Based on previous literature about segment reporting, notably related with SFAS 131, they develop two separate hypotheses: First, the number of segments reported is expected to increase after the adoption of IFRS 8. Second, the number of indicators reported will also increase after IFRS 8. The results of the empirical analysis do not confirm the first hypothesis, showing that the number of segments reported remained unchanged after the passage to IFRS 8. Furthermore, the majority of the companies seem to report business segments in the same way as with the previous regulation. The authors

conclude that companies have already used internal reporting to decide how they will report business segments, even before this became mandatory via the new regulation. Regarding the second hypothesis, the results indicate that there was not a significant change in the number of indicators, and the authors are thus unable to confirm the initial hypothesis.

*Manuela Lucchese and Ferdinando Di Carlo (working paper)* attempt to answer similar research questions about the effect of IFRS 8 on the number of reported segments and the accounting items disclosed, examining a sample of Italian listed companies. The results of this empirical research indicate once more no significant modification in the way companies provide segment information after the adoption of the IFRS 8. The authors conclude that the new regulation did not provide new incentives for companies to disclose more information, apart from the motives already considered to exist before the regulation's implementation.

## PART IV: INFORMATION ASYMMETRY

### *1. A review of studies about information quality and information asymmetry*

---

Information Asymmetry can be generally defined as a situation in which one party of a transaction possesses superior/private information than the counterparty that has access only to public information. This situation can be considered as dangerous when the party which holds the superior information takes advantage of the other party's lack of knowledge. The presence of information asymmetry usually leads to two types of problems: *adverse selection* and *moral hazard*.

**Adverse selection** occurs when the party of the transaction that has superior information is able to make a better estimation of the true value of the product under transaction. It is an issue of information asymmetry that can take place before a transaction and can prevent the transaction occurrence.

**Moral hazard** problems can arise in a situation where the party that holds the superior information uses it to take a more advantageous position, usually by ignoring the principles of the agreement and leading the less informed party to a disadvantageous position. Moral hazard issues may thus occur after a transaction is completed.

Through their work, *Myers and Majluf (1984)* are the first to model the adverse selection problem in financial decisions while *Jensen (1986)* addresses the moral hazard issue caused by the presence of information asymmetry.

Information asymmetry problems can appear in many circumstances. Relative to our study is the situation where a company's manager decides to withhold from users of the financial statements (investors, analysts, governments) pieces of information about the firm's whereabouts that could be useful to them. The possession of private information can thus create an *adverse selection* problem in the market, as the investors will not be able to precisely estimate the fair value of a firm due to incomplete information available and the uncertainty that is caused by this situation.

Accounting research suggests that financial reporting reduces information asymmetry between managers and investors by disclosing relevant and timely information. Furthermore, it is argued that because there is considerable variation in accounting quality and economic efficiency across countries, international accounting systems provide an interesting setting to examine the economic consequences of financial reporting.

### *The role of Financial Analysts*

---

Financial analysts are an indispensable part of the financial markets. Their job includes gathering and analyzing information about a company and providing consultation to investors primarily through earnings forecasts and buy/sell recommendations. Several studies indicate that the majority of the information accumulated by financial analysts is coming from the management of the firms they follow rather than processing public information given by annual or interim reports or other sources in order to develop their own insights ( *Lang & Lundholm; 1996*). Motivated by such studies, new regulations have been imposed regarding the timing of disclosing by companies, such as Regulation Fair Disclosure (RegFD) in the United States.

As many researches indicate, financial analysts are able, through their access to private information, to reduce information asymmetry by providing more accurate and timely consultations to investors.

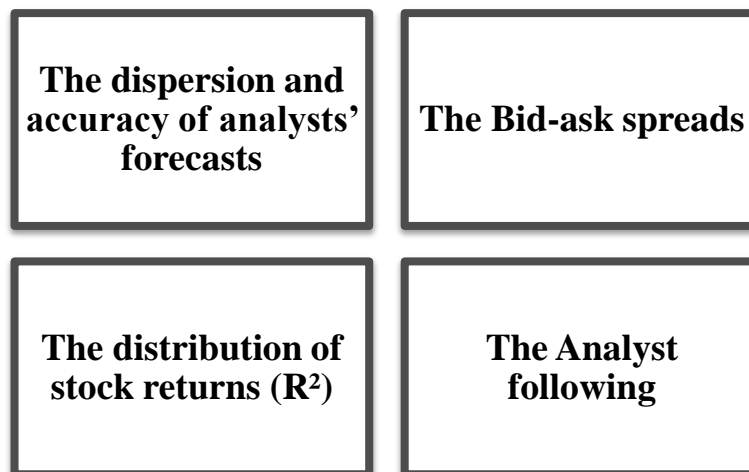
## ***2. Information Asymmetry: main metrics, methodologies and results***

---

Given the fact that the degree of information asymmetry cannot be directly measured, proxy variables are used in empirical studies. *Jonathan Clarke and Kuldeep Shastri (2000)* in their working paper concerning the comparison of different Information Asymmetry metrics discriminate two broad categories of proxy variables that have been used in the literature. The first category includes proxies for a company's internal investment opportunity set, while the second takes into account the "market microstructure" in which a firm operates.

The table below summarizes the main proxies for measuring the level of Information Asymmetry that are commonly used in the existing literature:

### **The most important proxies for Information Asymmetry**



For the purpose of this study we will examine the change in the level of information asymmetry using as proxies each one of the metrics presented above and discussed in detail below.

### ***2.1. Information asymmetry metrics: The Forecast Accuracy/ Forecast Error metric***

---

As it was mentioned above, **financial analysts** are among the major users of financial statements, as they intensively use accounting information to estimate a firm's fundamental value. The use of Financial Analysts' earnings forecasts as a proxy for measuring information



asymmetry has been widely used from researchers in many circumstances. In fact, earnings forecast accuracy (dispersion) has been positively (negatively) associated with the level of quality of the information publicly disclosed by firms (*Lang & Lundholm; 1996*).

Many researchers argue that an increase on the level of information about a firm will lead to a convergence of the financial analysts' forecasts concerning the firm's future earnings. The consensus analysts' forecasts of earnings per share as well as the dispersion among analysts' forecasts are therefore common proxies for capturing information asymmetry.

Two main categories of proxies can be derived from the literature:

- The first category studies the **Mean Consensus Forecast Errors** and can be defined as:

$$\text{Mean Forecast Errors} = \text{Mean Earnings per Share Forecast} \\ - \text{Actual Earnings per Share}$$

- The second category concerns the **Dispersion among analysts about a consensus estimate of the earnings forecasts** and is measured as the *Standard Deviation of analysts' Earnings Forecasts*.

