

Factors Influencing Measurement Choices of Investment Property in the European Union: Does Culture Still Matter Post IFRS?

Introduction

Despite Chanchani and MacGregor's (1999) finding that many accounting authors agree that culture has the potential to influence accounting, the interactions between culture and IFRS have not been examined to date. An understanding of these interactions will likely assist the International Accounting Standards Board (IASB) to improve IFRS so that they better satisfy the information needs of a wider variety of users. It will also provide a framework from which regulators in countries who are yet to adopt IFRS can evaluate the standards in relation to the information needs of their citizens. Investigating the adoption of IFRS in this light will also contribute to the body of accounting knowledge by improving our understanding of how accounting interacts with other social structures.

This paper examines the significance of factors influencing measurement choices in the context of the aftermath of the European Union's adoption of International Financial Reporting Standards (IFRS) for all consolidated financial reports in 2005. Preliminary research on the adoption of IFRS has returned mixed results. Daske et al. (2008) report that some countries are deriving capital market benefits, such as increased liquidity in share markets. However, Callao et al. (2007) found

that financial reports in Spain have become less relevant to stock market participants.

The aim of this paper is to address the question: ‘to what extent does culture and accounting tradition matter post IFRS?’ This question is approached in the context of the choice IAS 40 *Investment Property* gives real estate firms between reporting investment properties at either their historical cost or fair value. Our research develops and tests four hypotheses using a pooled cross-sectional logistic regression model. The paper makes a significant contribution to the literature by bringing the pre-IFRS discussions on factors influencing the development of accounting systems into the examination of IFRS. This provides new insights to both standard setters and regulators as it presents a new context from which IFRS can be evaluated.

The paper is structured as follows. First we examine the relevant literature on European harmonization, culture and IAS 40. The next section provides details of the research methodology. This is followed by the multivariate analysis, including a sensitivity analysis using additional factors, and a discussion of the results. Finally, conclusions, research limitations and avenues of future research are provided.

Literature Review

European harmonization: moving to IFRS

The European Union (EU) has been gradually moving towards the harmonization of accounting standards since 1957, when the Treaty of Rome officially commenced a program of company law harmonization. This led to the progressive

issuing of a number of directives, some of which, such as the Fourth Directive (1978) and the Seventh Directive (1983), dealt specifically with accounting issues. In 2000, the European Commission signalled an explicit move towards the harmonization of accounting standards across Europe, when it proposed that all listed European companies should issue consolidated financial statements in accordance with IFRS. This proposal, with the exceptions of IAS 32 *Financial Instruments: Presentation* and IAS 39 *Financial Instruments: Recognition and Measurement*¹, was enforced, and all publicly listed companies were obliged to use IFRS for their consolidated accounts for the fiscal year beginning on or after 1 January 2005².

The adoption of a universal set of accounting standards in Europe provides researchers with a unique opportunity to examine the underlying forces which impact on the harmonization of accounting standards, and the degree to which these forces work with or against the intended benefits of harmonization.

Post IFRS Europe

There are only a handful of papers which examine the post 2005 impact of the adoption of IFRS for the consolidated accounts of listed European companies, and these results are still quite preliminary and mixed. The key papers are discussed below.

¹ IAS 32 and IAS 39 were not enforced as a result of protests from French banks.

² Regulation (EC) No 1606/2002 of the European parliament and of the Council of July 19, 2002, on the application of international accounting standards (Official Journal L 243, 9/11/2002, p1-4). Available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2002:243:0001:0004:en:PDF>

Callao et al. (2007) investigated the effect that adopting IFRS had on the comparability and relevance of financial reports in Spain. They argue that the widening gap between book to market values of Spanish companies post IFRS indicates that financial reports have become less relevant to stock market participants. There are two possible ways to interpret this study. The first, which the authors propose, is that since IFRS has some major differences to Spain's previous accounting standards, the quality of reporting will naturally decrease in the short term as it will take time for local users to understand the new accounting system. The other interpretation, which follows Choi's (1981) theory is that the new standards do not satisfy the information needs of the Spanish society, and therefore the adoption of IFRS will naturally decrease the information content of published accounting reports in Spain. More research is needed to fill this gap in the literature and determine which interpretation is most valid.

Cairns, et al. (2009) investigate the comparability in policy choices between companies in the United Kingdom and Australia (who also adopted IFRS in 2005). Their results indicate that comparability has increased where the IAS impose the use of fair values, such as in IAS 39 *Financial Instruments: Recognition and Measurement* and IAS 41 *Agriculture*, but that comparability has decreased when there is an option to use a fair value approach, such as under IAS 16 *Property, Plant and Equipment*. Cairns et al. use these results to suggest that more incentives need to be built into the standards to encourage the use of fair values. Since their study focuses on only two countries which both follow the Anglo-Saxon accounting model it has a somewhat restricted scope. It does, however, provide evidence that the options available under IAS 40 *Investment*

Property may reduce the comparability of the consolidated financial reports produced by property companies in the European Union.

Perhaps the most comprehensive study on the effects of IFRS adoption has been undertaken by Daske et al. (2008). Their study, covering 26 countries, finds that the cost of capital decreases and that equity valuations and market liquidity increases around the time of adoption. However, as the authors acknowledge, it cannot be concluded that these economic benefits are derived solely as a result of IFRS adoption. The results do provide an indication that harmonization may be delivering some of the benefits identified by Douppnik and Perera (2005), or at least, that capital market participants are trading in the belief that these benefits are being realized.

Daske et al (2008) state that the benefits mentioned above are only found in countries that have implemented an adequate regulatory framework to support the adoption of IFRS. Their observation is supported in a different setting by Chen et al. (2002), and indicates that accounting standards operate in tandem with the institutional setting within a country. This suggests that a change in a country's institutional framework may be needed for the harmonization of accounting standards to be effective.

Our review of the harmonization literature found that the international harmonization of accounting standards may not bring about all of the intended benefits, as defined by Douppnik and Perera (2005) and Daske et al. (2008). The review also identified that 'environmental factors' may counteract harmonization

attempts (e.g. Mueller 1967). It is argued here that culture is a factor that needs to be addressed if IFRS is to be a success.

Cultural influences

Hofstede (1980; 2001) defined culture by discussing the programming of the human mind. He argues that there are three levels of mental programming: individual; collective; and universal. Individual mental programming is what makes a person unique, and hence, is different for each individual. The collective level is the mental programming that an individual shares with some, but not all humans, such as the language they speak, or the personal distance they keep from each other in conversations. Universal mental programming is the operating system of the person, as it contains what all humans have in common, such as the ability to laugh and cry.

Hofstede (1980; 2001) further observes that, unlike the individual and universal level of mental programming, most of the collective programming is learnt. This learnt mental programming differs across groups of people, hence it can be used as a way of placing individuals into a particular group, based on common sets of values and behaviours. Hofstede defined culture as being this level of mental programming, and called these groups cultural groups. While this definition is generally accepted in the accounting literature, it is not used extensively in sociology or in anthropology (Chanchani and MacGregor 1999; Baskerville 2003).

Hofstede's (1980; 1984; 2001) work on culture stems from a collection of surveys of IBM employees across 66 countries. He identified four dimensions from his study: individualism, power distance, uncertainty avoidance and masculinity.

Using these dimensions Hofstede (1980; 2001) divided the 66 countries in his sample into a number of cultural clusters. The dimensions of the three cultural clusters that are relevant to the European focus of this study are identified in Table 1.

Insert Table 1

Table 1 indicates that the primary differences between these cultural clusters come from the different power distance and uncertainty avoidance scores. Hofstede (2001) argued that economic growth is higher in more masculine countries, and that there is a positive association between individualism and GNP per capita. Therefore, it is not surprising that all three cultural areas have similar scores for these two dimensions, since they are drawn from the developed world. The mixed scores in the Latin³ cultural area for the masculinity dimension arise because Italy and Belgium are considered to have masculine values, while France and Spain have more feminine values. There have been some suggestions that the Latin cluster should be divided into two groups, but this ignores the other similarities that exist within the cultural cluster (Ronen and Shenkar 1985).

Ronen and Shenkar (1985) argue that the cultural clusters identified above are determined by three interdependent drivers of culture, namely, geography, language and religion. The relationship between geography and culture is evident

³ Hofstede named this cluster the More Developed Latin cluster to distinguish it from the Less Developed Latin cluster, which contains predominantly countries outside the European Union such as Mexico, Chile and Peru. Since this thesis is focusing on the European Union, the More Developed Latin cultural cluster is referred to as the Latin cultural cluster.

in the above table, as the cultural regions are also geographic areas. The argument behind the link is that a culture will spread primarily to the regions around its 'birthplace.' Language is considered to be a powerful driver of culture, as it provides the means through which meanings, classifications, and goals are communicated between people. Interestingly, countries in the Anglo cultural cluster predominantly speak English, while countries in the Germanic cultural cluster mainly speak German. Countries in the Latin cultural cluster speak different languages (primarily French, Italian or Spanish), but most these languages are derivatives of Latin, and are known as the three Romantic languages (due to their Roman origin). The relationship between culture and religion can be seen by the fact that Anglo and Germanic countries tend to share a Protestant heritage, while Latin countries share a Roman Catholic heritage.

