



## MEASUREMENT OF FINANCIAL REPORTING QUALITY BASED ON IFRS CONCEPTUAL FRAMEWORK'S FUNDAMENTAL QUALITATIVE CHARACTERISTICS

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### Abstract

The IASB creates the standards and the conceptual framework in an attempt to create higher quality financial statements. Through this article, the extent to which this objective has been achieved is examined. An important characteristic of this research is the fact that the quality of financial statements is examined in light of the Conceptual Framework. Specifically, the two fundamental qualitative characteristics - relevance and faithful representation (reliability) - set by the IAS Committee through the Conceptual Framework are examined. Additionally, this article highlights the conflict between the existing methods for measuring reliability and the faithful representation, as defined by the Conceptual Framework. The degree of relevance and reliability is measured by the usage of four alternative regression models. The sample of this research consists of listed companies of fifteen European countries that have adopted IFRS mandatorily and the time horizon that is investigated is 10 years, from 2000 until 2009. Specifically, the period between 2000 and 2004 is defined as the period before the adoption, while the period between 2005 and 2009 is defined as the period after the adoption. Generally, the findings that are obtained support an increase in relevance, while the reliability seems to be unchanged.

**Keyword:** Adoption of IFRS; Financial Reporting quality; Conceptual Framework; Qualitative Characteristics; Relevance; Faithfull Representation (Reliability).

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## I. Introduction

Following the decision taken in March 2002, the European Parliament decided to adopt the International Accounting Standards (IAS). Specifically, since 2005 all listed companies are required to prepare and present the consolidated financial statements in accordance with the International Financial Reporting Standards (IFRS). The decision regarding the implementation of the IFRS constitutes a significant and unprecedented change concerning the way financial statements are prepared and presented.

The ultimate purpose of the Committee of the International Accounting Standards Board (IASB) is to create high quality standards in order to create quality financial statements. To achieve this objective, the Commission establishes those standards that lead to the increase in the degree of relevance, faithful representation, comparability, timeliness, verifiability and understandability in financial statements. The Commission stresses that the financial statements must reflect the specific characteristics, as defined by the Conceptual Framework, so that the information which is provided is useful.

In particular, the qualitative characteristics that are found in the Conceptual Framework are divided into fundamental and enhancing. The two fundamental characteristics are the relevance and faithful representation (i.e. an alternative definition of reliability), and the enhancing are the comparability, timeliness, understandability and verifiability. The main difference between the fundamental and enhancing characteristics is that the enhancing characteristics cannot single-handedly generate useful information.

As already mentioned, the IFRS creates the standards as well as the Conceptual Framework, essentially aiming in producing higher quality financial statements. The critical question that arises is whether this goal has been achieved; that is, whether the financial statements following the IASB adoption are in fact, of higher quality.

An important characteristic and a significant contribution of this research is the fact that the quality measurement methodology used varies greatly from other existing methodologies that are identified in the existing literature. Specifically, this research examines the quality of financial statements, as defined by the Conceptual Framework and the findings are expected to show whether the Commission actually achieved its initial objectives, enhancing the quality and usefulness of financial statements.

Based on existing literature, the quality is measured using different methods or, a combination of them, such as, by calculating discretionary accruals, conservatism,



relevance and predictability of earnings. However, in some occasions a conflict between these methods and the degree of quality as defined by the Conceptual Framework can emerge. A typical example that highlights that conflict, concerns the measure of reliability. Literature supports that the degree of reliability is measured by the ability of current earnings to predict future earnings (Bandyopadhyay et al., 2010, Kirscheneiter 1997, Richardson et al., 2005). The problem arising out of this way of measurement is that it contradicts with the definition of reliability/faithful representation as defined by the Conceptual Framework. This conflict can be readily understood through the following example. Suppose a company makes use of fair value as the valuation method, which essentially introduces variability in the results by reducing their predictability. Given that the fair value is reflected without error, presenting faithfully the economic reality, the level of faithful representation based on the definition derived from the Conceptual Framework is very high, whereas based on the measure of predictability in contrast, is very low (Riedl, 2010).

Another element that highlights the aforementioned conflict relates to the measure of conservatism. The high degree of conservatism in the literature (Anwer et al., 2013, Ball et al., 2000, Ball and Shivakumar 2005, Barth et al., 2008, Chen, et al., 2010) is presented as an indication of high quality financial statements. In contrast, this feature is not considered desirable by the new Conceptual Framework - since it conflicts with the feature of neutrality - and therefore, it is not included in it.

The findings of this research constitute a useful tool both for the Commission as well as for users of financial statements. On the one hand, the Commission will be able to know the degree of achievement of the objectives set initially and to take the necessary actions/improvements wherever is deemed appropriate. On the other hand, users who know about the relevance and reliability - with respect to the financial statements - are more equipped to make favorable decisions for their part.

## **II. Conceptual Framework**

The conceptual framework of IAS essentially defines the general principles which should characterize the process of preparing and presenting financial statements. In no case does it have the power of a standard and the basic purpose of its creation is to help and guide the IASB to develop or review existing and future IAS. Furthermore, it directs those preparing the financial statements to correctly apply the standards and is an additional tool for handling accounting issues not covered by existing standards. At this



stage it should be noted that if an existing standard conflicts with the conceptual framework, then the standard shall prevail. Finally, it helps auditors and users to understand whether the financial statements and the information provided is consistent with IAS.

The qualitative characteristics are divided into fundamental and enhancing. The fundamental features are designed to separate the information provided to users in the following parts: useful information or non-useful and/or misleading information. The two fundamental characteristics include relevance and faithful representation. The conceptual framework highlights (paragraph 17) that in order for the information to be useful, it must be characterized by both of the aforementioned characteristics, i.e. relevance and faithful representation.

The first fundamental characteristic is relevance, meaning that financial statements can and influence the decisions of users. In other words, they can be used as predictive values and/or confirmatory values. In addition, relevance may be affected by whether a piece of information is essential, i.e. whether its omission or incorrect portrayal affects the economic decisions taken by users.