The first proxy basically provides a measure of the quality of **common** information, while the second one gives us the level of quality of the **private** information available to individual analysts.

We provide below brief presentations of some important studies concerning the link between the quality of information disclosed by firms and the earnings forecasts precision.

*Mark Lang & Russel Lundholm (1996)* provide a very interesting study concerning the association between disclosure practices of firms and financial analysts' behavior. In order to build their main hypotheses, the authors first discuss some insights concerning the possible properties of financial analysts' earnings forecasts among other variables. First of all, they suggest that the degree in which a shift on the level of information disclosed by firms will affect the dispersion of analysts' forecasts will depend on whether this dispersion is caused by different levels of information among analysts or different interpretation of the same pieces of information. In the case that analysts follow the same means for interpreting the public information, they will base their forecasts primarily on the private information that is available to each one, causing an increase of the consensus forecasts following an increase on

the level of disclosures. Alternatively, if analysts have all the same private information but they don't interpret the information in the same way, the dispersion of forecasts will normally increase after an increase of the information disclosed. The authors thus propose (and test in their study) a negative relationship between the informativeness of a firm's disclosures and the dispersion of analysts' forecasts.

Next, the authors establish the expected relationship between analysts' forecast accuracy and the informativeness of a firm's disclosure policy. They anticipate a positive relationship to exist between the above variables.

During their empirical research, the authors attempt to examine the relationship between the above variables (dispersion and accuracy of analysts' forecasts) as well as two other variables (number of analysts and revision volatility) and the disclosure policies followed by firms, after controlling for some factors that may affect the information environment such as size and earnings surprise. They authors measure the level of disclosure by considering three categories of disclosure, namely annual reports, other publications and investor relations.

The main results of this empirical research can be summarized as follows:

- Firms with disclosure policies of high quality will have less dispersion among analysts' forecasts as well as more accurate forecasts.
- The "investor relations" aspect of disclosures seems to be a very significant factor of the financial analysts' behavior, confirming the authors' intuition that most of the analysts' information is acquired directly from companies.

The authors conclude that the positive relationship between the quality of information disclosed and the accuracy of earnings forecasts implies that differences in analysts' forecasts have to arise primarily from differences in the amount and/or the quality of information provided by firms rather than by differences in the interpretation of this information by the analysts.

The article by *Orie E. Barron, Oliver Kim, Steve C. Lim and Douglas E. Stevens (1998)* is one of the first studies addressing the association between the forecasts of analysts and a company's disclosures of information. The authors suggest that financial analysts form their predictions about a company's earnings, based on two *signals* that they receive, one common across all analysts and one private to individual analysts. They claim that *forecast errors*

(deviation from the mean forecast) and *dispersion* (cross-sectional variance) arise due to the existence of those two types of information. They therefore attempt to associate those two metrics with the degree to which analysts opinions converge. Thereafter they show that using those metrics one can estimate the quality of common and private information available to financial analysts. To that end, the authors propose the following theoretical terms: “*Uncertainty*” refers to the expected squared error in individual forecasts aggregated (or averaged) across analysts. “*Consensus*” refers to the degree to which analysts share a common belief.”<sup>4</sup>

They then demonstrate that the expected dispersion of forecasts is positively related to uncertainty and negatively related to consensus, while the expected error (deviation from the mean forecast) is positively related to both uncertainty and consensus.

This article has made a great contribution to the existing literature, as it introduced a valid theoretical model for the association between financial analysts’ earnings forecasts and the quality of information disclosed by companies.

In a related study, *Elton, Gruber, and Gultekin (1984)* conclude that the analysts’ forecast errors tend to decrease as the predictions approach the end of a fiscal year.

Nevertheless, *Jonathan Clarke and Kuldeep Shastri (2000)* point out that there are some important limitations regarding the above studies. First, it is assumed that the information provided by analysts to investors is unbiased. Second, the authors argue that a major limitation of the analysts forecast errors as a metric for information asymmetry is that forecast errors might be also linked to the level of risk of a firm. In other words, higher forecast errors regarding a firm may be caused due to the high volatility of earnings and not due to higher levels of information asymmetry.

## 2.2. Information asymmetry metrics: The Bid-Ask Spread metric

The Bid-Ask spread metric is a proxy that captures the effect of Information Asymmetry on the behavior of **market makers**.

The principal role of market makers in organized exchanges is to provide the choice for investors to trade whenever they want to, thus to provide **liquidity** in the markets. In return of

---

<sup>4</sup> **Orie E. Barron, Oliver Kim, Steve C. Lim and Douglas E. Stevens (1998)**, Using Analysts’ Forecasts to measure properties of Analysts’ Information Environment, *The Accounting Review*, Vol. 70 No 4, October 1998, pp. 421-433

providing liquidity, market makers maintain the right to form different prices for purchases and sales. The spread between those two prices (called bid-ask spread) constitutes the primary source of compensation for the market makers for providing liquidity. As *Thomas E. Copeland and Dan Galai (1983)* mention, market makers will seek to optimize their position “...by setting a bid-ask spread which maximizes the difference between expected revenues received from liquidity-motivated traders and expected losses to information motivated traders”<sup>5</sup>

Information provided by accounting reports of high quality can be of crucial importance for maintaining the liquidity of a firm’s stock. Higher level of information disclosed through financial statements is associated with lower levels of information asymmetry across traders, leading market makers to easier stock transactions in terms of timing and pricing.

The most important determinants of the level of the bid-ask spread is the size as well as the market value of a firm. Given that companies with high value are more likely to interest investors, their stock is traded more frequently and thus their performance is usually monitored more frequently, leading to less potential for information asymmetry. Bid-ask spreads are consequently relatively low for large and profitable firms. On the other hand, when the information about a company is not very transparent or there is not enough information available, market makers will tend to increase the bid-ask spreads, as it is unlikely that they will have more information compared to sophisticated traders. (*Andros Gregoriou, Christos Ioannidis and Len Skerratt; 2005*)

Empirical literature concerning this metric indicates that the Bid- Ask spread consists of three main components: an **order processing component**, an **inventory component**, and an **adverse selection component**.

These three components are basically representing the potential costs that may occur for a market maker.

- The “*order processing costs*” represent the costs for market makers that are fixed.
- The “*inventory holding costs*” the costs for holding inventories that are not beneficial.
- The “*adverse selection costs*” correspond to the compensation for the market maker related to expected losses that may occur from transactions with traders that hold private information in addition to the public one.