Hofstede (1980; 2001) agrees that geography is one of the drivers of culture, along with other variables such as conquest, trade and investment. He also agrees that language plays an important role in cultural interactions, but he does not believe that it is a primary driver of culture. He uses the example of Belgium, which is classified as a Latin country, despite the majority of its citizens (54%) speaking Dutch (the official language of the Netherlands). Hofstede (1980; 2001) classified the Netherlands as a Nordic country, while House et al. (2004) argued that it is a Germanic country. Either way, the fact remains that the culture of Belgium is not determined by its majority language. Hofstede also found that the residents of Belgium who speak Dutch or French share more common cultural values than they do with Dutch or French nationals. Hofstede (1980) does concede that up until the emancipation of the Dutch speaking majority in the 1950's,

French was the language spoken by the upper classes, and this, in turn, may have had an impact on determining Belgium's culture. However, he believes the major factor which shaped Belgium's Latin cultural values is Roman Catholicism, which was more prevalent in the Dutch speaking majority. While this appears to support the claim that religion drives culture, Hofstede argues that culture first influences national values, which are then reflected in that country's religious beliefs and practices, which in turn, reinforces the country's culture. House et al. (2004) agree, suggesting that the Protestant reformation, which began in Germany, may have been fuelled by tensions between Roman Catholic teachings and German cultural values.

While authors debate what factors determine a country's culture, Baskerville (2003) claims that the grouping of nations into cultural clusters is itself misleading. Her argument is based on the claim that nations themselves are made up of different cultural groups. However, all of the counter examples she cites relate to countries from the developing world which have united in recent times, and hence would not have a strong national history or identity. Despite this, her argument may still apply to some of the countries studied here. For example, the separatist movement of the Catalans in the north of Spain, or the Bavarians in southern Germany. House et al (2004) defend the claim of cultural solidarity in Germany by providing evidence that while Germany may not be totally united as a nation, its populations do share a common cultural heritage and system. Hofstede (1980) addressed Baskerville's (2003) argument by distinguishing between types of cultures. He stated that there are numerous sub-cultures in each country, with the national culture being the collection of values and beliefs that

these sub-cultures have in common. Likewise, the cultural clusters of countries are made up of different national cultures which have a common set of values and beliefs.

While Baskerville (2003) questioned Hofstede's (1980; 2001) conclusions, McSweeney (2002) focused his critique, and subsequent discussion, on Hofstede's methodology and underlying assumptions. For this study, the important part of McSweeney's critique is his argument that Hofstede's sample is not representative, and that his cultural groupings are questionable at best. Hofstede's sample consisted of only IBM employees who share a common corporate culture. McSweeney (2002; 2002b) argues that this brings into question the representativeness of the sample. However, in his reply, Hofstede (2002) wrote that this is not a major issue as he measures the differences between national cultures. Therefore, any similarities he measures across countries caused by IBM's organizational culture, were eliminated. It is interesting to note that the Global Leadership and Organizational Behaviour Effectiveness Research Program (GLOBE) undertaken by House et al. (2004) obtained similar results when sampling 951 organizations. This suggests that the sample selection of Hofstede's (1980) project was not a major issue, and that culture appears to remain consistent over time.

McSweeney (2002) also claims that Hofstede (1980; 2001) arbitrarily chose his four cultural dimensions with no solid grounding in theory. McSweeney points out that authors such as d'Iribarne (1996) have demonstrated that the use of different cultural dimensions will result in different cultural groupings. These

different groupings can also be seen in review studies such as the one by Ronen and Shenkar (1985). However, Ronen and Shenkar's synthesis of the findings of other authors on national cultural clusters yielded identical groupings to Hofstede's. The GLOBE study (House et al. 2004), which represents the most comprehensive and modern attempt to quantify culture found similar groupings to Hofstede's for its European sample. Taras et al. (2009), however, argue that the GLOBE classifications and methodology are very similar to Hofstede's. Gray (1988 p5) defends Hofstede's dimensions by arguing that they have 'substantial support from prior work in the field.'

Radebaugh et al. (2006) produce country groupings based on the accounting traditions that exist within each country. Their groupings are identical to the Hofstede (1980; 2001) classification for all the countries examined in this study. Radebaugh et al (2006) argue that countries in the Anglo cluster have an accounting system which is more transparent and less conservative than either the Germanic or Latin accounting systems. Anglo accounting focuses on the information needs of investors, and ensuring that companies present a 'true and fair' view of their financial position and performance. By contrast, the Germanic and Latin cultural areas have accounting systems that focus on the information needs of creditors and tax authorities. This may explain why the stock markets in Germanic and Latin countries are much smaller than in Anglo countries. Hofstede (2001), however, argues that the smaller stock markets are a result of Germanic and Latin investors having a higher level of uncertainty avoidance, and hence having a preference for enduring investments such as precious metals and gems,

rather than shares. The focus of the accounting system therefore reflects the cultural values of the users of the financial reports.

Radebaugh et al. (2006) note that the differences between the Germanic and Latin accounting systems are becoming more pronounced. Germanic countries are moving towards a more transparent accounting model, as instanced by Germany allowing its companies to voluntarily adopt IFRS early. Latin countries, on the other hand, are holding more firmly to their accounting traditions, as demonstrated by Italy's belated implementation of the Fourth and Seventh directives in 1991.

Culture and accounting

Basu et al. (2009) provides evidence that accounting developed out of the need to manage relationships between individuals. This suggests that culture, which influences how people relate to each other, and accounting, which is used to manage these relationships, are intrinsically intertwined. Violet (1983) was the first person to explicitly link culture and accounting, arguing that culture could be used to explain the differences in national accounting systems. His work responded to Mueller's (1967) who proposed that environmental factors significantly influence accounting systems, and Seidler (1967) who proposed a theory based on the 'spheres of influence' of 'mother' countries. Violet (1983) argued that the success of any attempt to create an international set of accounting standards would be limited by cultural variables. This insight reveals that there are significant cultural challenges to be addressed in order for the harmonization of accounting standards to be effective.

Chanchani and MacGregor (1999) observe that after Violet (1983), the study of the relationship between culture and accounting followed an ad-hoc approach until Gray (1988) proposed a model which gained almost universal acceptance within the accounting literature. The Gray model incorporates accounting values and systems into the cultural model developed by Hofstede (1980). The model proposes that culture impacts on accounting systems through both accounting values, and through what Hofstede called institutional consequences.

Viewing the harmonization of accounting standards literature within the context of this model suggest some very interesting insights. Soderstrom and Sun (2007) reviewed the literature on the pre-IFRS adoptions of different Generally Accepted Accounting Principles (GAAP) to provide a background which can be used for research on the adoption of IFRS in the European Union. They conclude that the literature's findings imply that cross country differences in accounting quality are likely to remain post IFRS due to the institutional settings within each country. They argue that accounting quality after IFRS adoption will depend on the quality of the standards, each country's legal and political systems, and the incentives for financial reporting. These incentives include country wide realities such as financial market development and the tax system, and firm specific consequences such as capital structure and ownership structure.

Soderstrom and Sun's (2007) review highlights the proposition that the harmonization of accounting standards will not necessarily result in a uniform improvement of accounting quality. They argue that this failure of harmonization to bring about the benefits identified by Douppnik and Perera (2005) is due to what

Gray (1988) identified as institutional consequences. This is important because Gray and Hofstede (1980) showed that these institutional consequences are driven by a country's culture. Therefore, the literature reviewed by Soderstrom and Sun may simply be demonstrating some of the ways that culture is hampering the harmonization of accounting standards.

Gray's (1988) model establishes the link between societal values and accounting values by identifying four accounting cultural values: professionalism, uniformity, conservatism and secrecy; and then relating them to the four cultural values identified by Hofstede (1980; 1984); Individualism, Power Distance, Uncertainty Avoidance and Masculinity. Gray (1988 p8) defined the variables as follows:

Professionalism versus Statutory Control - a preference for the exercise of individual professional judgement and the maintenance of professional self-regulation as opposed to compliance with prescriptive legal requirements and statutory control.

Uniformity versus Flexibility - a preference for the enforcement of uniform accounting practices between companies and for the consistent use of such practices over time as opposed to flexibility in accordance with the perceived circumstances of individual companies.

Conservatism versus Optimism - a preference for a cautious approach to measurement so as to cope with the uncertainty of future events as opposed to a more optimistic, laissez-faire, risk-taking approach.

Secrecy versus Transparency - a preference for confidentiality and the restriction of disclosure of information about the business only to those who are closely involved with its management and financing as opposed to a more transparent, open and publicly accountable approach.

Table 2 shows the relationships that Gray (1988) hypothesized exist between Hofstede's (1980; 1984; 2001) dimensions and his own.

Insert Table 2

Gray (1988) and Radebaugh et al. (2006) propose that the degree of professionalism and uniformity determine the authority and enforcement of standards within the accounting system, while the degree of conservatism determines the measurement practices and the degree of secrecy determines the disclosure practices used by companies.