The second fundamental feature is the faithful representation/reliability of financial statements. The conceptual framework focuses on five specific features which should be reflected on the financial statements so as to be considered reliable. First, financial statements should present faithfully the economic events; secondly, they should not be the product of any prejudice whatsoever, that is to be neutral; third, should present the economic substance of economic events unconstrained by legal aspects; fourth, decisions taken by the management regarding uncertain events which require the exercise of judgment must be taken with caution and finally, the financial statements ought to be complete.

In addition, the IASB defines four enhancing qualitative characteristics considered complementary to the fundamental characteristics. The main difference with the fundamental characteristics is that if the financial information is not characterized by the fundamental characteristics, then the enhancing characteristics alone cannot generate useful information to users. Specifically, the enhancing characteristics are comparability, timeliness, understandability and verifiability.



### III. Literature Review

#### III.1. Relevance and Adoption of IAS

Extensive literature has dealt with the subject of relevance of financial statements. At this point, it is noteworthy that the first researchers who wrote about it were Ball and Brown, in 1968. They examined the relationship between performance and accounting profit, stimulating future research.

Over the past few years and following the adoption of IAS, researchers have extended the literature concerning relevance, assessing the relevance of financial statements prepared in accordance with national accounting standards and those prepared in accordance with IAS. This research can be divided into two major parts; one focusing on the studies using as sample the firms adopting IAS voluntarily and those that use as sample companies whose adoption of the standards in question is mandatory.

In the first category several research articles are identified. More specifically, Hung and Subramanyam (2007) examine 80 German companies. Comparing the financial statements prepared under IAS/IFRS as those drawn up by the German standards and using the relative degree of relevance, do not detect any change in the relevance of earnings and of the book value of equity. Furthermore, measuring relevance using the incremental approach, they found that the adjustments to the balance sheet data generated due to the adoption of IAS were relevant, while adjustments to the earnings were not. In contrast, Bartov et al. (2005) and Jermakowicz et al. (2007), identify an increase in the degree of relevance of earnings of companies adopting voluntarily the IAS. Barth et al. (2008), using a larger sample than previous research, by examining 319 companies from 21 countries that voluntarily adopt IFRS identify, *inter alia*, that the degree of relevance of firms adopting IAS is higher.

More recent studies dealing with the second category examine the change in relevance of the financial statements of those companies that mandatorily adopt IAS. Horton and Serafeim (2007) study the relevance of the financial statements of companies in the United Kingdom, France, Italy and Spain, using accounting adjustments arising from the reconciliation statements. Their findings suggest that adjustments in the earnings increase relevance in the UK, France and Italy, while this is not the case in Spain. The same researchers in 2010 examine relevance once more only this time, exclusively for the UK. Their findings again suggest that the adjustments regarding the earnings have a positive contribution to the degree of relevance. In contrast, adjustments in the book value



of equity have no positive contribution to the degree of relevance since the calculation of the book value of equity through both IAS and by the standards applied in the UK is similar (Horton and Serafeim, 2010). Similar results in respect to the UK are reached in 2008 by Capkun et al. The same researchers in their article incorporate eight other European countries besides the UK, identifying once again that adjustments regarding the earnings contribute to relevance whilst this does not apply to adjustments in the book value of equity. Christensen et al. in 2009, also identify an increase in relevance of the earnings regarding the case of the UK. The findings of Wang et al. (2008) concerning the Australian companies as well as 14 European countries follow the same pattern, in respect to the relevance of the earnings.

Finally, the part of the literature that utilizes two independent samples - financial statements before and after adoption - in order to detect the change of relevance of the financial statements for mandatorily adopters – is extremely limited. Chalmers et al. (2009) identify through this methodology that the earnings (book value of equity) of Australian businesses that adopt mandatory IFRS for the period 2006-2007 reflect higher (the same) degree of relevance in relation to the degree of relevance which reflected by the Australian businesses using the Australian standards during the period 1990-2004.

### **III.2. Reliability/Faithfull representation and Adoption of IAS**

Although IAS gives equal emphasis on the feature of relevance and reliability through their conceptual framework, the same does not apply as far as the literature is concerned. On one side, a significant proportion of the literature has dealt extensively with the feature of relevance and how this is reflected in the financial statements. In antithesis, the emphasis of the characteristic of reliability is very limited (Richardson et al. 2005).

The vast majority of the literature examines the feature of reliability of accruals through the estimation of discretionary (DA) and non-discretionary accruals (NDA). Several researchers have created models for measuring the degree of reliability using this methodology (Healy 1985, De Angelo 1986, Jones 1991, Dechow and Sloan 1991, Dechow et al. 1995), which are then used as tools for further research. Moreover, the concept of reliability of accruals has been identified with the concept of quality of accruals directly related to the literature that deals with the quality of earnings.

Escaping from the basic idea of the above researchers, recently some researchers identify the quality of accruals and earnings by measuring the amount of error that arises



from the relation between accruals and cash flows (Dechow and Dichev 2002, McNichols 2002).

In 2007, White, escaping heavily from the methodology of Dechow and Dichev (2002) and McNichols (2002), creates a new model that examines the extent to which the accruals at time  $t$  are converted into cash flow in year  $t+1$ . In comparison to the previous models, significant differences lie in that the calculation of accruals is not based on their changes, but on the closing balances of the accounts. Moreover and in antithesis with Dechow and Dichev (2002) and McNichols (2002), the model does not have as independent variables the overall operating cash flows, which acts as the cause for the introduction of error.

Beyond the research dealing with the reliability of accruals, only a very small part of the literature deals with the reliability of specific accounting items or financial statements as a whole.

Cotter and Richardson (2002), in order to identify the reliability of asset revaluations, compare the valuation of intangible assets arising from independent appraisers, with estimates arising from the board of the company. The findings identified that the valuations of plant and equipment that have been made by independent appraisers, are more reliable. For other non-current assets, no difference in the degree of reliability of valuations has been detected.