(*John Affleck-Graves, Carolyn M. Callahan and Niranjan Chipalkatti; 2002*)

---

<sup>5</sup> **Thomas E. Copeland and Dan Galai (1983)**, Information Effects on the Bid-Ask Spread, The Journal Of Finance Vol. XXXVIII, No. 5, December 1983

The “adverse selection” is considered as the most important component of the bid-ask spread related to our study, as it is the one that researchers claim to be increased with the level of information asymmetry (*Jonathan Clarke and Kuldeep Shastri; 2000*).

*Bagehot (1971)* was the first to introduce the idea that the differences in the level of information between market participants could affect stock prices and the market makers’ quote process. Given that a market maker will not benefit by trading with a more informed investor, he will attempt to offset the relevant loss from these transactions with the trading gains from less sophisticated investors. These gains are captured in the **bid-ask spread** that the market makers form during their transactions. The bid-ask spread has become a very common proxy for capturing information asymmetry in the literature.

The first study that formally analyzes the ideas brought by *Bagehot (1971)* comes from *Thomas E. Copeland and Dan Galai (1983)*. The authors propose a model for estimating the effect of the information disclosed by companies to the bid-ask spreads set by market makers. This model basically involves the use of a combination of put and call options to capture the commitment made by the market makers to buy or sell at the bid and ask prices. The authors conclude that the empirical results confirm the validity of this model as, consistent with previous studies, the bid-ask spread is appeared to increase with increase in the level and the volatility of the price of the asset being traded.

*Lawrence Glosten and Paul Milgrom (1985)* provide another useful model for estimating the bid-ask spread, which is connected with the adverse selection problem that the market makers have to deal with. This problem is caused, according to the authors, when informed traders are willing to deal in a certain bid-ask spread set already by the marker maker, causing losses to the latter which he must be reimbursed by trading with less sophisticated traders. The main difference with the previous work of *Copeland and Dan Galai (1983)* is that in this study the authors do not assume that the private information is revealed immediately after each trade, allowing further trading and thus providing a more realistic model.

In a related study, *David Easley and Maureen O’Hara (1987)* suggest that the *trade size* can also be a factor that introduces the adverse selection problem. The authors claim that informed traders (i.e. traders who hold private information) will be willing to trade bigger amounts of a given security at a given price proposed by a market maker. Consequently, the pricing strategies followed by market makers must also depend to the trading volumes that they observe for a given security. The authors thus conclude that the possibility for a market maker

that he trades with an informed investor will increase when the trade size increases. Additionally, the authors suggest that the sequence of trades also affects the determination of the price of the securities, given that market makers face also the risk that a new piece of private information does not actually exist.

Apart from the above studies that introduce us the meaning and the main models for measuring the bid-ask spread, another series of studies have been published, concerning the relationship between firms' disclosure policies and the levels of the bid-ask spreads.

*Welker (1995)* provides one of the first empirical researches concerning the above relationship. This article's main contribution is that, unlike previous studies that focus on the impact of specific information announcements on the markets, this study investigates the effect that a firm's overall disclosure policy has over the corresponding bid-ask spread. To that end, the author performs an empirical research in which both of the proxies for disclosure policy and for market liquidity are considered as endogenous variables. The annual corporate disclosure rating taken from the Association for Investment Management and Research Corporate Information Committee (CIC) reports is used as a proxy for the firms' disclosure policies, while the bid-ask spread is used as a proxy for market liquidity. The author confirms his hypothesis of a significant negative relationship between firms' general disclosure policies and the bid-ask spread.

*John Affleck-Graves, Carolyn M. Callahan and Niranjana Chipalkatti (2002)* attempt in their study to investigate the link between the predictability of earnings, information asymmetry, and the "adverse selection" component of the bid-ask spread. To that end, they basically perform an event study, examining the behavior of the adverse selection component of the bid-ask spread in the period around the firms' quarterly earnings announcements. Their findings suggest that there is no significant change in the adverse selection component of the bid-ask spread before or on the day of the quarterly earnings announcements for firms that are supposed to have predictable earnings. The opposite holds for firms with less predictable earnings.

Finally, *Kee H. Chung, Thomas H. McInish, Robert A. Wood and Donald J. Wyhowski (1995)* present a very interesting study regarding the association between the two metrics for information asymmetry derived from the behavior of financial analysts (forecast accuracy and dispersion) and the behavior of the market makers (bid-ask spreads). The authors claim that although theories about those two proxies for information asymmetry have been developed

separately, it would be interesting to examine how those metrics and the different market participants that they represent react with each other when it comes to the quality of information disclosed by firms. The authors suggest that each of the two parties of financial markets (financial analysts and market makers) take information about the volume of information asymmetry about a company's prospect by observing the behavior of the other party. Indeed, they report a concurrent interaction between the two parties.

### ***2.3. Information asymmetry metrics: The $R^2$ metric***

---

In recent studies, researchers have attempted to associate the level and the quality of information disclosed by companies to the behavior of their stock returns. However, there is evidence that only a relatively small part of the price movements can be explained by the release of common information such as annual or quarterly financial reports. Researchers suggest that private firm-specific information is the main determinant that affects the behavior of stock returns.

One of the first studies in this direction is the one of *Jin and Myers (2006)*. More specifically, in this study the authors attempt to demonstrate how the level of information available by a company affects the relationship between managers and investors. Their main idea is that managers are willing to interfere with the company's disclosed earnings, and more precisely to hide earnings from the investors, up to the point that the investors' "property rights" are completely protected. This limit depends however on the investors' perception of a firm's potentials, which in most cases is imperfect, given the existence of private (idiosyncratic) information. The authors attempt to examine the link between the opacity that arises from the situation described above and *the  $R^2$  from a modified index-model regression*, a measure that captures the behavior of stock returns. They conclude that an increase in the opacity of a firm (and consequently to the firm-specific information available to investors) leads to higher  $R^2$ s.

Based on the same principle, *Amy P. Hutton, Alan J. Marcus and Hassan Tehranian (2009)* introduce a new approach of the same idea, the association between the opacity of financial statements disclosed by firms and the distribution of stock returns. The main difference from the previous work of *Jin and Myers (2006)* is that in this study the authors propose a new firm-specific measure for capturing opacity: a company's level of earnings management.

More specifically, the authors use “*the prior three years’ moving sum of the absolute value of discretionary accruals*”<sup>6</sup> as an indicator of earnings management. The appropriateness of this measure is based on the fact that, given the investors’ imperfect level of information, their estimates about a firm’s performance will rely to reported earnings, the accuracy of which depends on the quality of accruals involved. The authors suggest that, in some cases managers may have incentives to manipulate earnings through presenting inaccurate accruals, even when conforming to the GAAP the company is mandated to follow. The results of this empirical research indicate that the opacity of a firm’s financial statements (and thus the decrease of firm-specific information disclosed) is associated with higher R<sup>2</sup>s.