Gray (1988) also provides a classification of Hofstede's (1980; 1984; 2001) cultural areas, based on his accounting values dimensions. These classifications are presented in Table 3.

Insert Table 3

Douppnik and Tsakumis (2004) critically examined the empirical testing of Gray's (1988) model to determine its validity. They argue that while a large number of studies support the link Gray drew between societal values and secrecy, not enough has been done to examine the other links between Hofstede's (1980; 1984) societal values (culture) and Gray's (1988) accounting values. Despite

needing stronger evidence, there are indications that Gray's hypothesized relationship between conservatism and Hofstede's indices of uncertainty avoidance, individualism and masculinity are supported (e.g. Salter and Niswander 1995; Sudarwan and Fogarty 1996).

Chanchani and MacGregor (1999, p25) conclude their review of cultural studies in accounting by claiming that most authors agree that culture has the potential to influence accounting, they only disagree on the 'extent and nature of this influence'.

Culture and IFRS

As mentioned earlier, Violet (1983) argued that the success of any attempt to create an international set of accounting standards would be limited by cultural variables. Therefore, it is important to investigate how culture affects the way companies in different cultural areas apply IFRS.

Existing literature investigating the adoption of IFRS has ignored how culture impacts on the adoption of IFRS, and instead, focuses on institutional consequences, which Hofstede (1980) and Gray (1988) suggest are driven by culture. This paper helps to fill this gap by seeking to determine the extent to which culture and accounting tradition exist post IFRS. It does this by examining whether there are associations between the different cultural areas identified by Hofstede (1980), and the measurement choices adopted by European property companies under IAS 40 *Investment Property*.

The requirement that all European companies produce consolidated annual reports using IFRS has had a significant impact on the European property industry. Prior to 2005, the domestic standards applied in individual countries required property companies to report their real estate assets under either a cost model (such as in Austria and Italy) or a revaluation model (such as in the United Kingdom), with firms only being able to choose between these two methods in a limited number of countries (e.g. Belgium). On top of this, some countries (such as Austria and France) did not have a specific standard that dealt with investment property, and hence, it was treated as a part of property, plant and equipment (PPE).

IFRS treats investment properties as separate from property plant and equipment, defining it as: ‘property (land or building - or part of a building - or both) held (by the owner or by the lessee under a finance lease) to earn rentals or for capital appreciation or both, rather than for: (a) use in the production or supply of goods or services or for administrative purposes; or (b) sale in the ordinary course of business.’ (IAS 40.5)

IAS 40, gives property companies the option of reporting their real estate holdings using either the historical cost model (IAS 40.56) or the fair value model (IAS 40.33). If the historical cost model is used, the firm applies the requirements of IAS 16, *Property Plant and Equipment*, and carries the property at its ‘cost less any accumulated depreciation and accumulated impairment losses’ (IAS 16.30). The fair value of the properties, however, must be calculated, and disclosed in the footnotes of the annual reports, unless there are exceptional circumstances which prevent it from being determined reliably (IAS 40.79 (e)).

If the fair value model is used, the fair value of the investment properties is reported on the balance sheet (IAS 40.33), with changes in value reported in the income statement (IAS 40.35). The fair value of the investment property is defined as the price at which the property ‘could be exchanged between knowledgeable, willing parties in an arm’s length transaction’ (IAS 40.5). When determining the fair value of their investment properties, firms are encouraged, but not required, to use an independent valuer with the relevant qualifications and experience (IAS 40.32).

The requirement of all firms to disclose the fair value of their investment properties, regardless of the measurement choice they use, is not the only apparent ‘bias’ towards the fair value model. The standard also notes that firms who report under the historical cost model are free to change to the fair value model, while it is highly unlikely that firms who report under the fair value model will be able to change to the historical cost model (IAS 40.IN17)

The requirement of firms to disclose the fair value of their investment properties, either on the balance sheet (if they use the fair value option), or in the footnotes to the financial statement (if they use the historical cost option), provides researchers with a unique opportunity to examine the factors that drive these accounting choices.

Post IAS40 research

There have been just a few papers which focus on European property companies post IFRS. Muller et al. (2007) and Quagli and Avallone (2010) seek to determine what factors influence a company's choice between the fair value and the historical cost model, while Lourenco and Curto (2008) and Muller et al. (2010) examine the impact of the firm's choice on investors. The two cited Muller et al papers (2007 and 2010) make up only one study, as the 2010 paper is an updated version of the 2007 paper. The 2010 version, however, represents a change in focus, as it explores the effect of IFRS adoption on information asymmetry, while the 2007 paper examined the factors that drive a firm's measurement choice under IAS 40. Since this paper is focusing on the choice firms' make under IAS 40, the 2007 study is drawn on to provide support for a number of control variables, some background information, and a context in which to interpret our results.

According to the model used by Muller et al. (2007), there are two primary factors that determine a firm's choice between the cost model and the fair value model. These are the pre-IFRS domestic accounting standard, and the company's commitment to transparency in reporting. They also find limited evidence to suggest that the liquidity of property markets and the dispersion of ownership play a role in determining the choice, but these relationships are not as strong.

Muller et al. (2007) only mention in passing that these factors could be explained by cultural differences, and therefore, do not adequately explore this idea. The pre-IFRS standards, and the dispersion of ownership (used as a proxy for transparency) are both institutional consequences identified by the Gray (1988)

model as being driven by a country's culture. The Gray model also argues that the degree of transparency within an accounting system is related to the accounting value 'secrecy', which is itself driven by culture. Therefore a valid interpretation of Muller et al. (2007) is that the factors they identified are merely the instruments through which culture impacts on the choice between the two models allowed by IAS 40.

Quagli and Avallone (2010) add to the Muller et al. (2007) investigation by stating that the core business of the company may be the primary explanatory variable. They use agency theory to argue that a company renting out investment properties is more likely to adopt the fair value approach in order to overcome the information asymmetry problem. However, the applicability of this result across all European real estate firms is questionable, as Quagli and Avallone only sampled companies in countries whose pre-IFRS domestic standards required the historical cost model to be applied to property. Therefore these results simply indicate a factor which could explain why a company would switch from the cost model to the fair value model.

Quagli and Avallone (2010) also conclude that the decision to implement the fair value option under IAS 40 is affected by other choices made in the adoption of IFRS, such as the option of 'fair value as deemed cost' under IFRS 1. This reveals that accounting choices made under IFRS are not independent of each other, and therefore, the findings of this paper may be generalizable to other applications of IFRS.

While Muller et al. (2007) and Quagli and Avallone (2010) explored the drivers of firms' measurement choices under IAS 40, Lourenco and Curto (2008) examine whether investors price these choices differently. Their results show that investors distinguish between a firm's choice under IAS 40, as investors value the reported fair value differently to the disclosed fair value. This is consistent with the study by Cotter and Zimmer (2003) which showed that managers are more likely to include revaluations on the balance sheet when the estimates used to calculate them are more reliable. Lourenco and Curto (2008) conclude that investors do not distinguish between the countries in which the real estate firms are based. Their sample contains one country from each of the four⁴ major European cultural clusters identified by Hofstede. However, their justification for this sample is that they have picked countries with different accounting models, and therefore, did not explicitly use culture as a variable. This paper extends their study by analysing a larger sample from the three major European cultural clusters, and comparing the differences between these clusters.

The results of Lourenco and Curto (2008) seem to suggest that capital providers prefer property companies to use the fair value option under IAS 40. However, their study needs to be compared to Cairns et al. (2009, p2), who argue that in relation to property, comparability under IFRS increased due to companies 'abandoning fair value measurement'. The Cairns et al. result is interesting because their sample was restricted to companies within the Anglo cultural context, the cultural cluster that predicts is the most likely to embrace the fair value measurement option.

⁴ Lourenco and Curto's (2008) study included a country from the Nordic cultural cluster. This cluster is not examined here. Section 3.4 contains a discussion of the sample selection process.

Muller et al. (2010) examine how the mandatory disclosure of the fair value of investment properties under IAS 40 affects information asymmetry in the capital market. Using the bid-ask spread as a proxy for information asymmetry, Muller et al. find that firms' which disclose the fair values of their investment properties for the first time under IAS 40 experienced a decline in information asymmetry. However, these firms still have a higher level of information asymmetry than firms which disclosed their fair values prior to IFRS adoption.

This result was investigated further, and evidence suggests that these firms' have less reliable fair value estimates than firms' which disclosed their investment property fair values prior to IFRS. Muller et al. (2010, p25) therefore argue that 'fundamental differences exist' between these types of firms, and that these differences 'manifest themselves in the relative reliability of fair value estimates.' This study addresses this claim by proposing that culture is one of these fundamental differences.