Cotter and Richardson identify the degree of reliability by examining the write-downs of an upward revaluation that took place in the past. They claim that the greater the reversal the lower the reliability, as a great reversal implies that there was greater error in the initial revaluation.

In 2007, Lanito detects the degree of reliability of IAS in Finnish companies through questionnaires that target business managers and auditors of financial statements. The findings resulting from the responses, both for managers and auditors, recognize as reliable the information provided by several standards whilst the findings regarding those standards requiring the exercise of judgment, are characterized as neutral.

Richardson et al. (2005) and Bandyopadhyay et al. (2010), measure the degree of reliability through the ability of current earnings to predict the earnings of the following period. This is based on the argument that the error arising from accruals is incorporated to the process of calculating the earnings, consequently weakening the relationship between successive earnings. In other words, the larger the error in the current earnings is, the lower the correlation to future earnings, leading to a lower degree of



persistence/predictive power. An important problem that arises is that this way of measuring reliability is not consistent with the definition of reliability, as it emerges from the conceptual framework of IAS. It is alleged that this method may lead to conflicting findings concerning the degree of reliability, especially when the revaluation model is used. In particular, it is argued that the use of fair value introduces additional variation in earnings while reducing their predictive ability. Therefore, based on the empirical model of Richardson et al. (2005), the degree of reliability would be characterized as low whilst by the definition derived from the conceptual framework, the reliability is high (as long as the fair values are portrayed without error, presenting the faithfully the economic reality).

Finally, the findings associated with the reliability and adoption of IAS are identified in 2005 from Van Tendeloo and Vanstraelen, discovering while using the model of Jones (1991), that the financial statements of German firms that voluntarily adopt IAS are characterized by higher degree of DA, compared with companies that do not adopt IAS. In addition, Chen, Tang et al. (2010) who examine 15 European countries and apply *inter alia* the modified model of Jones and Kothari et al., discover opposite results as compared with the findings of the Van Tendeloo and Vanstraelen (2005). Particularly, they find that the degree of DA is lower in firms adopting IAS, which supports the increase in the quality of their financial statements. In addition, the same researchers examine the quality of accruals through the model proposed in 2002 by the Dechow and Dichev, identifying a reduction in standard deviation of the residuals of the model, which again supports the rise in quality.

#### **IV. Hypothesis development**

##### **IV.1. Relevance of Financial Statements and IAS Adoption**

Financial statements may be characterized by a high degree of relevance either when used to predict future events or when they confirm predictions and actions of the past.

Accounting regimes of several countries that adopted IFRS were stakeholder-oriented, with the main purpose to inform stakeholders (state, creditors, banks, etc.). As a natural consequence, the financial statements were prepared with the basic aim of providing information mainly to creditors and the state, rather than to the shareholders/investors, thereby reducing the degree of relevance of financial statements for shareholders. Various accounting options that were identified prior to the adoption of IAS and reinforce this case were the use of historical values, which in many cases had



nothing to do with the current economic prices. Moreover, the excessive emphasis on some accounting principles, such as the matching concept and principle of prudence, had as a consequence the restriction of relevance in the financial statements, as these characteristics impeded the immediate recognition of the economic events in the financial statements.

In contrast, the purpose of the Committee of the International Accounting Standards Board has been the creation of standards, mainly oriented to the needs of shareholders; thus, giving them, through the financial statements, more relevant information. The use of fair value and less frequent use of historical cost, the weakening of the principle of the matching concept and the reduction of the degree of conservatism resulted, first, the accounting amounts reflected in the financial statements to converge to the current economic prices and secondly, the financial information to be integrated in a more timely manner to financial statements. Both of these features lead to an increase in the degree of relevance, since most financial statements reflect more directly the current economic events which help investors in making timely investment decisions.

Finally, by increasing the degree of comparability between the financial statements at both national and international level, investors are able to identify more easily investment opportunities arising from the comparison of the financial statements of two or more companies in the same industry. The degree of comparability at the international level is therefore enhanced, as most financial statements are based on common accounting standards. Indeed, prior to the adoption of IAS, because of the differing accounting systems of each country, this comparison was more difficult to achieve and at a higher cost as the users had to make the necessary adjustments between different accounting systems. Alternatively, after the adoption of IAS, comparison is achieved a lot easier and at a lower cost. In addition, comparability at the national level is also enhanced, since the use of fair value as the valuation method facilitates users to perform better comparisons. Business items that are measured at fair value are easier to compare, given that all are calculated for the current period (i.e. there is a common basis for comparison for all businesses which is considered as a basis). Instead, the historical cost of the assets of each company is based on a different point in time, thereby, resulting a priori in the incorrect comparison. In conclusion, increasing the degree of comparability both at national and international level creates an additional source of information to users, helping them in making investment decisions and increasing the usefulness of financial statements.



In summary, following the adoption of IAS investors will be able to take timely and with greater ease more relevant information from the financial statements, which will aid them make better investment decisions. The hypothesis which arises is the following:

*Hypothesis 1:* The relevance (for shareholders/investors) of the financial statements of firms adopting IAS is greater for the period following the adoption of IAS as compared with the period before the adoption.

#### **IV.1. Adoption of IAS and the degree of Faithfull representation/ Reliability of Financial Statements**

Based on the definition of faithful representation/reliability as defined by the conceptual framework, the financial statements are said to be reliable when they do not contain any material error or bias and reliably reflect the economic events that they must present.

The purpose of the IAS Committee was the creation and provision, especially to investors, of augmented levels of relevance in the financial statements. Given the interaction between the characteristics of relevance and reliability, the increase of relevance will be attained by increasing the reliability of financial statements. To achieve this objective, the IASB has taken the following actions: First, reduction of alternative accounting methods (e.g. abolition of the LIFO method), which aims to reduce the degree of manipulation of results and thus increasing their reliability. Second, give focus on the economic substance of events, giving in many cases the option to managements to choose the accounting treatment (e.g. introduction of fair value as the valuation method) resulting to the better reflection of economic reality in the financial statements.