#### 2.4. Information asymmetry metrics: The “Analyst following” metric

Many researchers suggest an additional approach for capturing the effect of Information Asymmetry on the behavior of financial analysts. This approach is often called the “**analysts following**” approach and suggests that a firm’s informational environment can be estimated by observing the number of financial analysts who are interested in analyzing the information available for this firm.

In general, previous studies suggest that having more analysts following a specific firm with more accurate forecasts, lower forecast dispersion and lower volatility of revisions indicates a firm with better information environment.

*Patricia C. O'Brien and Ravi Bhushan (1990)* conduct a study about the determinants that lead financial analysts to follow specific firms. The authors propose a model that simultaneously examines these factors as well as the institutional investors' decisions to invest to the same firms. The authors report an association between analysts’ decision to follow a firm and the relative costs and benefits of gathering information about this firm. More specifically, they claim that financial analysts will prefer to follow industries in which more and more firms operate or industries that are properly regulated. On the other hand, they find no evidence that firm size is an important determinant of the analysts’ following decision.

During another study, *Michael Brennan, Narasimhan Jegadeesh and Bhaskaran Swaminathan (1993)* investigate the relationship between the number of analysts following a firm and the sensitivity of this firm’s price to the disclosure of new information. They find

---

<sup>6</sup> **Amy P.Hutton, Alan J.Marcus and Hassan Tehranian (2009)**, Opaque financial reports, R<sup>2</sup> and crash risk, *Journal of Financial Economics* 94 (2009) p.67–86



that firms that are followed by more analysts tend to have in general higher returns compared to firms followed by fewer analysts, even after controlling for the firm size.

### ***3. The impact of new regulations on the financial analysts' information environment***

---

Several studies have been conducted over the years concerning the impact of new regulations on the financial analysts' information environment. Most of these studies are focused on the change in the ability of financial analysts to predict earnings after a specific regulation (such as particular parts of IFRS or US GAAP or even IFRS as a whole) became mandatory.

*Gerald J. Lobo, Sung S. Kwon and Gordian A. Ndubizu (1998)* examine the impact of the changes brought by the *Statement of Financial Accounting Standards (SFAS) No. 14: Financial Reporting for Segments of a Business Enterprise* to the financial analysts' earnings forecasts. The authors report that the increase of the analysts' earnings forecast accuracy for the sample of companies that released annual reports under the new regulation appeared to be significantly greater compared to the firms that did not disclose such information. They conclude that the SFAS 14 seems in general to improve the quality of the companies' information environment.

*Ashbaugh and Pincus (2001)* demonstrate that analyst forecast accuracy has actually improved after companies adopted the International Accounting Standards (IAS). More specifically, after controlling for several factors such as analyst following changes and market capitalization, the authors find out that the convergence in different companies' accounting policies imposed by the adoption of IAS had a positive impact on the financial analysts' information environment, leading to a significant reduction in the analysts' forecast errors. In a related study, *Guan, Hope and Kang (2006)* find that analysts' forecasts seem to be more accurate for companies that are domiciled in countries with local GAAPs that are similar to the US GAAP. They conclude that a convergence of local GAAPs to a high quality standard will have important benefits concerning the firms' informational environment.

Finally, *H. Tan, S. Wang and M. Welker (2011)* examine the impact of the mandatory IFRS adoption on two metrics of Information Asymmetry, the Analyst Following and the Forecast Accuracy, especially for foreign financial analysts. Their results suggest that the adoption of

IFRS generally improves foreign analysts' forecast accuracy. In addition, the authors report that the change in analyst following is greater in the cases in which IFRS and the local GAAPs that it replaced differed significantly. Based on these results the authors suggest that the harmonization of the accounting principles will generally improve the usefulness of accounting information mainly through enhancing comparability between firms.

## PART V: RESEARCH PROPOSAL

### *1. Motivation*

---

The IFRS 8: "Operating Segments" is considered by many analysts a regulation that may change fundamentally the way that companies disclose their financial information. It is nevertheless obvious that not all firms will be affected by the changes that this regulation brings. For example, the new regulation is irrelevant for firms (regardless their size) that operate only in one segment. On the other hand, companies that are highly diversified are expected to be immensely affected by the introduction of this regulation.

It would be thus very interesting to investigate the degree of the impact that the mandatory adoption of IFRS 8 has brought on firms.

The main motivation of this research proposal was the fact that, although the literature concerning the effects of the mandatory adoption of the IFRS is large and growing, **little research has been dedicated to the effectiveness of specific standards.**

We strongly believe that IFRS 8 is a very important regulation and that its implementation will change in many ways the relevance of the disclosed information by companies. Nevertheless, as many researchers argue, the same accounting standards can be implemented very differently in each country, due to particularities in cultures, legal systems and enforcement strategies. The presence of suitable enforcement mechanisms is therefore mandatory for real convergence and harmonization which will lead to real comparability of the financial statements.

## ***2. Research questions***

---

The main research question that we will attempt to answer is **whether IFRS 8 produces more relevant and useful information** for financial statements' users. In addition, we will investigate **the degree in which companies comply with the new regulation**, and more specifically with the newly introduced "management approach". Finally, we will examine **the firms' incentives for voluntary adopting the new standard** in the period before its mandatory adoption.

We will search answer to these questions by examining *whether the introduction IFRS 8 has contributed in the reduction of Information Asymmetry*. In order to do so, we will investigate the evolution of different metrics for Information Asymmetry before and after the imposition of the new regulation.

As it was discussed earlier, it is argued by many researchers that the adoption of IFRS had a direct effect on not only the information that is common across all financial analysts but also on the information that is available privately to individual analysts. In other words, the precision of both common and idiosyncratic information has changed after the adoption of IFRS. In addition, several papers have shown that financial reporting has a significant impact on the analysts' behavior, the levels of the bid-ask spreads formed by the market makers, as well as the distribution of the stock price returns. It is proven that increased disclosure leads to decreased analysts' forecast errors, lower bid-ask spreads, higher R<sup>2</sup>s and increased analyst following.

Moreover, as it was mentioned before, one of the primary goals behind the introduction of IFRS 8 was to force more firms in engaging into segment disclosure and thus in providing higher level of information to investors. The primary objective of the empirical study proposed will be to investigate whether the introduction of IFRS 8 has indeed achieved this goal. We will attempt to answer to this research question by examining the accuracy of three related hypotheses.