Methodology

Our research seeks to answer the question 'to what extent does culture and accounting tradition exist post IFRS?' This question is examined within the context of the European real estate industry by focusing on the measurement choice real estate firms make under IAS 40 *Investment Property*. To answer this question, we test four hypotheses. The first three hypotheses relate to the

relationship between the cultural cluster in which a firm is based and its choice of measurement method under IAS 40. The fourth hypothesis investigates whether the passing of time results in a change in measurement method, and therefore, whether firms' measurement choices under IAS 40 converge to a common decision over time, independently of cultural clusters.

It was found earlier that countries which belong to the Anglo cultural cluster value optimism (as opposed to conservatism) and transparency (as opposed to secrecy) more than countries in other cultural areas (Gray 1988). It was also discussed that in the United Kingdom companies have a legal requirement to present the 'true and fair view' of their financial results and position (Radebaugh et al. 2006). These factors suggest that property companies in the Anglo cultural cluster are more likely to choose the fair value measurement option given under IAS 40. This leads to the first hypothesis.

H1: Companies that are based in the Anglo cultural cluster are more likely to adopt the fair value measurement option under IAS 40 than the historical cost measurement option.

The literature review also highlighted the fact that unlike the Anglo cultural area, both the Germanic and Latin cultural areas value conservatism and secrecy (Gray 1988; Radebaugh et al. 2006). This suggests that property companies in the Germanic and Latin cultural clusters are more likely to adopt the historical cost model than those in the Anglo cultural clusters. Latin countries are expected to use the historical cost model more than Germanic and Anglo countries because

Gray (1988) argued that they were more conservative in their measurement methods. Radebaugh et al. (2006) also argued that countries in the Germanic cultural cluster appear to be more open to IFRS than countries in the Latin cultural cluster. This leads to the second and third hypotheses.

H2: Companies that are based in the Germanic cultural cluster are more likely to use the historical cost model option under IAS 40 than companies in the Anglo cultural cluster.

H3: Companies that are based in the Latin cultural cluster are more likely to use the historical cost model option under IAS 40 than companies in either the Anglo and Germanic cultural cluster.

It was also argued that IAS 40 has a bias towards firms choosing the fair value measurement method for their investment properties, as it makes it virtually impossible for firms which report under the fair value model to switch to the historical cost model (IAS 40.IN17). The standard also requires all firms that report under the historical cost model must disclose the fair value of their investment properties in the footnotes to their financial statements (IAS 40.79 (e)). This increases the reporting costs of firms that adopt the historical cost model, as they have to disclose two valuation methods in their accounts.

Radebaugh et al. (2006) argued that countries such as Italy, which have been traditionally reluctant to change their accounting model to accommodate harmonization, have eventually given in to pressures from international markets. It is apparent that the IASB believes that the fair value model is the best measurement method for investment properties. The European Public Real Estate Association (EPRA) agrees, recommending that its members adopt the fair value model as best practice for reporting investment properties (EPRA 2006).

Therefore, firms which have traditionally used the historical cost model can be pressured to change to the fair value model. This leads to hypothesis four.

H4: The probability of a firm choosing to adopt the fair value model increases over time, independently of the cultural cluster in which the firm is based in.

Model development

To test the four hypotheses, this study uses the following pooled cross-sectional logistic regression model.

$$FV_{CHOICE} = \frac{e^{Z(X)}}{1 + e^{Z(X)}}$$

$$Z(X) = \beta_0 + \beta_1 CULTURE + \beta_2 YEAR + \sum \beta_n CONTROLS + \varepsilon$$

FV_CHOICE is an indicator variable which equals 1 if firm i chooses to value its investment properties according to the fair value model under IAS 40, and 0 otherwise (indicating that the firm chooses the historical cost model).

The variable which is used to test H1, H2 and H3 is CULTURE. This is an index variable which equals 1 if firm i's head office address is in the Anglo cultural cluster, 2 if the address is in the Germanic cultural cluster, and 3 if it is in the Latin cultural cluster. Consistent with H1, H2 and H3 we expect β_1 to be negative to reflect the preference for the fair value model in Anglo countries, and a higher likelihood of the historical cost model being used in Latin countries.

The variable which is used to test H4 is YEAR. This is an indicator variable which equals 1 if the observations for firm i were taken from the most recent IFRS report, and 0 otherwise (indicating that the observations were taken from the first year reports of IFRS). This creates a term in the regression which allows for the comparison of the first year of adoption, and the most recent year. As stated in H4, we expect that over time firms will become more likely to adopt the fair value mode under IAS 40, which means that we expect the importance of culture in explaining the measurement choice of firm i to decline. Therefore, we expect that in the above model β_7 will be positive.

The control variables represent the factors other than CULTURE and YEAR that are expected to impact on firm i 's measurement decision under IAS 40. The first three control variables, EPRA, BIG4 and E_ADOPT were used by Muller et al. (2007) as controls for transparency. EPRA is an indicator variable which equals 1 if firm i is a member of the European Public Real Estate Association (EPRA) prior to its reporting date. We expect β_8 to be positive as the EPRA (2006) recommends that its members use the fair value model as best practice. BIG4 is an indicator variable which equals 1 if firm i 's auditor is a big 4 accounting firm, and 0 otherwise. The literature argues that having a large external monitor signals an increased commitment to transparency (e.g. Titman and Trueman 1986; Beatty 1989). Since the use of fair values is associated with transparency, we expect β_9 to be positive (e.g. Laux and Leuz 2009). E_ADOPT is an indicator variable which equals 1 if firm i is an early adopter of IFRS, and 0 otherwise. Since

voluntary adoption of IFRS signals a commitment to transparency (Leuz and Verrecchia 2000), we expect β_5 to be positive.

PRE_IFRS is an indicator variable which equals 1 if the pre-IFRS GAAP in firm i 's home country allowed firms to use the revaluation method for the reporting of their investment properties, and 0 if the historical cost method was enforced. Muller et al. (2007) provide evidence that the firms are more likely to adopt the fair value model in their first year of IFRS if their pre-IFRS standards permitted the use of the revaluation model. Therefore we expect β_6 to be positive.

The last three control variables are SIZE, OPERATIONS and LIQUIDITY. These variables are all calculated based on firm i 's previous year's annual reports. This is due to the assumption that firm i chooses its measurement method under IAS 40 before its reporting date, and hence, if financial indicators impact on the decision they will be taken from prior years. For the first year of IFRS adoption, the prior years figures are considered to be the IFRS restatements, to ensure that the accounting figures have the same basis of preparation.

SIZE is the natural log of firm i 's total assets from the previous year's annual report, as measured in Euros. Some British firms prepared their annual reports in either British Pounds or US Dollars. The total value of their assets is therefore calculated based on the exchange rate as at the firm's financial reporting date. Quagli and Avallone (2010) provide evidence that smaller firms are more likely to adopt the fair value model under IAS 40. However, their sample excluded firms from the Anglo cultural cluster. Muller et al. (2007) provide mixed evidence in

terms of firm size, but showed that for their sample, the average market capitalization of firms who adopt the fair value model under IAS 40 is nearly twice the size of those that adopt the historical cost model. Therefore, we expect β_7 to be positive.

OPERATIONS is equal to firm i's rental income, divided by its sales, as reported in its income statement of the previous year. Quagli and Avallone (2010) found that firms with a core business activity of renting out investment properties are more likely to use the fair value method as it provides more information about the future prospects of their property to the market, and hence, reduces information asymmetry. We therefore expect β_8 to be positive.

LIQUIDITY is equal to the total debt of firm i divided by its assets, as reported in the previous years annual reports. This variable captures whether a firm's debt is high, compared to its assets, which suggests that the firm risks breaching a debt covenant. This creates an incentive for the firm to maximize the value of its reported assets. We do not have an expected sign for β_9 , as post Global Financial Crisis there remains a high level of volatility in international real estate markets, so it is unclear which measurement method will maximize reported values.

Muller et al. (2007) also included a control variable for performance in their regression, which was found to be significant at the less than 1 per cent level in all but one of their tests (where it was significant at the less than five per cent level). This variable is equal to the net income of the firm, divided by sales. Our study

excludes this variable because it does not provide useful information, as demonstrated by the following discussion.

When a firm adopts the fair value model under IAS 40, gains or losses arising from a change in the fair value of its investment properties must be reported in the income statement. These changes in value will therefore lead to a change in the net profit or loss of a firm, but will not affect sales. If there is a systematic increase in real estate values across Europe, then it can be expected that firms which use the fair value model will systematically outperform the firms that use the historical cost model. Alternatively, if there is a systematic decrease in real estate values across Europe, which occurred with the fall in property prices following the Global Financial Crisis, then it is expected that firms who use the historical cost model will outperform the firms that adopt the fair value model. Therefore, this performance variable does not convey any useful information on factors influencing a firm's measurement choice under IAS 40, and has the potential to make the model invalid.

Sample selection

The sample selection process began by identifying the publicly listed ICB Subsector 8633 firms operating in the European and African region according to the Thomson One Banker Database. Industry Classification Benchmark (ICB) Subsector 8633 'Real Estate Holding and Development' contains firms that 'invest directly or indirectly in real estate through development, investment or ownership' (FTSE International Limited 2008). Using this classification allows the study to focus exclusively on firms whose primary business activity is the

management or trading of investment properties. It also excludes real estate investment trusts (which are classified under 8670), and firms which provide real estate services (which are classified under 8637).