In addition, the detailed presentation of the principles relating to valuation, recognition and publication of the financial statements, suggests that the degree of manipulation by the management is reduced and at the same time a rise in terms of completeness is observed.

Additionally, with the adoption of IAS and the increase of the degree of comparability, especially at international level, investors are able to compare at a lower cost the financial statements, identifying omissions and/or errors in accounting statements easier. This leads both, managements and audit firms that audit the financial statements, to be more careful in the drafting and auditing of accounts, resulting in more reliable financial statements.



On the other hand, in some cases, the use of fair value and the exercise of judgment by the management may result in the rise of the degree of manipulation. Moreover, the difficulty of calculating the fair value can introduce additional estimation error. These elements can cause loss of reliability, but are not considered likely to lead to a reduction in the reliability of the financial statements in the period following the adoption of IAS.

If one relies on the definition of reliability, developed in the first paragraph of this section, it can be drawn that before the adoption of IFRS the financial statements were governed by a low degree of reliability, since due to the use of historical cost the accounting data did not adequately describe the economic reality, because the book values of a firm deviate significantly from the economic values. The deviation from the economic reality - an indication of low-level reliability - resulting from the use of historical cost is expected to be greater than the deviation caused by the use of fair value, upon adoption (which as mentioned above, in some cases can be manipulated or can be inaccurate).

As a final point, the possibility that the elements that seem to reduce the reliability of financial statements - such as those developed in the previous paragraph - seems unlikely to prevail and lead to the reduction of the degree of reliability. This assumption combined with the actions taken by the International Accounting Standards Board to increase the reliability, lead to the following hypothesis:

*Hypothesis 2:* The faithful representation/reliability of the financial statements of firms adopting IAS is higher during the period following the adoption of IAS in relation to the period before the adoption.

## V. Methodology

### V.1. Relevance and Adoption of IAS

The relevance of financial statements is measured using two alternative methods. The first method examines the relevance through the linear model that has as independent variables the earnings and the book value of equity, with the share price six months after the end of the fiscal year as a dependent. The second method examines the relevance through the linear model that has as independent variables the total assets and total liabilities and the share price six months after the end of the fiscal year as the dependent.



### V.I.1. Measuring Relevance - First Method

The first method for measuring the relevance examines the relationship between accounting and market data. Specifically, the simultaneous relationship between both, the market price of a share at time  $t+6$  months and also, the accounting results along with the book value of equity at time  $t$ , is examined (Francis and Schipper 1999, Barth et al., 2008, Kim and Kross, 2005). Furthermore, following a similar methodology with Bartov et al. 2005, (incremental approach), the dummy variable Post is introduced in the model, in an attempt to identify the changes (resulting due to the transition of countries in IAS) of the two independent variables of the model. The model developed is the following:

$$P_{it+6} = a_0 + a_1 Post + a_2 Bvps_{it} + a_3 Eps(1)_{it} + a_4 Post * Bvps_{it} + a_5 Post * Eps_{it} + u_{it+6} \quad (1)$$

$P_{it+6}$  = Market share price at time  $t+6$  months,

$Bvps_{it}$  = Book value of equity per share,

$Eps(1)_{it}$  = Income (before extraordinary items) per share,

Post = Dummy - variable equals to 1 for the period after the adoption of IAS and to 0 for the period prior.

$U_{it+6}$  = residuals

Essentially, the ability of earnings and the book value of equity to explain future stock prices are identified using the model (1). The higher this ability is, the higher the degree of relevance of specific accounting data is, since users are able to make better investment decisions. Moreover, the change in relevance of the financial statements prepared according to IFRS (period after the adoption of IFRS) is revealed through the Post dummy variable. Specifically, for the period after the adoption, the coefficient of the book value of equity is equal to  $a_2$  plus  $a_4$  and the coefficient of earnings is equal to  $a_3$  plus  $a_5$ . Thus, if the coefficients  $a_4$  and  $a_5$  are positive (negative) and statistically significant, it implies that the relevance of the book value of equity and earnings respectively, are larger (smaller) in the period following the adoption.

Finally, the relative approach is also used to detect the change of relevance. Specifically, the R<sup>2</sup> of regression (2) is identified for each period separately (before and after adoption).

$$P_{it+6} = a_0 + a_1 Bvps_{it} + a_2 Eps(1)_{it} + u_{it+6} \quad (2)$$



If the coefficient of determination ( $R^2$ ), after the adoption of IAS, is higher (lower), it means that the explanatory ability of the two independent variables on future stock prices is higher (lower), indicating the increase (decrease) of the degree of relevance of book value of equity and earnings. The statistical significance of the difference between the two  $R^2$  is examined through a test used by Van der Meulen et al. in 2007, which was based on the analysis of Crammer (1987) (appendix1).

#### ***V.1.2. Measuring Relevance - Second Method***

The second method for measuring relevance examines the relationship between balance sheet information and market data. The methodology that is being followed is similar to the previous one. In this case, the simultaneous relationship between the market price of one share at time  $t + 6$  months and the total assets and total liabilities at time  $t$ , is examined (Francis, 1999). The variable Post is introduced again to identify differences between the periods ex antes and ex post the adoption. The model developed is as follows:

$$P_{it+6} = a_0 + a_1 Post + a_2 TA_{it} + a_3 TL_{it} + a_4 Post * TA_{it} + a_5 Post * TL_{it} + u_{it+6} \quad (3)$$

$P_{it+6}$  = Market share price at time  $t + 6$  months,

$TA_{it}$  = Total assets per share,

$TL_{it}$  = Total liabilities per share,

Post = Dummy-variable equals to 1 for the period after the adoption of IAS and to 0 for the period prior.