**We will therefore hypothesize that after the implementation of IFRS 8:**

- 1. The level of financial analysts' forecast accuracy as well as the analyst following have been increased**
- 2. The level of Bid-Ask spreads has been reduced**
- 3. The level of R<sup>2</sup> has been increased**

We will then attempt to estimate the level of compliance with the new regulation and therefore to investigate what are the actual consequences that the introduction of the IFRS 8 has brought to companies. As it was mentioned before, this particular regulation is not expected to affect all companies in the same degree neither to be applied simultaneously by all firms in the same way. It would be therefore interesting to investigate the reaction of firms to the changes that the new regulation has brought, by measuring the level of compliance for each firm and estimating the determinants that lead to higher conformity with the IFRS 8.

Finally, we think that it would be interesting to investigate the incentives that companies had for voluntarily adopting the new regulation. The fact that companies were permitted to voluntarily comply with IFRS 8 for a two-year period (2007-2009) gives us a unique opportunity to investigate the levels of voluntary adoption as well as the factors that led to the decision of early compliance. We believe that this research will give us insights about the importance of the new regulation for companies.

The proposed empirical research will include a descriptive study with three main objectives:

1. The first objective of this study will be to provide insights for the information given by companies. More specifically, we will attempt to investigate whether companies have changed their **disclosure policies** regarding their disaggregated information with the passage from IAS 14R to IFRS 8.
2. The second objective of this research will be to make a distinction between firms that provide rich information compared to those that provide poor information. We will try to shed light to the **main motivations** that lead a company to the decision to disclose more or to withhold information regarding its operating segments.
3. The third objective will include the investigation of the impact that the new regulation has had concerning the means that companies choose in order to report their operating segments. We will attempt to search the factors that affect a company's decision to comply with the new regulation, and thus to what degree this regulation is relevant for firms.

### ***3. Research Design and Methodology***

---

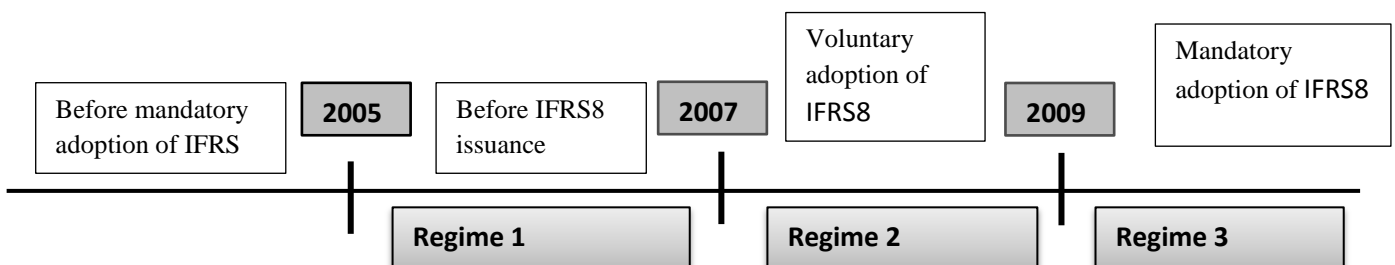
The main procedure of the proposed empirical analysis involves the comparison of the different Information Asymmetry metrics that were mentioned above, for the periods before and after the implementation of IFRS 8. The secondary procedures involve the estimation of the levels of voluntary disclosure as well as the levels of compliance with the new regulation.

Given that the new regulation became effective by the beginning of 2009, but voluntary adoption was allowed from the beginning of the year 2007, we can discriminate three separate periods for our data:

- a) The period before the issuance of IFRS 8 (2005-2007)                      **Regime 1**
- b) The period of voluntary adoption of IFRS 8 (2007-2009)                      **Regime 2**      and
- c) The period of mandatory adoption of IFRS 8 (2009-2012)                      **Regime 3**

The first period of our study will start the year 2005, as this is the date that the IFRS became mandatory for listed companies in Europe.

We provide a schema illustrating the three different Regimes previously described:



In addition, using the data available for Regime 3, we will discriminate **three types of firms**:

- a) Those that do not disclose so much of their private information because they don't have much information to disclose
- b) Those that have much private information to disclose, but they choose for several reasons not to,
- c) Those that disclose high levels of private information

In order to answer to the main research questions, we intend to follow the procedures described below:

First, we will conduct **descriptive statistics**, in order to investigate the number of firms that were actually affected by the imposition of the new regulation. The descriptive statistics will include information about the number of firms that have changed their segment reporting policies since the mandatory adoption of IFRS 8, either by changing the number of segments reported or by changing the amount of the information disclosed. We will seek answer to questions about the special characteristics of the firms that seem to be affected by the new regulation (firm size, profitability, industry, country of domicile). After the conduction of the descriptive statistics we will be able to discriminate a **“benchmark” sample of firms** for which the introduction of IFRS 8 is considered useful and is more likely to have changed the quality of available information.

Second, in the process of investigating whether the introduction of IFRS 8 has increased the quality of the information available by firms (and accordingly decreased the level of Information Asymmetry), we will seek answer to the following questions:

### 1) What is the impact of IFRS 8 on Information Asymmetry?

In order to address this question we will perform a comparison of the levels of Information Asymmetry, as expressed through the different proxies mentioned in Part IV, between the three separate Regimes (1, 2 and 3).

In order to capture the change in the information asymmetry metrics between the three separate Regimes, we will use a multiple linear regression model, described below:

$$\mathbf{IA} = \alpha_0 + \alpha_1 \mathbf{POST} + \alpha_2 \mathbf{SAMPLE} + \alpha_3 \mathbf{SIZE} + \alpha_4 \mathbf{IND} + \alpha_5 \mathbf{COUNTRY} + \varepsilon \quad (\text{Reg. 1})$$

Where:

**IA** is the dependent variable defined each time by the information asymmetry metric that we will use (*forecast accuracy or error, bid-ask spread, R<sup>2</sup>*)

**POST** is a dummy variable indicating whether the data is drawn from the period before the mandatory adoption of the regulation (Regime 1 & 2) or after (Regime 3)

**SAMPLE** is a dummy variable indicating whether or not the firm belongs to the “benchmark” sample of firms for which the introduction of IFRS 8 is considered useful

**SIZE** is a control variable estimated as the firm’s net sales

**IND** is a variable that captures the Industry-fixed effects (based on SIC codes)

**COUNTRY** is a variable that captures the Country-fixed effects (based on the country in which the firm is located).

We present below the main formulas that, based on previous literature, we intend to use for measuring the different information asymmetry metrics previously described:

a) The “Forecast Accuracy/ Forecast Error metric:

