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Fair Value of Real Estate and Utility of Financial Statements of Construction Companies

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Some international standards have proposed that the fair value approach should be used to evaluate real estate assets. The choice to use this method or another approach could influence the quality of the financial reports published in response to information demands by company stakeholders. In this study, we will examine whether fair value evaluation, in the real estate context, improves the utility of construction company financial reports. For this purpose, we have addressed a questionnaire to financial directors that concern the relevance, reliability and viability of this valuation criterion. Based on the opinion of the respondents, our results show that the fair value model would improve the usefulness of financial reports to evaluate company solvency, and would also improve the comparability, timeliness and understandability of such reports.

1. Introduction

In recent years, leading international standards-setting bodies (International Accounting Standards Board (IASB), Financial Accounting Standards Board (FASB), and International Valuation Standards Committee (IVSC)) have taken into consideration the evaluation of the real estate assets of companies. The IASB and FASB have published standards aimed to improve the quality of financial reports published by companies worldwide, and seek to promote the uniformity of accounting criteria, their transparency and usefulness for decision taking. The IASB standards, known as the International Financial Reporting Standards (IFRS), have been recommended by the Organisation for Economic Co-operation and Development (OECD), United Nations, World Bank, International Organization of Securities Commissions (IOSCO) and European Union. The latter, in a piece of communication published on 13 June 2000, informed of its decision to adopt the IFRS, and set a timetable for its member states to adapt their national accounting standards accordingly (EC Regulation No. 1606/2002). At a global level, ever more countries are adopting the IFRS (Whittington, 2008; IASB, 2009a; FASB, 2008).

The IASB has published two standards that concern the evaluation of real estate assets for financial reports: IFRS No. 16, which is called Property, Plant and Equipment, and IFRS No. 40, which is called Investment Property (IASB, 2009a). The former concerns real estate that is intended to be used for the company's own activity, i.e. administrative, commercial or production purposes, among others. IFRS No. 40, on the other hand, is focused on the real estate assets acquired by a company with the intention to obtain income and/or capital gains, rather than used as part of the company's fundamental activity.

In general, and until fairly recently, national accounting standards in most countries required the use of the historical cost method in drawing up financial reports (García & Zorio, 2002; Council of Europe, 2005). The historical cost of an asset is calculated as the amount of cash or equivalent liquid assets paid, plus the value of any other asset surrendered in order to acquire the good, at the moment of its acquisition. However, both IFRS Nos. 16 and 40 incorporate the notion of fair value to value real estate assets in financial reports, as an alternative to historical cost. In this international framework, fair value is defined as the amount for which an asset may be bought /sold in an operation between two parties who are independent, well informed and acting without duress (FASB, 2008 and 2006; IASB, 2009a and 2009b).

The IVSC (2007), too, considers fair value to be an acceptable method to value real estate, and identifies fair value with the market value, as proposed in the International Valuation Standard No. 1 (valuation for financial reports) and Guideline Note No. 1 (under the title of real estate valuation). The IVSC

incorporates professional evaluation associations from all over the world, and is a member of the United Nations; it also has close ties with international institutions such as the OECD, World Bank, European Union and International Monetary Fund.

Various highly respected studies have concluded that if fair value was adopted, and replaced the historical cost approach as a method of accounting evaluation, the usefulness of financial reports for company managers could be affected. The adoption of fair value standards would affect the financial ratios and management indicators of companies, which play a vital role in the management decisions taken (Lantto & Sahlström, 2008; Benston, 2006; ICAEW, 2006). In their study, Carrol et al. (2003) conclude that when fair value is applied, company results (losses or profits) are more in accordance with share values. Other studies have analysed the effects of applying fair value in companies in Australia and the United Kingdom, and conclude that current values are more relevant than those based on historical cost, for the purposes of accounting for company results, and improve the accuracy of the forecasts of future profits (Barth & Clinch, 1998; Easton et al., 1993; Aboody et al., 1999). In addition, Nichols and Buerguer (2002) hold that German companies that prepare their financial reports using the fair value approach obtain a higher level of funding from finance institutions. According to Ball (2006), international institutions support the fair value approach because they are convinced that its application generates financial reports that are more relevant for users, and better reflect the current and future financial situation of a company.