$U_{it+6}$  = residuals

Through the model (3), the ability of the total assets and total liabilities to explain the future stock prices is revealed. As in the previous model, the higher that ability is, the higher the degree of relevance of specific accounting items. To detect the change of relevance between the two periods - before and after the adoption - variable Post is reentered. So, for the period after the adoption the coefficient of total assets is equal to  $a_2$  plus  $a_4$ , while the coefficient of total liabilities equals  $a_3$  plus  $a_5$ . Unlike the first model, the signs of the coefficients are not expected to be all positive. The fact that an increase in total assets is expected to result in an increase in the stock price, while an increase in total liabilities is expected to reduce the stock price, results in the coefficient  $a_2$  to be expected positive, whereas the  $a_3$  to be expected negative. For this reason, in case of increase



(decrease) of relevance of total liabilities upon adoption,  $a_5$  is expected to be negative (positive) and statistically significant. Conversely, when total assets are more (less) relevant after the adoption,  $a_4$  is predicted to be positive (negative) and statistically significant.

To detect the change of relevance (as in the first method), the relative approach is used interchangeably. Specifically, the R<sup>2</sup> of regression (4) for each period separately (before and after adoption) is identified.

$$P_{it+6} = a_0 + a_1 TA_{it} + a_2 TL_{it} + u_{it+6} \quad (4)$$

## V.2. Reliability/Faithfull representation and Adoption of IAS

The reliability of the financial statements is measured by two alternative methods. The first method examines the degree of reliability through the linear model with cash flows from operating activities and accruals at time t acting as independent variables, while cash flows from operating activities in t + 1 are designated as the dependent variable. The second method examines the degree of reliability through the linear model that defines the following independent variables: 1) accruals (amounts recognized in the year t and which are disbursed to the next), 2) Cpcf, amounts recognized in the year t and disbursed in it and 3) deferrals (amounts relating to the fiscal year t+2 and disbursed to t +1) and the cash flows from operating activities in t +1 as the dependent variable.

### V.2.1.. Measuring reliability - First Method

The first model used to measure the reliability has been developed by Kim and Kross (2005). Specifically, cash flows from operating activities and accruals at time t are set as the independent variables, whilst the cash flows from operating activities in t +1 as the dependent variable. The model which emerges is the following:

$$Cfo_{it+1} = a_0 + a_1 Cfo_{it} + a_2 Acc_{it} + u_{it+1} \quad (5)$$

$Cfo_{it+1}$  = Cash flows from operating activities in t + 1 / Total assets at t,

$Cfo_{it}$  = Cash flows from operating activities in t / Total assets at t-1,

$Acc_{it}$  = DWC - DEP,

DEP = Depreciation / Total Assets at t-1,



DWC = change in net accounts Receivables / total assets at t-1, plus change in inventory / Total assets at t-1, plus change in other current assets / total assets at t-1, minus change in accounts payable / Total assets at t-1, minus change in taxes payable / total assets at t-1, minus change in other current liabilities / Total assets at t-1, minus change in deferred taxes / Total assets at t-1.

$$U_{it+1} = \text{residuals}$$

Reliability is defined as the ability of the two independent variables to explain the cash flows from operating activities in  $t + 1$ . This ability is identified by the coefficient of determination of the model ( $R^2$ ). In other words, the identification of higher  $R^2$  indicates a higher degree of reliability of the financial statements and, vice versa. The comparison of reliability between the two periods - before and after the adoption - is performed by comparing the  $R^2$  of two independent samples. Once more, the statistical significance of the difference between the two  $R^2$  is examined through the test used by Van der Meulen et al, in 2007.

#### ***V.2.2. Measuring reliability - Second Method***

The second model used to measure reliability is based on the model developed by White, in 2007. Two important properties of the model is that the calculation of accruals is not based on changes in the accounting items ('traditional' approach), as older models (Dechow and Dichev, 2002, McNichols, 2002, Kim and Kross, 2005 etc.), but on their closing balances. Furthermore, a distinction between accruals and deferrals is made, escaping from the hitherto definition of accruals that integrated the cumulative accruals and deferrals.

The underlying logic of the model is to isolate the amounts recognized in the year  $t$  and which are disbursed to the next ( $t + 1$ ) (payable/accruals), the amounts recognized in the year  $t + 1$  and disbursed to it as well as the amounts disbursed in fiscal year  $t + 1$  and related to upcoming year (prepaid/deferrals). Finally, White (2007) examines the ability of these three variables to explain the cash flows at  $t + 1$ . A basic assumption of the model is the hypothesis that short-term assets and liabilities are recovered or settled, within twelve months.

The higher the capacity of the three independent variables in explaining the dependent variable is, the higher the degree of reliability of the financial statements. In other words, when the accruals (payable/accruals at time  $t$  and prepaid/deferrals at time



t+1) explain the operating cash flows at time t+1, then the management estimates relating to accruals can be regarded as reliable. Finally, White (2007) argues that the introduction of the independent variable Cpcfit+1 introduces systematic measurement error in the regression (White, 2007: 18). Hence, he uses a proxy variable; the Cpcfit. The model which emerges is the following:

$$Cfo_{it+1} = a_0 + a_1 Accr_{it} + a_2 Cpcf_{it} + a_3 Def_{it+1} + u_{it+1} \quad (6)$$

$Cfo_{it+1}$  = Cash flows from operating activities in t + 1 / Total assets at t,

$Accr_{it}$  = Net accounts receivables / Total assets at t-1, minus other current liabilities / Total assets at t-1, minus inventory accruals / Total assets at t-1,

$Cpcf_{it}$  = operating income before depreciation at time t minus Accr it plus Def it-1.

$Def_{it+1}$  = other current assets / Total assets at t, plus inventory deferrals / Total assets at t,

$U_{it+1}$  = residuals

Once again, the explanatory ability of the independent variables is measured by the coefficient of determination of the model (R2). The higher the R2 is, the more reliable the financial statements and, vice versa. As in the previous model, the comparison of reliability between the two periods - before and after the adoption - is performed by comparing the R2 of two independent samples.