Ali A., Klein A. and Rosenfield J.S. (1992) propose the following model for calculating Forecast Errors:

$$FE_{it} = \frac{(EPS_{it} - F_{it})}{P_{it}}$$

Where  $EPS_{it}$  is the reported annual earnings per share for firm  $i$  for year  $t$ ,  $F_{it}$  is the median analysts' forecast for annual EPS of year  $t$ , and  $P_{it}$  is the market price of the stock at the beginning of the month in which analysts' forecasts are released

Alternatively, Fort P. C. (1997) defines the forecast accuracy measure as the absolute value of the difference between the actual Earnings per Share (EPS) and the forecasted EPS divided by the actual EPS

$$FAcc_{i,t} = \left| \frac{(ActualEPS_{i,t} - MedianForecastEPS_{i,t})}{ActualEPS_{i,t}} \right|$$

Where:  $ActualEPS_{i,t}$  is the actual EPS reported of firm  $i$  in period  $t$  and  $MedianForecastEPS_{i,t}$  is the median monthly forecast of year-end EPS of firm  $i$  in period  $t$

b) The Bid- Ask spread metric:

The work of *Roll (1984)* was among the first studies that presented an official formula for estimating the Bid-ask spread. The author mentions that the compensation that the market maker will require for trading with informed investors will be reflected in the bid-ask spread. He suggests that even in an informationally efficient market, the market price changes will not be independent because transactions will occur either at the bid or at the ask price. The author suggests that there is a negative serial relationship between observed stock prices when a market maker is involved in the transactions. He shows that this negative relation implies that the bid-ask spread can be calculated as:

$$Bid-Ask\ Spread = 2 \sqrt{-Cov(\Delta_{pt}, \Delta_{p\ t+1})}$$

Where:  $Cov(\Delta_{pt}, \Delta_{p\ t+1})$  is the covariance between two successive price changes  $\Delta_{pt}$  and  $\Delta_{p\ t+1}$ .

An important assumption that is made by the author is that successive transactions are independent. This means that the likelihood of one transaction to be executed at the bid or at the ask price does not depend on the previous transaction.

c) The R<sup>2</sup> metric:

Consistent with the work of *Amy P. Hutton, Alan J. Marcus and Hassan Tehranian (2009)* and *Jin and Myers (2006)*, we will calculate the level of R<sup>2</sup> from a *modified index-model regression*:

$$r_{j,t} = \alpha_j + \beta_{1,j}r_{m,t-1} + \beta_{2,j}r_{i,t-1} + \beta_{3,j}r_{m,t} + \beta_{4,j}r_{i,t} + \beta_{5,j}r_{m,t+1} + \beta_{6,j}r_{i,t+1} + \varepsilon_{j,t}$$

Where  $r_{j,t}$  is the return on stock  $j$  in week  $t$ ,  $r_{m,t}$  is the CRSP value-weighted market index and  $r_{i,t}$  is the Fama and French value-weighted industry index.<sup>7</sup>

<sup>7</sup> **Hutton A., Marcus A. and Tehranian H. (2009)**, Opaque financial reports, R2 and crash risk, *Journal of Financial Economics* 94 (2009) p.67–86



**2) Does this impact depend on how IFRS 8 is applied? Which factors are associated with higher levels of compliance with the standard?**

In order to answer this research question we will perform a regression based on the methodology of *Prather-Kinsey and Meek (2004)*. We will attempt to capture the level of compliance with the new regulation by estimating the variable **Disclosure Compliance** (DisCom) for each firm in our sample, during the period 2009-2012 (Regime 3), by regressing this variable to some typical firm characteristics:

$$\text{DisCom} = \beta_0 + \beta_1\text{SIZE} + \beta_2\text{PROF} + \beta_3\text{IND} + \beta_4\text{COUNTRY} + \beta_5\text{BIG4} + \beta_6\text{POST} + \beta_7\text{SAMPLE} + \varepsilon \quad (\text{Reg. 2})$$

Where:

**DisCom** is the dependent variable, measured by dividing the total of items reported by a firm by the total of items required by the IFRS 8

**SIZE** is estimated as the firm's net sales

**PROF** captures the profitability of a firm, measured by its Net Income

**IND** is a variable that captures the Industry-fixed effects (based on SIC codes)

**COUNTRY** is a variable that captures the Country-fixed effects (based on the country in which the firm is located)

**BIG4** is a variable indicating whether the firm is audited by one of the four larger audit firms

**POST** is a dummy variable indicating whether the data is drawn from the period before the mandatory adoption of the regulation (Regime 1 & 2) or after (Regime 3)

**SAMPLE** is a dummy variable indicating whether or not the firm belongs to the benchmark sample of firms for which the introduction of IFRS 8 is considered useful.

**3) Which were the determinants of the voluntary adoption of IFRS 8?**

In order to address this question, we will perform a regression similar to Reg. 2 for the period 2007-2009, during which the adoption of IFRS 8 was mandatory (Regime 2). Our dependent variable will be **VolDisc** (Voluntary Disclosure) and it will be calculated by dividing the number of items disclosed voluntarily by the firm to the items required by the regulation. The independent variables will remain the same:

$$\text{VolDisc} = \gamma_0 + \gamma_1 \text{SIZE} + \gamma_2 \text{PROF} + \gamma_3 \text{IND} + \gamma_4 \text{COUNTRY} + \gamma_5 \text{BIG4} + \gamma_6 \text{POST} + \gamma_7 \text{SAMPLE} + \varepsilon \quad (\text{Reg. 3})$$

Where:

**SIZE** is estimated as the firm's net sales

**PROF** captures the profitability of a firm, measured by its Net Income

**IND** is a variable that captures the Industry-fixed effects (based on SIC codes)

**COUNTRY** is a variable that captures the Country-fixed effects (based on the country in which the firm is located)

**BIG4** is a variable indicating whether the firm is audited by one of the four larger audit firms

**POST** is a dummy variable indicating whether the data is drawn from the period before the mandatory adoption of the regulation (Regime 1 & 2) or after (Regime 3)

**SAMPLE** is a dummy variable indicating whether or not the firm belongs to the benchmark sample of firms for which the introduction of IFRS 8 is considered useful.

## CONCLUSION

This master dissertation presents an extended literature review regarding the main research in the topics of firms' disclosure policies, segment reporting and the regulations concerning this kind of information provided by firms. Furthermore, we discuss the most important research regarding the Information Asymmetry issues in the financial markets, as well as the main proxies for measuring information asymmetry, as proposed in the related literature. Finally, we propose the discussion of several issues that we believe that are interesting for future research, together with preliminary methodologies for addressing the related research questions.