Insert Table 4

The search involved European and African companies because the Thomson's database does not allow for a search of just European companies. The sample was reduced to include only European companies removing all companies with a head office address outside the European Union⁵. This allows the study to focus on the real estate industry in the European Union.

The sample was further refined by eliminating firms with a head office in a country that does not fall within either the Anglo, Germanic or Latin cultural clusters (see Table 1 for the cultural cluster classifications). This eliminates the Nordic and Eastern European cultural clusters, which can be investigated in further studies. Eliminating these two cultural areas only reduces the sample by only 26%, which reveals that the cultural clusters studied here contain the vast majority of the European Union's Real Estate Holding and Development companies.

The sample was then reduced further by eliminating property companies for which annual reports could not be obtained, and eliminating property companies which did not record their investment property holdings (either because the reports were not consolidated, and therefore, not prepared in accordance with IFRS, or because they literally reported a 0 balance). Two property companies

⁵ This also eliminated European countries which are not members of the European Union such as Switzerland and Norway from the sample.

were then eliminated because their measurement method could not be determined. Another property company was eliminated because it changed its reporting period during the timeframe that this study focuses on, and this in turn, prevents the financial ratios which are required as control variables from being comparable. Finally, one German property company was removed from the sample because it is a wholly owned subsidiary and, hence, its measurement decision under IAS 40 may be unduly influenced by its parent entity.

This results in a sample of 89 different investment property firms. Data is available for the first year of IFRS adoption for 49 of these firms (i.e. the annual report covering the year starting on or after 1 January 2005), while 88 firms filed an annual report in the last 12 months (i.e. the annual report which covered the year ending between 30 June 2009 and 30 April 2010). This gives a total of 137 firm year observations.

Descriptive statistics

Table 5 presents the descriptive statistics of the variables defined earlier for the 137 firm year observations.

Insert Table 5

Table 5 reveals that the sample contains a similar number of observations from each of the three cultural areas. It also shows that the majority of firms adopt the fair value model, and use a big 4 auditor, while EPRA members make up only around one third of the sample.

Table 5 shows that around 65% of the observations are taken from the most recent year. The high number of observations in the most recent year (88 compared to 49 in the first year of IFRS adoption) is caused by the creation of new real estate firms, and the listing of real estate firms on the stock exchange. None of the firms in the sample reported the most recent year as being their first year of IFRS. Table 5 reveals that early adopters make up a very small proportion of the total sample. Therefore, the model is not going to find E_ADOPT to be significant in terms of explaining FV_CHOICE. This is not a major problem, as E_ADOPT has been included as a control variable. The inclusion of E_ADOPT as an independent variable does, however, create an interesting result discussed later.

The minimum value of OPERATIONS is zero, as some real estate firms in the sample are property developers. This means that they purchase and develop investment properties to earn capital gains instead of leasing them to earn rental income.

The minimum value of LIQUIDITY is zero, as one property company in the Anglo cluster did not hold any liabilities in the year prior to the adoption of IFRS. The maximum value of LIQUIDITY is greater than one, as two companies in the sample each reported a negative equity in one of their annual reports.

There are no major correlations between any of the explanatory variables. The highest correlation exists between CULTURE and FV_CHOICE. This provides preliminary evidence to support H1, H2 and H3, as it suggests that a relationship exists between a firm's cultural cluster and its measurement choice under IAS 40.

OPERATIONS and CULTURE are the two explanatory variables with the highest correlation. Upon examination of the data, it was noticed that the rental income of Latin firms tended to make up a lower proportion of sales than in Anglo or Germanic firms. Further research is needed to explain this result.

Multivariate analysis

Table 6 presents the results of the logistic regressions. Models 1 and 2 are both pooled cross-sectional logistic regressions as they use data from both time periods, namely the first year of IFRS reporting⁶, and the most recent year⁷. The difference between these two models is that Model 1 is a control model, as it excludes CULTURE as a variable. This allows us to determine whether adding CULTURE improves the explanatory power of the model. Models 3 and 4 are both cross-sectional logistic regressions as they contain data from only one time period. Model 3 contains the first year of adoption data while Model 4 contains the data from the most recent annual reports. In both Models 3 and 4 YEAR is excluded as a variable, because it returned the same value for all observations (YEAR = 0 in Model 3, and 1 in Model 4). The Control Model (Model 1) has good explanatory power, as it is significant at the less than 1% level, with a McFadden's⁸ R² of 0.2087. The model also correctly predicts 74.5% of measurement choices. Model 1 provides evidence to support H4 as the YEAR coefficient is positive and significant at the less than 1% level, indicating that over time firms become more likely to adopt the fair value model under IAS 40. Consistent with Muller et al. (2007) the model finds that the PRE_IFRS coefficient is positive and significant (at the less than 5% level), which indicates that firms are more likely to adopt the fair value method if the pre-IFRS domestic standards of their home country allowed investment properties to be reported under the revaluation model. The model also reports that the OPERATIONS coefficient

⁶ The fiscal year which began on or after 1 January 2005

⁷ The financial report with a year end between 30 June 2009 and 30 April 2010.

⁸ Since this study uses logistic regression models, the R² cannot be calculated as it is for OLS linear models. This study adopts McFadden's (1974) method to estimate the R².

is positive and significant at the less than 1% level. This supports Quagli and Avallone's (2010) assertion that firms which rely more on the renting out of investment properties are more likely to adopt the fair value model than firms which derive their income from other sources (such as the development and sale of investment properties).

Insert Table 6

Finally, the model finds that the coefficient for BIG4 is negative and significant at the less than 10% level. This suggests that real estate firms who use big 4 auditors are more likely to adopt the historical cost model under IAS 40. As discussed earlier, this may be an indication that non-big 4 auditors prefer their clients to use the fair value method. Muller et al. (2007), however, found that their variable for BIG4 was positive and significant (at the less than either 10% or 5% levels). Perhaps this difference in results can be attributed to different samples.

The Culture Model (Model 2) appears to have a stronger explanatory power than the Control Model (Model 1), as it is significant at the less than 1% level, but also has a much higher Adjusted McFadden's R^2 (0.2435 compared to 0.0988) and correctly predicts 8.7% more observations⁹. These factors all suggest that adding CULTURE improves the predictive power of the model. By itself, the coefficient of CULTURE is negative and significant at the less than 1% level, demonstrating that Anglo firms are more likely to adopt the fair value model under IAS 40 than Germanic and Latin firms, while Latin firms are more likely to adopt the historical cost model under IAS 40 than

⁹ The adjusted R^2 measure can be used to compare regressions with different explanatory variables, as unlike the conventional R^2 it penalises models that include irrelevant variables. (Gujarati 2006)

Anglo or Germanic firms. This therefore provides strong evidence to support H1, H2 and H3.

Just like Model 1, Model 2 finds evidence to support H4 as the coefficient of YEAR is both positive and significant at the less than 1% level. Therefore, there is strong evidence to support H4.

Model 2 also finds that the coefficient for BIG 4 is negative and significant at the less than 5% level. Unlike Model 1, the coefficient of OPERATIONS is insignificant. This may be due to the observation made earlier that, on average, rental income made up a lower proportion of sales for Latin firms. Therefore, the high significance attributed to OPERATIONS as an explanatory variable in Model 1 may have in fact been caused by OPERATIONS being used by the model as a proxy for CULTURE. Model 2 also provides evidence that larger firms are more likely to adopt the fair value model (as the coefficient of SIZE is positive and significant at the less than 10% level), and that EPRA members are more likely to adopt the historical cost model (as the coefficient of EPRA is negative and significant at the less than 10% level). This second result could be caused by EPRA members facing less pressure to adopt the fair value model, as these firms are perceived to be more transparent by virtue of their EPRA membership.

Model 3 (First Year Model) examines only the data from the first year of IFRS adoption. The model is significant at the less than 1% level, and appears to have a reasonably good McFadden's R^2 . However, the adjusted R^2 is very low, and the model correctly predicted

less than 70% of cases. The model also has a relatively small sample size, and hence the results must be treated with some caution. However, despite this, the model finds evidence to support H1, H2 and H3 as the coefficient for CULTURE is both negative and significant at the less than 1% level. This suggests that the cultural area in which a firm is based is a significant factor in determining the measurement method a firm uses under IAS 40. As with the Culture Model, this model also finds that the coefficient for SIZE is positive and significant at the less than 5% level, suggesting that, on average, larger firms are more likely to choose the fair value measurement method under IAS 40 in the first year of adoption. The First Year Model also provides evidence that firms' are more likely to choose the fair value model under IAS 40 in the first year of IFRS adoption if their pre-IFRS standards allowed the use of the revaluation model to value investment properties, and if the firm had a lower level of debt relative to total assets. However, as mentioned previously, the small sample size means that these results are not definitive.