## VI. Sample

The sample of this study consists of listed companies of 15 European countries, which according to the classification published by the FTSE Group in September 2009 (FTSE, Country Classification, 2009) are characterized as developed. The countries considered are: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden and the UK.

The time period under study for this research is 10 years, and consists of the period prior (2000-2004) and the period after (2005-2009) the adoption of IAS. Given that the effects of IFRS on the financial statements of companies that are mandatory IAS adopters are the ones examined, firms which are either voluntary adopters of IAS, or whether they adopt them at a time after 2005 (as listed on AIM London Stock Exchange - alternative investment market) are excluded from the sample. In other words, any firms



whose first publication of their financial statements under IAS was held a year other than 2005 are crossed out from the sample.

The data for the sample was provided by DataStream database. In addition, other than the aforementioned exceptions, firms in the financial sector are also excluded (so that the findings can be directly compared with previous research), since the exclusion of financial firms from samples of previous research that are related is almost ubiquitous. Additionally, according to the existing literature, companies with negative book value of capital are excluded. Among others, Collins et al (1997) and Collins et al. (1999) and Brown et al. (1999) argue that the samples used for the measurement of relevance should incorporate only positive observations of book value of equity. In addition, 2% of the extreme values is deleted. The process of the creation of the final samples, as discussed in the previous paragraphs, is summarized in Table 1.

**Table 1 – Sample selection for IFRS mandatory adopters**

	(N) 2000 - 2004	(N) 2005 - 2009	(N) 2000 - 2009
Original sample	26876	23047	49923
Minus:			
Observations for companies / fiscal year different from 1/1-31/12	7495	6501	13996
Observations for companies in the financial sector	1615	1459	3074
Observations for companies with negative book value of equity	581	572	1153
Voluntary adopters	7711	6686	14397
Data not available	437	449	886
Outliers (2%)	136	191	327
Final sample	8662	7428	16090

This sample is referred to relevance measure resulting from regression  $Pit + 6 = a_0 + a_1 Post + a_2 Bvpsit + a_3 Epsit + a_4 Post * Bvpsit + a_5 Post * Epsit$ . Observations arising from other models vary, depending on the unavailable data.

## VII. Results

### VII.1. Descriptive Statistics

In Table 2 the descriptive elements of the sample are presented. Specifically, it presents the descriptive elements of the 15 countries examined (cumulative). A detailed description of the variables used is presented in the table. It is observed that in the period following the adoption of IAS there is a statistically significant increase in both the averages, and the median book value of equity and earnings. In contrast, the average of total assets and total liabilities do not appear to differ between the two periods.



**Table 2 - Descriptive statistics**

Variable / Model	2000-2004					2005-2009				
	Mean	Median	Q1	Q3	Sd	Mean	Median	Q1	Q3	Sd
Relevance 1										
Pt+6	15.43	4.49	1.58	12.80	43.36	19.63***	6.17***	2.00	17.6	50.12
Bvps t	10.61	2.46	0.93	7.20	50.83	12.60***	3.26***	1.29	9.17	42.14
Eps(1) t	0.52	0.14	-0.04	0.68	5.49	1.12***	0.28***	0.016	1.1	4.65
Relevance 2										
Pt+6	14.14	4.55	1.62	12.90	32.52	17.32***	6.10***	2.00	17.30	35.66
TA t	35.46	8.48	2.51	27.09	101.15	33.67	9.24***	3.46	26.94	89.89
TL t	21.66	4.49	1.07	16.17	65.65	20.58	5.01***	1.75	15.92	61.42
Reliability 1										
Cfot+1	0,07	0,08	0,03	0,12	0,15	0,07	0,07***	0,03	0,12	0,11
Accr t	0,08	0,08	-0,01	0,18	0,2	0,08	0,08	-0,01	0,18	0,17
Cpcf t	0,07	0,06	-0,05	0,17	0,27	0,08***	0,08***	-0,05	0,19	0,22
Def t+1	0,07	0,03	0,01	0,1	0,11	0,06**	0,02***	0,00	0,1	0,1
Reliability 2										
Cfot+1	0,09	0,09	0,05	0,13	0,09	0,08***	0,08***	0,04	0,12	0,08
Cfo t	0,08	0,08	0,05	0,12	0,09	0,09***	0,09***	0,05	0,13	0,08
Acc	-0,05	-0,06	-0,09	-0,02	0,09	-0,04***	0,03***	-0,07	0,00	0,08

The model Relevance 1 refers to the regression : Pit +6months = a0 + a1Bvpsit + a2Eps (1) it + a3Post \* Bvpsit + a4Post \* Eps (1) it, the model Relevance 2 refers to the regression : Pit +6months = a0 + a1TAit + a2TLit + a3 Post \* TAit + a4 Post \* TLit, the model Reliability 1 refers to the regression : Cfot+1year = a0 + a1Accr + a2Cpcf + a3Defit +1year, and model Reliability 2 refers to the regression : Cfot +1year = a0 + a1Cfot + a2Accit. Variables : Pit +6 months = Market share price at time t +6, Bvps it = Book value of equity per share , Eps (1) it = Income (before extraordinary items ) per share , Post = dummy-variable that takes the value 1 for the period after the adoption of IAS and the value 0 for the period prior , TA it = Total assets per share , TL it = Total liabilities per share , Cfo it +1 = Cash flows from operating activities in t + 1 / Total assets at t, Cfo it = Cash flows from operating activities in t / Total assets at t-1, Accr it = Net accounts receivables / Total assets at t-1, minus other current liabilities / Total assets at t-1, minus inventory accruals / Total assets at t-1, Def it +1 = Other current assets / Total assets at t, plus inventory deferrals / Total assets at t, Cpcf it = operating income before depreciation at time t minus Accr it plus Def it-1, Accit = DWC - DEP, DEP = Depreciation / Total Assets at t-1, DWC = change in net accounts Receivables / total assets at t-1, plus change in inventory / Total assets at t-1, plus change in other current assets / total assets at t-1, minus change in accounts payable / Total assets at t-1, minus change in taxes payable / total assets at t-1, minus change in other current liabilities / Total assets at t-1, minus change in deferred taxes / Total assets at t-1, \*\*\* = 1% statistically significant , \*\* = 5% statistically significant , \* = 10% statistically significant, T-test and Wilcoxon rank sum test have been used to test for differences means and median, respectively.