The fair value method proposed under international standards has provoked a lively debate on the effects of this valuation criterion on the characteristics of financial reports, especially with respect to their relevance and reliability (Ball, 2006; Martin et al., 2006; Rayman, 2007; Benston, 2006; Turley, 2008; Whittington, 2008). In general, prior studies have concluded that the information obtained by applying fair value is more relevant for the users of financial reports than that derived from historical cost, but unfortunately, it is less reliable (Ball, 2006; Bies, 2005; Betts & Wines, 2004; Elad, 2004; Haussler, 2004).

According to Ball (2006) and Bies (2005),financial reports based on fair value do not provide reliable information because the evaluations are not based on real transactions. As a general question, the problems of reliability in the evaluation of assets are ascribed to difficulties in quantifying such assets. According to IFRS 16 and 40, the fair value of real estate assets should be calculated with reference to reliable values taken from an active, liquid market. If that is not possible, then evaluation models and techniques that are generally accepted in establishing prices should be used, for example by reference to recent transactions and estimating the flows of effective future values. It is on this latter point that the fair value presents the greatest problems of reliability (Häusler, 2004). In the opinion of Betts and Wines

(2004), when markets are imperfect or incomplete, the concept of fair value becomes ambiguous, and in certain situations, various fair values might exist for the same item (Barth & Landsman, 1995; Bradbury, 2000). In a study of the reliability of fair value with respect to valuing the investment property of a group of British companies, Dietrich et al. (2001) conclude that the estimations made by external experts are more reliable than those carried out by in-house staff.

Clearly then, the question of applying fair value in order to objectively value real estate assets is by no means answered. On the contrary, it is a hotly debated issue, above all because the replacement of historical cost by fair value in valuing this type of asset could affect the utility of the financial reports used for the financial management of companies, with respect to its possible influence on the relevance and reliability of these reports. Nevertheless, to date, the evaluation of real estate assets and its effects on the usefulness of financial reports for accounting purposes, has not received the attention that it deserves. This neglect explains the need for studies to examine the evaluation of real estate assets as reported in company financial reports, despite the fact that, as remarked by Zietz (2003), an increase in multi-family housing has brought about a considerable rise in the number of theoretical and empirical studies of this type of property.

Spence and Thorson (1998) conclude that experienced appraisers do in fact exhibit less variation in their valuation of property characteristics; hence there is greater agreement in their market value estimates than the case with novices, while Daniela and Phillips (2007) study the effect of control by financial advisors on the evaluation of mergers between investment funds. In another study, Ben-Shahar et al. (2009) analyse the methods currently used for the amortization of real estate assets, and conclude that none of them incorporates the latest criteria set out by accounting standards. Accordingly, they propose a proportional method to take into account future cash flows in the company, based on the information provided in financial reports.

The evaluation of real estate assets for accounting purposes requires further study, due to the large volume of transactions that involve these goods in recent years in many developed western countries, such as Spain, where the construction sector has come to represent almost 10% of the GDP. Furthermore, more research is needed into this question because of the potential usefulness of financial reports produced by construction companies with regard to decision taking, both by their own financial managers and financial organizations, clients and suppliers, auditors, shareholders, investors and public institutions, among others. Thus, the opinions of users of financial reports could be a key element in deciding upon the basis that would be adopted or the accounts evaluation of real estate assets: fair value or historical cost.

With these considerations in mind, the aim of the present study is to analyse whether the application of the fair value of real estate assets could contribute to improving the usefulness of the financial reports produced by the construction sector. Therefore, we have developed an empirical study carried out via a questionnaire addressed to the financial directors of 500 construction companies that are operating in Spain, with the goal to determine their opinions on the possible effects of applying the fair value approach to the evaluation of real estate assets, as regards the relevance and reliability of their financial reports, and the viability of this mode of evaluation.

The rest of this paper is organized as follows: Section 2 presents an exploratory study made to identify the use made of the financial reports produced by construction companies, with special attention given to the accounts value ascribed to real estate assets. The following section describes the criteria applied in selecting the sample, methodology used, and statistical results obtained, together with the confirmation or otherwise of the hypotheses proposed. Finally, in the conclusions section, we summarise our findings with respect to the initial objectives.