The main motivation for this master dissertation as well as the conducted research proposal is the fact that, although a huge part of research has already been dedicated to the effectiveness of the International Financial Accounting Standards and the ways that they affect the financial markets, little research has been so far conducted concerning the impact of specific standards. We strongly believe that IFRS 8: "Operating Segments" is an accounting standard that will induce substantial changes in the firms' disclosure policies. The analysis of the effectiveness of this regulation should be therefore considered to positively contribute to the existing disclosure literature.

## References

1. **Affleck-Graves J., Callahan C. and Chipalkatti N. (2002)**, Earnings Predictability, Information Asymmetry and Market Liquidity, *Journal of Accounting Research*, Vol. 40 No 3, June 2002
2. **Ajinkya B. (1980)**, An Empirical Evaluation of Line-of-Business Reporting, *Journal of Accounting Research*, Vol. 18 No. 2 Autumn 1980
3. **Ali A., Klein A. and Rosenfield J.S. (1992)**, Analysts' use of information about permanent and transitory earnings components in forecasting annual EPS, *The Accounting Review*, Vol. 67 No. 3, pp. 183-98
4. **Ashbaugh H. and Pincus M. (2001)**, Domestic Accounting Standards, International Accounting Standards, and the Predictability of Earnings, *Journal of Accounting Research* 39 (2001): 417–34.
5. **Bagehot W. (1971)**, "The only game in town," *Financial Analysts Journal* 27, 12-22
6. **Balakrishnan R., Harris T. and Sen P. (1990)**, The Predictive Ability of Geographic Segment Disclosures, *Journal of Accounting Research* Vol. 28 No. 2
7. **Baldwin B. (1984)**, Segment Earnings Disclosure and the ability of Security Analysts to forecast Earnings per Share, *The Accounting Review*, Vol. LIX, No.3, July 1984
8. **Barron O., Kim O., Lim S. and Stevens D. (1998)**, Using Analysts' Forecasts to measure properties of Analysts' Information Environment, *The Accounting Review*, Vol. 70 No 4, October 1998, pp. 421-43
9. **Barton J. and Waymire G. (2004)**, Investor protection under unregulated financial reporting, *Journal of Accounting and Economics* 38 (2004) pp.65–116
10. **Berger P. and Hann R. (2007)**, Segment Profitability and the Proprietary and Agency Costs of Disclosure, *The Accounting Review*, Vol. 82, No. 4 2007 pp. 869–906
11. **Beyer A., Cohen D., Lys T. and Walther B. (2010)**, The financial reporting environment: Review of the recent literature, *Journal of Accounting and Economics* 50, p.296–343
12. **Botosan C. and Stanford M. (2005)**, Managers' Motives to Withhold Segment Disclosures and the Effect of SFAS No. 131 on Analysts' Information Environment, *The Accounting Review*, Vol. 80, No. 3, pp. 751–771
13. **Brennan M. J., Narasimhan Jegadeesh, and Bhaskaran Swaminathan (1993)**, Investment analysis and the adjustment of stock prices to common information, *Review of Financial Studies* 6, 7999824

14. **Chung K., McInish T., Wood R. and Wyhowski D. (1995)**, Production of information, information asymmetry, and the bid-ask spread: Empirical evidence from analysts' forecasts, *Journal of Banking & Finance* 19, p.1025- 1046
15. **Clarke J. and Shastri K. (2000)**, On Information Asymmetry Metrics, Working paper, Draft of November 2000
16. **Conover T. and Wallace W. (1995)**, Equity Market Benefits to Disclosure of Geographic Segment Information: An Argument for Decreased Uncertainty, *Journal of International Accounting Auditing & Taxation*, 4(2):101-112
17. **Collins D. W. (1976)**, Predicting Earnings with Sub-Entity Data: Some Further Evidence, *Journal of Accounting Research* (Spring 1976): 163-177
18. **Collins D. and Simonds R. (1979)**, "SEC Line of Business Disclosure and Market Risk Adjustments.", *Journal of Accounting Research*, Vol. 17 No. 2 Autumn 1979
19. **Copeland T. and Galai D. (1983)**, Information Effects on the Bid-Ask Spread, *The Journal Of Finance*, Vol. XXXVIII, No. 5, December 1983
20. **Crawford L., Extance H., Helliar C. and Power D. (2012)**, Operating segments: The usefulness of IFRS 8. Edinburgh: ICAS
21. **Easley D. and O'Hara M. (1987)**, Price, trade size and information in Securities Markets, *Journal of Financial Economics* 19 (1987) p.69-90
22. **Elton E., Gruber M.J. and Gultekin M.N. (1984)**, Professional expectations: Accuracy and diagnosis of errors, *Journal of Financial and Quantitative Analysis* 19, 351-363
23. **EUROPEAN COMMISSION Internal Market and Services DG** "Endorsement of IFRS 8 Operating Segments, Analysis of Potential Effects – Report"
24. **Fort P. C. (1997)**, Analysts' forecast accuracy and the presentation of a mandated accounting change. *Journal of Applied Business Research*, 13(4), 93–105
25. **Glosten L. and Milgrom P. (1985)**, Bid, Ask And Transaction Prices in a Specialist Market with heterogeneously informed traders, *Journal of Financial Economics*, Mar1985, Vol. 14 Issue 1, p71-100, 30p
26. **Gregoriou A. , Ioannidis C. and Skerratt L. (2005)**, Information Asymmetry and the Bid-Ask Spread: Evidence From the UK, *Journal of Business, Finance and Accounting*, 32(9)&(10), November/December 2005, 0306-686X
27. **Guan Y., Hope O. and Kang T. (2006)**, Does Similarity of Local GAAP to U.S. GAAP Explain Analysts' Forecast Accuracy?, *Journal of Contemporary Accounting and Economics* 2 (2006): 151–69