## VII.2. Empirical Findings

### VII.2.1. Degree of Relevance and Adoption of IAS

According to the first hypothesis, the degree of relevance of the financial statements is expected to be higher during the period following the adoption of IAS, as compared with the period before.

Table 3 illustrates the degree of relevance of earnings and the book value of equity, with respect to the stock price six months after the end of the year. The degree of relevance is tested both through the incremental approach as well as the relative approach.

The earnings seem to be more relevant in the period after the adoption since the coefficient  $a_5$  is positive (2.27) and statistically significant at the 1% significance level. Regarding the variable of the book value of equity and the degree of relevance, the findings (Horton and Serafeim (2010) and Capkun et al. (2008) identify similar results regarding the degree of relevance regarding equities in the UK. Specifically, a change in equity relevance is not detected) that are identified are not statistically significant, but remain in the same direction.

The results obtained from the relative approach are consistent with the findings obtained through the incremental approach, again indicating increase of relevance. Specifically, the coefficient of determination is higher for the period after the adoption at a significance level of 5%. The findings suggest that the explanatory ability of the two independent variables on future stock prices ( $t+6$ ) is higher in the period after the adoption of IAS, suggesting an increase in the degree of relevance of book value of equity and earnings.

**Table 3 - Relevance Model 1**

	Incremental Approach						2000- 2009 Ad.R <sup>2</sup>	2005- 2009 Ad.R <sup>2</sup>	Difference Ad.R <sup>2</sup>
	$P_{it+6} = a_0 + a_1 Post + a_2 Bvps_{it} + a_3 Eps(1)_{it} + a_4 Post * Bvps_{it} + a_5 Post * Eps(1)_{it} + u_{it+6}$ (1)	$P_{it+6} = a_0 + a_1 Bvps_{it} + a_2 Eps(1)_{it} + u_{it+6}$ (2)	$a_0$	$a_1$	$a_2$	$a_3$	$a_4$	$a_5$	
All countries	3.81*** 2.98*	- *	0.33* 1.82***	0.22	2.27*** 55%				52% 67% 15%**



Variables:  $P_{it+6}$  = Market share price at time  $t + 6$  months,  $Bvps_{it}$  = Book value of equity per share,  $Eps_{it}$  = Earnings per share,  $Post_{it}$  = Dummy - variable equals to 1 for the period after the adoption of IAS and to 0 for the period prior. The technique bootstrapping (Van der Meulen et. al 2007 and Crammer 1986) is used to control the statistical significance of differences in  $R^2$ . \*\*\* = 1% statistical significance, \*\* = 5% statistically significant, \* = 10% statistically significant.

Table 4 illustrates the degree of relevance of balance sheet items. More specifically, it examines the relevance of total assets and total liabilities with respect to the stock price six months after the end of the year. The degree of relevance is tested once again through both, the incremental approach and relative approach. At a significance level of 1% the degree of relevance of both total assets and total liabilities increased in the period after the adoption. In more detail, the coefficient  $a_4$  which reflects the change in the degree of relevance of the total assets is equal to 0.35 and coefficient  $a_5$ , which reflects the change of relevance of all liabilities, is equal to -0.43.

At the same time, the results obtained from the relative approach (Table 4, regression 4) indicate a statistically significant increase in the coefficient of determination (the period following the adoption of IAS) at 1%. The findings suggest that the explanatory ability of the two independent variables on future stock prices ( $t+6$ ) is higher in the period after the adoption of IAS, suggesting an increase in the degree of relevance of total assets and total liabilities.

**Table 4 - Relevance Model 2**

	Incremental Approach						Relative Approach			
	$P_{it+6} = a_0 + a_1 Post_{it} + a_2 TA_{it} + a_3 TL_{it} + a_4 Post * TA_{it} + a_5 Post * TL_{it} + u_{it+6}$ (3)						$P_{it+6} = a_0 + a_1 TA_{it} + a_2 TL_{it} + u_{it+6}$ (4)			
	$a_0$	$a_1$	$a_2$	$a_3$	$a_4$	$a_5$	2000- 2009 Ad.R <sup>2</sup>	2000- 2004 Ad.R <sup>2</sup>	2005- 2009 Ad.R <sup>2</sup>	Difference Ad.R <sup>2</sup>
All countries	2.59***	0.45	0.29***	- 0.22**	0.35***	- 0.43***	44%	33%	46%	13%***

Variables:  $P_{it+6}$  = Market share price at time  $t + 6$  months,  $TA_{it}$  = Total assets per share,  $TL_{it}$  = Total liabilities per share,  $Post_{it}$  = Dummy - variable equals to 1 for the period after the adoption of IAS and to 0 for the period prior. The technique bootstrapping (Van der Meulen et. al 2007 and Crammer 1986) is used to control the statistical significance of differences in  $R^2$ . \*\*\* = 1% statistical significance, \*\* = 5% statistically significant, \* = 10% statistically significant.



**VII.2.2. Adoption of IAS and the degree of Reliability of financial statements**

According to the second hypothesis, reliability of financial statements is expected to increase in the period following the adoption of IAS. Tables 5 and 6 illustrate the findings on this matter.

The change of the degree of reliability is detected by the linear models 5 and 6 and more specifically, by examining the change of the coefficient of determination ( $R^2$ ). The results from both methods detect a marginal increase in the degree of reliability but are not statistically significant whatsoever. Specifically, the change of  $R^2$  regarding both, regression 5 and 6, shows a marginal non-significant increase in reliability at the rate of 3% and 2%, respectively (Table 5, 6).