2. An Exploratory Study about the Use of Financial Reports of Construction Companies

Leading international standards-setting organizations (AARF, 1990; IASB, 2009a; FASB, 2008) have identified financial directors and managers in general as among the main users of financial reports produced by construction companies. However, according to Navarro & Rodríguez (2007), in order to perform an appropriate analysis of the effects of fair value on the usefulness of financial reports, it is not sufficient to identify the main users of financial reports. IFAC (2000) and IASC (1989) should be taken into account, as information needs vary from one user to another, and the choice of accounting measurement basis depends on the purpose for which the financial statements are to be used. Therefore, we must identify the uses made of these financial reports and the importance of the accounting value of the assets for which the application of the fair value method is being considered – in the present case, these are real estate assets.

Thus, with the aim of deciding upon the selection of items to be included in the final questionnaire, we have performed an exploratory study, which consists of two parts: a) personal interviews on the use made of financial reports, and b) a preliminary survey on the usefulness of the accounts value of real estate assets. For authors such as Arnaboldi and Lapsley (2009), in this type of study, the combination of various methods to obtain data enables the researcher to improve the validity of the results, thanks to the diversity of the sources of evidence. Moreover, Wallace (2008) and Winstanley et al. (2002) have stated that in studies of housing, the use of qualitative methods

compensates for the deficiencies of merely statistical studies, which sometimes oversimplify the complexity of the phenomena and deal with them somewhat artificially.

2.1 Personal Interviews

We carried out structured personal interviews with the financial directors of five large companies in the construction sector that are active in Spain. The aim of these interviews was to determine the uses made of financial reports by these directors; this would help us to identify the effects of different evaluation criteria on their information needs, with respect to this particular function. This procedure would then provide us with guidelines to select the items to include in the questionnaire. Each interview lasted approximately an hour and a half. The five financial directors interviewed were informed of the goals of this study, and each had at least four years of professional experience as the head of the economic-financial department of their respective companies.

On the basis of the information provided by these respondents, we concluded that the financial reports of construction companies reflect information that is highly relevant for substantiating the decisions to be taken by financial directors, including the following: a) investing in new land on which to build; b) acquiring housing for restructuring and/or renovation; c) requesting loans from financial organizations, negotiating the quantity, due-by date and conditions; d) establishing prices for housing offered for sale; e) establishing rental prices for properties that belong to the company; f) forming temporary business associations with other companies; g) presenting offers in response to invitations to tender made by public administrations; h) depositing transitory cash surpluses in the financial securities market, establishing the corresponding due-by date, return and conditions; and i) making rights issues to increase company funds.

In addition, the interviewed financial directors observed that on many occasions, they acted as interlocutors for their company with other users of its financial reports. Such users include financial institutions, insurance companies, auditing firms, suppliers and creditors, potential shareholders, potential investors in bonds, tax authorities, shareholders, trade unions and employees, present and potential clients, companies with whom they are negotiating the conditions for a possible temporary business association, public administrations with whom agreements with regards to public works compensation have been reached, and public administrations that have published calls to invite tenders for contracts.

During negotiations of credit facilities with financial institutions, the interviewed directors must convince these institutions of the credit-worthiness of their company, and demonstrate its ability to meet the repayment commitments undertaken. For this purpose, the information contained within

the company financial reports is fundamentally important, and enables experts to perform risk analyses and estimate the coverage of risks by the company assets offered as security for the loan. For one of the respondents, "the bank always wants the highest possible guarantee of repayment…, when the balance sheet reflects high-value real estate items, it is easier to get a loan". In this respect, the financial directors interviewed stated that it is normal to use financial reports to accredit the company's solvency to investors in its bonds, as lenders to the company. However, two of the respondents worked in companies that had never made use of this type of funding. In the words of another, "for a company that issues bonds to gain the confidence of investors, it is essential that its financial reports should reflect important investments in buildings and constructions, as a demonstration of the solidity of the business project".