Model 4 (Recent Year Model) is significant at the less than 1% level, and also has a relatively high McFadden's R^2 , and adjusted R^2 . This model supports H1, H2 and H3, as it finds that the CULTURE coefficient is negative and significant at the less than 1% level. This provides evidence that the cultural area in which a firm is based remains a significant factor in the measurement decision of that firm after the first year of IFRS adoption. Like the Culture Model, this model also finds that the coefficient of BIG4 and EPRA are negative and significant at the less than 5% and 10% levels respectively. Comparing the First Year Model with this model provides limited evidence that the importance of the firm's core business activity in explaining its measurement choices

under IAS 40 increases over time. The E_ADOPT variable was dropped from this model, as were the two early adopters, as both used the fair value method under IAS 40 for their most recent annual reports. This provides limited evidence that early adopters of IFRS are more likely to choose the fair value model under IAS 40 in the medium to long term.

Overall, the four models examined in this study provide strong evidence to support all four hypotheses. The first three hypotheses all proposed that the cultural cluster in which a real estate firm is based plays a significant role in determining the measurement method that the firm will choose under IAS 40. These hypotheses were supported by the Models 2, 3 and 4 of the multivariate analysis finding that the coefficient for culture is negative, and significant at the less than 1% level. This indicates that real estate firms in the Anglo cultural cluster are more likely to adopt the fair value model under IAS 40 than real estate firms from the Germanic or Latin cultural clusters. Furthermore, real estate firms in the Latin cultural cluster are more likely to adopt the historical cost model under IAS 40 than real estate firms in either the Germanic or Anglo cultural clusters. The hypothesis is further strengthened by the Culture Model (Model 2) having a higher explanatory power than the Control Model (Model 1).

This results also support H4, which claimed that the probability of a firm adopting the fair value measurement method under IAS 40 increases over time, independently of the cultural cluster in which the firm is based. This evidence came from the finding in Model 2 that the coefficient of YEAR is both positive and significant at the less than 1% level.

Accordingly, the evidence reported here suggests that culture and accounting tradition continue to exist and influence accounting practices post IFRS, and while this influence appears to be diminishing, it has not disappeared.

Sensitivity analysis

The first two alternative factors identified as being potential drivers of accounting systems are language and religion. Ronen and Shenkar (1985) argued that these two factors, along with geography, determined the culture of a particular country. This study has already provided evidence that culture impacts on real estate firms' accounting choices under IAS 40. However, if Ronen and Shenkar are correct, then this study may simply have indirectly measured the impact these factors have on accounting through culture.

The sample of real estate firms used in this research is drawn entirely from Western European countries and, therefore, does not contain enough variation to test for geographical differences. The sample does, however, contain firms that prepare their annual reports in different languages, and which operate in countries with different religious heritages. This paper is therefore able to test two of Ronen and Shenkar's (1985) three factors.

Whorf (1956) wrote extensively on how language impacts on the way individuals perceive the world. While he did not write within the accounting domain, his work can be used as a background for understanding how language impacts on accounting. He argues

that the structure and categories inherent in language shape the way that speakers of that language view and interpret the world. Since different languages contain different classifications and structures, the speakers of different languages view and interpret the world in different ways. Ronen and Shenkar (1985) argue that since languages contain meanings and values, they shape the values and outlook of their speakers. This, ultimately, leads to different cultural clusters.

Weber (1958) provided perhaps the first argument that religion drives economic development through his proposition that the 'spirit of capitalism' arose out of the 'Protestant ethic.' His argument is framed around two key strands of Protestant theology. The first part of his argument arises from the attainment of salvation. The Catholic Church teaches that all people can be saved through reception of the sacraments, while the Protestant faith, and in particular the Calvinist strand, teaches a doctrine of double predestination, where salvation is a gift from God given to an 'elect' few. This causes Protestant believers to look for signs, such as worldly success, that they have been set apart from those eternally damned to hell. This, in turn, encourages believers to actively seek material success to confirm their salvation. The second part of his argument arises from the interpretation of a vocation. Weber argues that Roman Catholicism views a vocation as being a calling to a zealous religious life, while Protestantism views a vocation as a calling to follow a secular life with as much zeal as possible. This leads to Catholics seeking a life of religious holiness, while Protestants seek a life of material success. Weber ultimately argues that the Protestant creed led to the development of the

'spirit of capitalism' which views wealth maximization as an end in itself, instead of a means to an end.

Ronen and Shenkar (1985) argue that religion, like language, shapes the values of a nation, which then impacts upon the accounting values, and hence, the accounting system. Hamid et al. (1993) agree, citing the impact Islam has on accounting systems in Muslim countries. While Hofstede (1980; 2001) believes that Roman Catholicism was an important factor in the shaping of Belgium's culture, he argues that culture comes before religion, and that religion then reinforces culture.

The literature investigating the relationship between a country's accounting and legal system does not appear to be as theoretically developed as the literature for language or religion. However, there are a number of empirical studies which have found evidence of a relationship between a nation's legal system and aspects of its accounting system. These studies tend to draw a distinction between 'civil law countries' where legal rules are codified, and 'common law countries' which have a judicial legal system. Radebaugh et al. (2006) and Nobes and Parker (2004) argue that accounting regulation in civil law countries is more detailed, and accountants have less influence on standard setting than common law countries. Ball et al. (2000) find that accounting income in common law countries is more timely than in civil law countries, especially when reporting losses. La Porta et al. (1998) find evidence to suggest that a high level of shareholder protection leads to a lower concentration of ownership in public firms. La Porta et al. conclude that while their evidence suggests a link between legal systems and economic growth, other

factors are also important. Hofstede (1980; 2001) argues that culture drives the development of the legal system.

Adhikari and Tondkar (1992) found evidence that the size of a country's stock market is related to the stock exchange disclosure requirements in that country. They argue that their findings are consistent with Pratt and Behr (1987), as they provide empirical evidence that capital market factors can be used to explain accounting system differences. Nobes (1998) proposes a model of accounting classes, where the strength of the equity market plays a role in determining the accounting system within a country. He further argues that many other factors suggested by the literature to explain accounting differences 'result from or are linked to the equity market' (Nobes 1998, p184). Hofstede (1980; 2001), however, argues that the equity market in a country is determined by the culture of the country, particularly the uncertainty avoidance index. He noted that countries with highly developed share markets exhibited a low uncertainty avoidance score, suggesting that investors are happy to hold risky securities. He continues that investors in countries with a high uncertainty avoidance score preferred investing in more secure investments such as precious metals. Therefore, Hofstede argues that the share markets in both groups of countries simply reflect the demand investors have for shares.

Following on from this review, a number of models besides the control and culture models are developed to incorporate these additional factors into the explanation of measurement choice under IAS 40.

Hofstede-Gray Model

Following the control and culture models, the third model incorporated in this sensitivity analysis, and the first model with new variables, examines whether Hofstede's (1980; 2001) indices can be used to explain the measurement method adopted by firm *i* under IAS 40. This model represents an alternative measurement of culture, as it uses the individual indices of countries instead of national groupings. The model uses the three indices that Gray (1988) argued are related to the level of conservatism in the accounting system (namely, uncertainty avoidance, masculinity and individualism). The model is expressed as follows:

$$FV_{CHOICE} = \frac{e^{Z(X)}}{1 + e^{Z(X)}}$$

$$Z(X) = \gamma_0 + \gamma_1 UAI + \gamma_2 MAS + \gamma_3 IND + \sum \gamma_n CONTROLS + \varepsilon$$

UAI is the Uncertainty Avoidance Index identified by Hofstede (1980; 2001) in the country in which firm *i* has its head office, less 58, which is the point chosen by Hofstede to differentiate countries with a high Uncertainty Avoidance score from those with a low score. Hofstede argued that his four indices were relative measures, and therefore meaningless unless they were compared across countries. He chose the points of differentiation in order to maximise differences between the cultural clusters, and therefore facilitate better comparisons. We expect to find that companies in countries which prefer to avoid uncertainty (and hence have high scores) will be more likely to use the historical cost method. Therefore, γ_1 in this model is expected to be negative.

MAS is the Masculinity Index identified by Hofstede (1980; 2001) in the country firm i has its head office, in less 50. Once again, this point is chosen arbitrarily by Hofstede to maximise the differences between the cultural clusters. We expect companies in societies which value attributes such as achievement and material success instead of modesty will be more likely to adopt the fair value measurement method under IAS 40. Therefore, β_2 in this model is expected to be positive.

IND is the Individualism Index identified by Hofstede (1980; 2001) in the country firm i has its head office, less 50. The number 50 was chosen because it is halfway between 0 and 100. Hofstede's cultural groupings were based primarily on his three other indices, and hence, he did not set an arbitrary point from which to judge the Individualism index. Gray (1988) hypothesized that a country's individualism score is negatively related to its level of conservatism. Therefore, β_3 is expected to be positive in this model.