**Table 5 - Reliability Model 1**

$$Cfo_{it+1} = a_0 + a_1 Cfo_{it} + a_2 Acc_{it} + u_{it+1} \quad (5)$$

	a <sub>0</sub>	a <sub>1</sub>	a <sub>2</sub>	Ad. R <sup>2</sup>	Dif. R <sup>2</sup>
All countries prior IAS	0,023369***	0,698654***	-0,093846***	51%	
All countries post IAS	0,014563***	0,679640***	-0,052264**	54%	+03%

Variables :  $Cfo_{it+1}$  = Cash flows from operating activities in  $t+1$  / Total assets at  $t$ ,  $Cfo_{it}$  = Cash flows from operating activities in  $t$  / Total assets at  $t-1$ ,  $Acc_{it}$  = DWC - DEP, DEP = Depreciation / Total Assets at  $t-1$ , DWC = change in net accounts Receivables / total assets at  $t-1$ , plus change in inventory / Total assets at  $t-1$ , plus change in other current assets / total assets at  $t-1$ , minus change in accounts payable / Total assets at  $t-1$ , minus change in taxes payable / total assets at  $t-1$ , minus change in other current liabilities / Total assets at  $t-1$ , minus change in deferred taxes / Total assets at  $t-1$ . The technique bootstrapping (Van der Meulen et. al 2007 and Crammer 1986) is used to control the statistical significance of differences in  $R^2$ . \*\*\* = 1% statistical significance, \*\* = 5% statistically significant, \* = 10% statistically significant.

**Table 6 - Reliability Model 2**

$$Cfo_{it+1} = a_0 + a_1 Accr_{it} + a_2 Cpcf_{it} + a_3 Def_{it+1} + u_{it+1} \quad (6)$$

	a <sub>0</sub>	a <sub>1</sub>	a <sub>2</sub>	a <sub>3</sub>	Ad. R <sup>2</sup>	Dif. R <sup>2</sup>
All countries prior IAS	0,025848***	0,442617***	0,459280***	-0,295475***	35%	
All countries post IAS	0,016293***	0,450523***	0,489532***	-0,333095***	37%	+02%

Variables :  $Cfo_{it+1}$  = Cash flows from operating activities in  $t+1$  / Total assets at  $t$ ,  $Accr_{it}$  = Net accounts receivables / Total assets at  $t-1$ , minus other current liabilities / Total assets at  $t-1$ , minus inventory accruals / Total assets at  $t-1$ ,  $Def_{it+1}$  = Other current assets / Total assets at  $t$ , plus inventory deferrals / Total assets at  $t$ ,  $Cpcf_{it}$  = operating income before depreciation at time  $t$  minus  $Accr_{it}$  plus  $Def_{it-1}$ . The technique bootstrapping (Van der Meulen et. al 2007 and Crammer 1986) is used to control the statistical significance of



differences in  $R^2$ . \*\*\* = 1% statistical significance, \*\* = 5% statistically significant, \* = 10% statistically significant.

### VIII. Conclusions

The IASB creates the standards and the conceptual framework in an attempt to create higher quality financial statements. Through this article, the extent to which this objective has been achieved is examined. Specifically, whether the quality of the financial statements of firms adopting IAS is superior to the period after the adoption of IAS, as compared with the period before the adoption, is the object of examination.

An important characteristic and a notable contribution of this research is the fact that the quality measurement methodology used, varies greatly from other existing methodologies that are identified in the existing literature. Specifically, through this article the quality of financial statements is detected in light of the Conceptual Framework. Particularly, the two fundamental qualitative characteristics set by the IAS Committee through the Conceptual Framework are examined in much detail.

The sample with respect to the specific research question consists of listed companies of fifteen European countries that have adopted IAS mandatorily. The countries included in the sample include Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden and the UK. Finally, the time horizon that is considered is 10 years, from 2000 until 2009. Specifically, the period between 2000 and 2004 is defined as the period before the adoption, while the period between 2005 and 2009 is defined as the period after the adoption.

Generally, the findings obtained support an increase in the quality of the financial statements of firms adopting IAS and are summarized as follows: First, an increase of the degree of relevance regarding the financial statements for the period following the adoption is identified. That increase is detected through the use of two alternative measures and suggests an increase in the quality of financial statements. Second, a marginal increase in the reliability of the financial statements is identified, without being statistically significant nonetheless. These results suggest that the degree of reliability of the financial statements did not change during the IAS transition of the countries under study.



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### **Appendix 1- Statistical significance of the differences of Factor Determination ( $R^2$ )**

The methodology carried out in order to identify the statistical significance of the difference between two Coefficients of Determination ( $R^2$ ) was held in two steps. Initially, the standard errors as well as variations of the coefficients of determination for each sample were calculated using the 'bootstrapping' technique. Then, following the statistical test used by Van der Meulen et al, in 2007, which was based on the analysis of Crammer (1987), the statistical significance concerning the differences in terms of  $R^2$ , was identified.

Specifically, the comparison of  $R^2$  between the two samples (prior and post the adoption), is performed through the following statistical test:

$$T = \frac{|R_{\text{IFRS}}^2 - R_{\text{LOCAL}}^2|}{SE(R_{\text{IFRS}}^2 + R_{\text{LOCAL}}^2)}$$

Moreover, the standard error (SE) is equal to:

$$SE(R_{\text{IFRS}}^2 + R_{\text{LOCAL}}^2) = \sqrt{\text{VAR}(R_{\text{IFRS}}^2 + R_{\text{LOCAL}}^2)}$$

Therefore, given that the two samples being independent, the following applies:

$$SE(R_{\text{IFRS}}^2 + R_{\text{LOCAL}}^2) = \sqrt{\text{VAR}(R_{\text{IFRS}}^2) + \text{VAR}(R_{\text{LOCAL}}^2)}$$