28. **Hayes R. M. and Lundholm R. (1996)**, Segment Reporting to the Capital Market in the Presence of a Competitor, *Journal of Accounting Research*, Vol. 84 No 2, Autumn 1996
29. **Heem G. and Taddei Valenza P. (working paper)**, An Analysis of Segment Disclosures under IAS 14 and IFRS 8
30. **Herrmann D. and Thomas W. (1996)**, Segment Reporting in the European Union: Analyzing the Effects of Country, Size, Industry, and Exchange Listing, *Journal of International Accounting & Taxation*, 5( 1): 1-20
31. **Herrmann D. and Thomas W. (1997)**, Geographic Segment Disclosures: Theories, Findings, and Implications, *The International Journal of Accounting*, Vol. 32, No. 4, pp. 487-501
32. **Herrmann D. and Thomas W. (2000a)**, An Analysis of Segment Disclosures under SFAS No. 131 and SFAS No. 14, *Accounting Horizons* Vol. 14 No. 3, September 2000 pp. 287-302.
33. **Herrmann D. and Thomas W. (2000b)**, A Model of Forecast Precision Using Segment Disclosures: Implications for SFAS No. 131, *Journal of International Accounting, Auditing & Taxation*, 9(1):1–18
34. **Hope O., Thomas W. and Winterbotham G. (2006)**, The Impact of Nondisclosure of Geographic Segment Earnings on Earnings Predictability, *Journal of Accounting, Auditing & Finance*, 2006 21: 323
35. **Hussain S. (1997)**, The Impact of Segment Definition on the Accuracy of Analysts' Earnings Forecasts, *Accounting and Business Research* Vol. 27, No. 2. pp. 145-156
36. **Hutton A., Marcus A. and Tehranian H. (2009)**, Opaque financial reports, R2 and crash risk, *Journal of Financial Economics* 94 (2009) p.67–86
37. **IFRS 8: Operating Segments Technical Summary**, extract prepared by IFRS Foundation staff
38. **Jensen, M.C. (1986)**, Agency costs of free cash flow, corporate finance, and takeovers. *American Economic Review* 76, 323–330
39. **Jin and Myers (2006)**, R2 around the world: new theory and new tests, *Journal of Financial Economics* 79, p.257–292
40. **Kinney W., JR. (1971)**, Predicting Earnings: Entity versus Subentity Data, *Journal of Accounting Research* (Spring 1971): 127-36
41. **Kochanek R.F. (1974)**, Segmental Financial Disclosure by Diversified Firms and Security Prices, *The Accounting Review* (April 1974), pp. 245-258

42. **Lang, M. H., & Lundholm, R. (1996)**, Corporate disclosure policy and analyst behavior, *The Accounting Review*, 71(October), 467–492
43. **Lobo G., Kwon S. and Ndubizu G. (1998)**, The Impact of SFAS No. 14 Segment Information on price variability and earnings forecast accuracy, *Journal of Business Finance & Accounting*, 25{7} & (8), September/October 1998, 0306-68
44. **Lucchese M. and Di Carlo F. (working paper)**, An Analysis of Segment Disclosure under IFRS 8 and IAS 14R: Evidence from Italian Listed Companies
45. **Maines L., McDaniel L. And Harris M. (1997)**, Implications of Proposed Segment Reporting Standards for Financial Analysts' Investment Judgments, *Journal of Accounting Research* Vol. 35 Supplement 1997
46. **Mande V. and Ortman R. (2002a)**, The effect of Japanese business segment reporting on analysts' forecasts: implications for US investors and the SEC, *Journal of Accounting and Public Policy* 21, p.31–70
47. **Mande V. and Ortman R. (2002b)**, Are recent segment disclosures of Japanese firms useful? Views of Japanese financial analysts, *The International Journal of Accounting* 37 (2002) p.27–46
48. **Myers, S.C. and Majluf, N.S. (1984)**, Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics* 13, p.187–221
49. **Nagarajan N. and Sridhar S. (1996)**, Corporate responses to segment disclosure requirements, *Journal of Accounting and Economics* 21 p.253-275
50. **Nichols D., Tunnel L. and Seipel C. (1995)**, Earnings Forecast Accuracy and Geographic Segment Disclosures, *Journal of International Accounting Auditing & Taxation*, 4(2): 113-126
51. **Nichols N. and Street D. (2007)**, The relationship between competition and business segment reporting decisions under the management approach of IAS 14 Revised, *Journal of International Accounting, Auditing and Taxation* 16 (2007) 51–68
52. **Nichols N., Street D. and Cereola S. (2012)**, An analysis of the impact of adopting IFRS 8 on the segment disclosures of European blue chip companies, *Journal of International Accounting, Auditing and Taxation* 21 (2012) 79– 105
53. **O'Brien P. and Bhushan R. (1990)**, Analyst Following and Institutional Ownership, *Journal of Accounting Research* Vol. 28 Supplement 1990
54. **Paul J. and Largay J. (2005)**, Does the “management approach” contribute to segment reporting transparency?, *Business Horizons* 2005/48, 303—310

55. **“Post-implementation Review: IFRS 8 Operating Segments”**, Published for comment by the International Accounting Standards Board, July 2012
56. **Prather-Kinsey J. and Meek G. (2004)**, The Effect of Revised IAS 14 on Segment Reporting by IAS Companies, *European Accounting Review*, Vol. 13, No. 2, 213–234
57. **Prodhan B. (1986)**, Geographical Segment Disclosure and Multinational Risk Profile, *Journal of Business Finance & Accounting*, 13(1), Spring 1986, 0306 6
58. **Prodhan B. And Harris M. (1989)**, Systematic Risk and the Discretionary Disclosure of Geographical Segments: an Empirical Investigation of US Multinationals, *Journal of Business Finance & Accounting*, 16(4) Autumn 1989, 0306 68
59. **Roll R. (1984)**, A Simple Measure of the Effective Bid-Ask Spread in an Efficient Market, *The Journal of Finance*, 39 (Sept, 1984), 1127-1139
60. **Roberts C. (1989)**, Forecasting Earnings Using Geographical Segment Data: Some UK Evidence, *Journal of International Financial Management and Accounting* 1:2
61. **Scott W.**, *Financial Accounting Theory*, fifth edition, Pearson Education 2009, ISBN-10: 0132072866 • ISBN-13: 9780132072861
62. **Stanford Harris M. (1998)**, The Association between Competition and Managers' Business Segment Reporting Decisions, *Journal of Accounting Research*, Vol. 36 No. 1 spring 1998
63. **Tan H., Wang S. and Welker M. (2011)**, Analyst Following and Forecast Accuracy after Mandated IFRS Adoptions, *Journal of Accounting Research*, Vol. 49 No. 5 December 2011
64. **Troberg P., Kinnunen J. and Seppänen H. (2010)**, What drives cross-segment diversity in returns and risks? Evidence from Japanese and U.S. firms, *The International Journal of Accounting* 45 (2010) 44–76
65. **Verrecchia R. (2001)**, Essays on disclosure, *Journal of Accounting and Economics* 32 p.97–180
66. **Welker M. (1995)**, Disclosure policy, Information asymmetry and liquidity in equity markets, *Contemporary Accounting Research*. 12:801-827