In addition, the persons interviewed observed that a company would also need to demonstrate its solvency to suppliers and creditors when requesting and negotiating payment delays; the latter parties, obviously, seek reasonable guarantees that the company will eventually pay its debts, and so the value of its assets as reflected on company financial reports, in their experience, is a matter of crucial importance. The professional experience of one of the persons interviewed was that "when the supplier fails to perceive the financial support of an important level of audited company assets, he may begin to doubt… this is why it is desirable for accounts to reflect present-day values".

In the same way, the financial reports of construction companies are often used to demonstrate their solvency to present and potential customers, who need to be assured that the company will provide the goods and/or services for which payment in advance (in whole or in part) is made ("a company with low asset levels may be seen by clients as being temporary and unreliable"). Financial reports are also used to document company solvency before public administrations, such as city councils, with which compensation agreements have been reached under which construction companies agree to finance the cost of certain public works, or in the case of calls for tenders that the company is participating. For all these reasons, the respondents are of the opinion that the accounts value of the company's assets provides relevant information, and so its financial reports are a crucial element in negotiations with the above-mentioned agents.

Apart from the question of solvency, the interviewed directors recognized that financial reports are also used in their professional dealings with insurance companies, which are necessary to reach an agreement on the value of the assets to be insured; with auditors, who must endorse the valuation made of the assets in the company's balance sheet; with tax authorities, when the company is undergoing an inspection that involves the confirmation of their asset values; and with trade unions, in order to show that its business project has sufficient capital support to ensure future viability and job stability.

In parallel, financial reports are often used to provide evidence to shareholders and potential investors of the profitability and consistency in the future business projects of the construction company. This claim is corroborated by views such as "the balance sheet value of buildings is a critical area for auditors… they always require documentary proof of valuations"; and a"…even though (insurance) companies normally perform their own valuing, the balance sheet values of buildings are sometimes taken into account in the negotiation of insured values…"; or "…in meetings with the unions, the increased value on the balance sheet of buildings and land is usually seen as a sign of the company's intentions to continue growing"; and "…in general, shareholders and investors, especially those who seek to maintain their investment over the long term, take a positive view of the rising value of buildings on the balance sheet".

2.2 Preliminary Survey

On the basis of the results obtained from the interviews, we sought to further understand the specific purposes for which the balance sheet values of real estate assets are used. Thus, we addressed a preliminary questionnaire to the financial directors of 20 companies in the construction sector (see Table 1). The data provided the basis for the preparation of the final questionnaire, which forms the essence for the conclusions drawn in this paper.

Table 1 Results of the Preliminary Questionnaire

The Evaluation Of Real Estate Assets On Your Company's Financial Reports Is Useful In Order To:	**RESPONSES**	
	YES	**NO**
1.Demonstrate company solvency to financial institutions when applying for credit facilities	18 90%	2 10%
2. Guarantee the company's solvency to bond-holders	17 85%	3 15%
3.Demonstrate the company's solvency to suppliers and creditors	17 85%	3 15%
4.Demonstrate the company's solvency to current and potential customers	18 90%	2 10%
5.Demonstrate the company's solvency to public institutions	16 80%	4 20%
6.Negotiate the insured value of company assets with insurance companies	13 65%	7 35%
7.Provide documentary proof to auditors of the correct evaluation of company assets	20 100%	0 0%
8.Demonstrate the consistency of the business project to shareholders and investors	17 85%	3 15%
9.Respond to information requirements made by tax authorities	13 65%	7 35%
10.Demonstrate future security of employment to trades unions	12 60%	8 40%

As can be seen, the overwhelming majority of respondents recognize the usefulness of the accounting value of real estate assets to demonstrate the solvency of a company to external economic agents, such as financial institutions, suppliers, creditors, customers and public administrations. Moreover, most of these financial directors acknowledge the usefulness of real estate assets to justify accounting criteria to auditors and provide shareholders and investors with documentary proof of the consistency of the business projects in the company. Nevertheless, opinions were mixed with regards to the usefulness of the value of real estate assets in negotiations with insurance companies, response to the requirements of tax authorities or the guarantee of future employment for employees.