Culture driver model

The fourth model used in this analysis examines whether the cultural drivers identified by Ronen and Shenkar (1985) can be used to explain firm i 's choice of measurement method under IAS 40. This model is expressed as follows:

$$FV_{CHOICE} = \frac{e^{Z(X)}}{1 + e^{Z(X)}}$$

$$Z(X) = \delta_0 + \delta_1 ENGLISH + \delta_2 PROTESTANT + \sum \delta_n CONTROLS + \varepsilon$$

ENGLISH is an indicator variable which equals 1 if the financial reports produced by firm i are available in English, and 0 otherwise. Note that many firms in the non-Anglo cultural cluster prepare their financial reports in their native language, and then provide an English translation. These firms will therefore score a 1 in this variable. We expect to find that real estate firms which adopt the language of the Anglo-cultural cluster for the preparation of their financial reports will be more likely to adopt the fair value model. Therefore, β_1 is expected to be positive in this model.

PROTESTANT is an indicator variable which equals 1 if firm i has its head office in a country with a Protestant heritage, and 0 otherwise. Since the sample is drawn from Western Europe, the firms which score a 0 for this variable were incorporated in a country which has a Roman Catholic heritage. Weber (1958) argued that the Protestant belief and ethical systems led to the development of Capitalism and the focus on wealth maximization. In light of his arguments, we expect that firms which operate in countries with a Protestant heritage will be more likely to adopt the fair value method. This is because investors in these countries are more likely to demand that the firm discloses its economic profits, which will allow them to value the company with greater accuracy. Therefore, β_2 is expected to be positive in this model.

Legal model

The fifth model used in this sensitivity analysis examines whether the legal system of the country in which firm i was incorporated determines the measurement method chosen by the firm under IAS 40. This model is expressed as follows:

$$FV_{CHOICE} = \frac{e^{Z(X)}}{1 + e^{Z(X)}}$$

$$Z(X) = \varphi_0 + \varphi_1 SHAR_{RIT} + \varphi_2 CRED_{RIT} + \sum \varphi_n CONTROLS + \varepsilon$$

SHAR_RIT is an index variable that rates the rights of shareholder in the country in which firm i has its head office on a scale from 0 to 6. It is the sum of six indicator variables identified by La Porta et al. (1998 p1122-1123). We expect that firms with head offices in countries that promote the rights of shareholders are more likely to adopt the fair value method, as these countries will prefer their firms to be more transparent with their shareholders. Therefore, φ_1 is expected to be positive in this model.

CRED_RIT is an index variable that rates the rights of creditors in the country in which firm i has its head office on a scale from 0 to 4. It is the sum of four indicator variables identified by La Porta et al. (1998 p1123). We expect that firms with a head office in countries which protect creditors will be more likely to value transparency. Therefore, φ_2 is expected to be positive in this model.

MCap model

The sixth and final model examines whether the development of the share market in the country in which firm i was incorporated is a factor that determines the firm's measurement method choice under IAS 40. This model is expressed as follows:

$$FV_{CHOICE} = \frac{e^{Z(X)}}{1 + e^{Z(X)}}$$

$$Z(X) = \omega_0 + \omega_1 MCAP_{GDP} + \sum \delta_n CONTROLS + \varepsilon$$

MCAP_GDP is equal to the total market capitalisation of all listed companies in the country in which firm *i* has its head office in divided by that country's Gross Domestic Product. This is used as a proxy for share market development. As with the control variables of SIZE, OPERATIONS and LIQUIDITY, MCAP_GDP is taken from the start of the year. However, since MCAP_GDP is only available for calendar years, MCAP_GDP for firms with a non 31/12 reporting date is taken from the start of the calendar year prior in which most of their financial year falls in. For example, a firm which reports a 31/3 year end in 2010 (or a 30/9 year end in 2009) will have the opening 2009 value of this variable, as most of their financial year falls within the 2009 calendar year¹⁰. We expect that firms which operate in countries with a higher level of share market development will be more likely to adopt the fair value measurement method under IAS 40. Therefore, ω_1 is expected to be positive.

Before discussing the results of the regression it should be pointed out that many of the variables used by the different models are highly correlated. CULTURE is highly correlated with UAI, IND, ENGLISH, PROTESTANT, SHARE_RIT and CRED_RIT, adding weight to Hofstede's (1980; 2001) argument that culture influences the religious and legal systems in a country. Due to the high correlation between CULTURE and UAI, it is not surprising to find that UAI is also highly correlated with IND, ENGLISH,

¹⁰ Firms with a 30/6 year end in 2009 have 181 reporting days fall in the 2009 calendar year, and 184 days fall in the 2008 calendar year, so these firms have the opening 2008 value of MCAP_GDP.

PROTESTANT, SHARE_RIT and CRED_RIT. The high negative correlation between UAI and IND is a problem as both variables are being used in the same model. Therefore there are indications that the Hofstede-Gray Model suffers from multicollinearity. However, Gujarati (2006) argues that the consequences of multicollinearity do not adversely affect the objectives of this paper. This is because multicollinearity inflates the standard errors of the OLS estimates, thereby reducing the likelihood of finding individual significances in the model. Here we are comparing the predictive power of the models as a whole, instead of focusing on the significance of an individual estimator. Therefore, the potential existence of multicollinearity does not invalidate the overall outcomes of the models.

The results of the sensitivity analysis are shown in Table 7. Model A (Control Model) and Model B (Culture Model) were discussed previously, as they are equivalent to Models 1 and 2. The discussion of these results concluded that culture was a significant factor in explaining firms accounting choices under IAS 40.

Model C (Hofstede-Gray Model) examines the relationship Gray (1988) proposed between Hofstede's (1980; 1984; 2001) cultural indices and the firm's measurement method under IAS 40. This model appears to provide the best explanation of firms' measurement choices, as it has the highest McFadden's R^2 and adjusted R^2 , as well as the highest percentage of correctly predicted choices.

Despite the suggestion of multicollinearity, the model provides support for Gray's (1988) hypothesis as it demonstrates that the uncertainty avoidance and masculinity indices are both important in explaining a firm's accounting choices. The coefficient of UAI is both negative and significant at the less than 1% level, which provides evidence that firms in countries with a higher uncertainty avoidance score are less likely to adopt the more volatile fair value measurement method under IAS 40. The coefficient of MAS, on the other hand, is positive and significant at the less than 5% level, indicating that firms in countries that value attributes such as achievement and material success are more likely to adopt the fair value model. The model indicates that IND is not individually significant in explaining the choice of measurement method under IAS 40. This, however, may be due to countries in the sample having similar individualism scores. Interestingly, this model finds that the coefficient of SIZE is positive and significant at the less than 10% level.

The McFadden's R^2 and adjusted R^2 of the Culture Driver Model (Model D) suggest that this model explains a lower proportion of the variance in a firm's choice of measurement method under IAS 40 than either of the culture models (Models B and C). However, this model correctly predicts approximately the same percentage of cases as the culture models, so it appears to still have a strong explanatory power. Perhaps the explanatory power would be improved by adding a variable to account for geography, which was the third factor proposed by Ronen and Shenkar (1985). This can be investigated in further research. The model indicates that the coefficient of ENGLISH is positive and significant at the less than 10% level. This suggests that requiring all firms to produce their reports

in a common language may result in a more consistent application of accounting choices under IAS 40. The coefficient for PROTESTANT is also positive and significant at the less than 1% level. This indicates that real estate firms which have their head office in countries with a Protestant heritage are more likely to adopt the fair value measurement model under IAS 40 than firms with a head office in a country with a Roman Catholic heritage. This finding appears to support the claims of Ronen and Shenkar (1985) and Weber (1958) that religion plays a role in the shaping of commercial systems. It should be noted, however, that there was a very high correlation between PROTESTANT and the culture variables of CULTURE, UAI, IND and MAS. Therefore, it is not surprising that this variable is significant. Further research is needed to determine whether religion or culture drives accounting choice. Further research can also investigate whether the secularisation of European countries, as well as increases in the European Islamic population, will have an impact on accounting choices.

Despite correctly predicting around 5% less measurement choices than Models B, C and D, The Legal Model (Model E) has a relatively strong explanatory power. This is because the McFadden's R^2 and adjusted R^2 of the model indicate that it explains a similar amount of the variance of choices as Model 2 (Culture Model). The model reports that the coefficient of SHARE_RIT is positive and significant at the less than 1% level. This provides evidence that firms with a head office in countries with a higher level of shareholder protection are more likely to adopt the fair value measurement method under IAS 40. Similarly, the coefficient for CRED_RIT is positive and significant at the less than 1% level, indicating that firms with a head office in countries with higher levels of

creditor protection are more likely to adopt the fair value model. These results support the claim that the legal system of the nation in which a firm operates impacts on the firm's accounting choices.

The MCAP Model (Model F) has a weaker explanatory power than all the other models (apart from the control model), as it correctly predicts less measurement choices, and has a lower McFadden's R^2 and adjusted R^2 . The model provides evidence that the development of a country's share market is significant in explaining measurement choices under IAS 40 as the coefficient of MCAP_GDP is positive and significant at the less than 1% level. Interestingly, this model finds that OPERATIONS is individually more significant than MCAP_GDP in explaining the measurement choice under IAS 40 (as seen by the higher t-ratio). This, combined with the low explanatory power of the model, suggests that share market development is not as significant in explaining the accounting choice of firms as culture.

Conclusions

The results of this study indicate that cultural factors explain the measurement choices of firms under IAS 40 at least as well if not more so than other factors identified in the literature. The strongest evidence to support this claim is where it was shown that Hofstede's (1980; 1984; 2001) cultural indices explain firms measurement choices under IAS 40 better than any of the other combination of variables being tested. This is due to the Hofstede-Gray Model correctly predicting the highest percentage of measurement choices, and explaining the highest proportion of variance in the measurement choice (as

it has both the highest adjusted McFadden's R^2). It can be argued that the model with the second best explanatory power is the Culture Model (as it has the second highest adjusted McFadden's R^2).

Further studies may be able to compare the explanatory power and causal factors involved in different industry contexts and across more countries. . However, the evidence presented in this study suggests that a nation's culture has a significant impact on firms' measurement decisions, under IAS 40 in the case of investment property companies in the European Union, though such influences appear to be diminishing over time.

Table 1: Three of Hofstede's (1980; 2001) cultural clusters, based on his indices.

	Anglo	Germanic	Latin
Individualism	High	High	Moderate to High
Power Distance	Low	Low	High
Uncertainty Avoidance	Low	High	High
Masculinity	High	High	Mixed
Examples	Ireland, United Kingdom	Austria, Germany	Belgium, France, Italy, Spain

Table 2: Gray's (1988) hypotheses on how accounting values are related to Hofstede's (1980; 2001) cultural values.

	Professionalism	Uniformity	Conservatism	Secrecy
Individualism	Positive	Negative	Negative	Negative
Power Distance	Negative	Positive	No Relationship	Positive
Uncertainty Avoidance	Negative	Positive	Positive	Positive
Masculinity	No Relationship	No Relationship	Negative	Negative

Table 3: Hofstede's (1980; 2001) cultural clusters in terms of Gray's (1988) accounting values.

	Anglo	Germanic	Latin
Professionalism	High	High	Moderate to High
Uniformity	Low	Moderate to High	High
Conservatism	Low	Moderate to High	High
Secrecy	Low	High	Moderate to High

Table 4: Sample selection process

	Less	Remaining
Publicly listed ICB Subsector 8633 firms operating in the Europe & African region according to the Thomson One Banker database		266
Less firms:		
With a head office address in a country outside the European Union	40	
With a head office address in a country that is not in the Anglo, Germanic or Latin cultural clusters as identified in the Literature Review	60	
For which financial reports could not be obtained	39	
Which did not have an Investment Property account	34	
For which the measurement choice under IAS 40 could not be determined	2	
Which changed their reporting period during the sample period	1	
Which are wholly owned subsidiaries	1	
TOTAL SAMPLE		89

Table 5: Descriptive statistics

	Mean	Median	Minimum	Maximum	StDev
FV_CHOICE	0.7153	1	0	1	0.4529
CULTURE	2.000	2	1	3	0.795
YEAR	0.642	1	0	1	0.481
EPRA	0.358	0	0	1	0.481
BIG4	0.650	1	0	1	0.479
E_ADOPT	0.029	0	0	1	0.169
PRE_IFRS	0.482	0	0	1	0.502
SIZE	20.025	20.155	12.456	25.673	1.882
OPERATIONS	0.479	0.418	0	1	0.395
LIQUIDITY	0.630	0.657	0	1.100	0.250

Table 6: Multivariate analysis of firms' measurement choice under IAS 40

	Expected Sign	Model 1	Model 2	Model 3	Model 4
		Control Model	Culture Model	First Year Model	Recent Year Model
constant	?	0.2197 (0.086)	0.0490 (0.016)	-4.1810 (-0.770)	3.6379 (0.808)
CULTURE	-		-2.1250 (-4.116) ***	-2.8593 (-2.845) ***	-2.1165 (-3.003) ***
YEAR	+	1.1229 (2.524) ***	1.3873 (2.658) ***		
EPRA	+	-0.1778 (-0.345)	-0.9278 (-1.446) *	-0.5733 (-0.622)	-1.6669 (-1.630) *
BIG4	+	-0.7410 (-1.384) *	-1.1225 (-1.840) **	-1.1535 (-1.214)	-1.6791 (0.094) **
E_ADOPT	+	0.9054 (0.690)	0.2848 (0.211)	-0.4531 (-0.273)	
PRE_IFRS	+	0.9175 (1.987) **	0.6293 (1.107)	1.5290 (1.344) *	0.2696 (0.718)
SIZE	+	-0.0005 (-0.004)	0.3113 (1.564) *	0.6752 (1.735) **	0.1626 (0.613)
OPERATIONS	+	2.1484 (3.146) ***	0.7629 (0.915)	-0.0505 (-0.038)	1.7919 (1.479) *
LIQUIDITY	?	-0.9752 (-0.836)	-1.2518 (-0.832)	-3.4916 (-1.397) *	0.6553 (0.320)
Observations		137	137	49	86
McFadden R²		0.2087	0.3657	0.3524	0.3597

	Expected Sign	Model 1	Model 2	Model 3	Model 4
		Control Model	Culture Model	First Year Model	Recent Year Model
Adjusted R²		0.0988	0.2435	0.0854	0.1726
Chi-squared		34.162 (0.0000) ***	59.8569 (0.0000) ***	23.7607 (0.0025) ***	30.7614 (0.0001) ***
Cases Correctly Predicted		74.5%	83.2%	69.4%	86.0%

Table 7: Results of Multivariate Analysis Incorporating Additional Models

ALL YEARS	Expected Sign	Model A	Model B	Model C	Model D	Model E	Model F
		Control Model	Culture Model	Hofstede-Gray Model	Culture Driver Model	Legal Model	MCAP Model
Constant	?	0.2197 (0.086)	0.0490 (0.016)	-5.6303 (-1.536) *	-4.1076 (-1.267)	-5.5747 (-1.514) *	-2.1147 (-0.749)
CULTURE	-		-2.1250 (-4.116) ***				
UAI	-			-0.0707 (-2.354) ***			
MAS	+			0.0910 (2.272) **			
IND	+			-0.0016 (-0.056)			
ENGLISH	+				0.8533 (1.475) *		
PROTESTANT	+				1.9710 (2.956) ***		
SHARE_RIT	+					0.5347 (2.341) ***	
CRED_RIT	+					1.2547 (3.729) ***	
MCAP_GDP	+						0.0333 (2.425) ***

ALL YEARS	Expected Sign	Model A	Model B	Model C	Model D	Model E	Model F
		Control Model	Culture Model	Hofstede-Gray Model	Culture Driver Model	Legal Model	MCAP Model
YEAR	+	1.1229 (2.524) ***	1.3873 (2.658) ***	1.5877 (2.830) ***	1.3766 (2.722) ***	1.5995 (2.957) ***	1.9995 (3.403) ***
EPRA	+	-0.1778 (-0.345)	-0.9278 (-1.446) *	-1.5349 (-2.216) **	-0.9174 (0.376) *	-1.1980 (-1.813) **	-0.0733 (-0.137)
BIG4	+	-0.7410 (-1.384) *	-1.1225 (-1.840) **	-1.4334 (-2.168) **	-0.9366 (-1.583) *	-1.4175 (-2.228) **	-0.9103 (-1.615) *
E_ADOPT	+	0.9054 (0.690)	0.2848 (0.211)	0.9983 (0.725)	0.5258 (0.376)	1.1970 (0.850)	0.7766 (0.577)
PRE_IFRS	+	0.9175 (1.987) **	0.6293 (1.107)	2.0046 (2.324) **	1.0534 (1.855) **	-0.6570 (-0.989)	-0.4213 (-0.591)
SIZE	+	-0.0005 (-0.004)	0.3113 (1.564) *	0.3339 (1.549) *	0.1610 (0.883)	0.1670 (0.851)	0.0414 (0.273)
OPERATIONS	+	2.1484 (3.146) ***	0.7629 (0.915)	0.6226 (0.723)	1.1184 (1.341)	1.0578 (0.202)	2.3176 (3.176) ***
LIQUIDITY	?	-0.9752 (-0.836)	-1.2518 (-0.832)	-1.1554 (-0.743)	-0.8584 (-0.605)	-1.1841 (-0.800)	-1.2806 (-1.011)
Observations		137	137	137	137	137	137
McFadden R ²		0.2087	0.3657	0.4077	0.3300	0.3671	0.2508
Adjusted R ²		0.0988	0.2435	0.2610	0.1955	0.2327	0.1286
Chi-squared		34.162 (0.0000) ***	59.8569 (0.0000) ***	66.7211 (0.0000) ***	54.0031 (0.0000) ***	60.0803 (0.0000) ***	41.0539 (0.0000) ***

ALL YEARS	Expected Sign	Model A	Model B	Model C	Model D	Model E	Model F
		Control Model	Culture Model	Hofstede-Gray Model	Culture Driver Model	Legal Model	MCAP Model
Cases Correctly Predicted		74.5%	83.2%	84.7%	83.9%	78.8%	78.8%

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