These results mean that a change in the measurement basis used could affect the accounts value of real estate assets held for specific purposes, especially as regards accrediting the company's solvency and assuring auditors of the correct preparation of financial reports. Therefore, in order to fulfill the stated aims of this paper, we must specifically study the usefulness of financial reports based on fair value criteria, for the specific purposes of auditing and demonstrating solvency. The accounts valuation of real estate assets is also useful for other stakeholders, such as insurance companies, investors and shareholders; thus, we should study whether the application of the fair value approach to real estate assets is an influential factor in the understandability, comparability and timeliness of financial reports, which are the three fundamental characteristics for such reports to be readily interpreted by users who are not specialists in accounting. These implications reflect the fundamental basis of the drafting of our questionnaire, and hence, the conclusions drawn from this study.

3. An Empirical Study of the Fair Value of Real Estate Assets

3.1 Sample Selection and Methodology

In order to analyze the effects of a fair value estimation of real estate values on the usefulness of financial reports, we addressed a questionnaire to the financial directors in a sample of 500 construction companies that are active in Spain. The target population in this study constitute of companies engaged in activity No. 501 (construction and civil engineering) according to the classification made by Spanish tax authorities with respect to the Economic Activities Tax. The database used was the Spanish Balance Sheet Analysis System (SABI), produced by the company E-Informa, which compiles the annual accounts of the leading companies in Spain, and has accumulated historical information since 1990.

We decided to target financial directors for this questionnaire because the results of the exploratory study show that these professionals, in their double role as those responsible for producing financial documentation and as users of financial reports, utilize financial information in their everyday activities, either to take decisions within their field of competence or act as interlocutors for their company with other users of its financial reports. Moreover, they possess considerable, broad-ranging experience, which enables them to give well-grounded opinions. In addition, the personal interviews and the preliminary questionnaire showed us that financial directors are well aware of the information needs of financial report users, and so these individuals have a complete understanding of the usefulness of such data for diverse purposes.

On the basis of the preliminary survey and interview results, we drew up a questionnaire (Annexe I), which is structured into three blocks in accordance with previous work, such as that of Navarro and Rodríguez (2004, 2007), and the ICAC (2002). The first part of the questionnaire, termed 'Relevance', is made up of five items, and examines the respondent perceptions of the impact of fair value on the usefulness of financial reports for financial directors in their decision taking process. The first of these items refers to solvency, as both the interviews and the preliminary questionnaire revealed the association of this concept with the evaluation of real estate assets. The remaining items in the first block are aimed at analyzing the repercussions of adopting fair value, as regards the understandability, comparability and timeliness of financial reports, these being the three main characteristics that determine their usefulness. The main conceptual frameworks proposed have traditionally considered understandability (IASC, 1989) comparability and timeliness (FASB, 1980; 2008) as characteristics that are related to the relevance of company financial reports, the achievement of which contributes to ensuring the usefulness of these reports in the decision taking process of different users. Furthermore, in accordance with Llewellyn and Northcott (2005), and the IFAC (1993), comparability is a quality that contributes to meeting the demand for relevance. As concluded by Navarro and Rodríguez (2007), following an empirical study that involved 47 countries, the real usefulness of financial reports, as far as their users are concerned, is that their informational content should be readily interpretable. For this reason, we considered understandability to be a fundamental element of the usefulness of financial reports. Timeliness is also a key factor in this respect, as delays in the preparation and disclosure of financial reports can lead to the loss of a significant amount of relevance.

The second part of the questionnaire inquires into the perceptions of the respondents that concern the reliability of fair value estimations. Following Häusler (2004), Betts and Wines (2004), and Elad (2004), we identified two problems that are related to the reliability of fair value estimations of real estate assets, which are included as items 6 and 7. These are the problems of objectivity and auditability. In this respect, and taking into consideration the certain proposals made by the IFRS to overcome these problems, we have

included items 8 and 9, which are related to the incorporation of information in the notes to the accounts with regards to fair value estimations. In addition, ISA 540 and 545 (IFAC, 2008) state that the auditor must assure him/herself of the reasonableness of the initial criteria used in accounts estimations, and so the information in the notes to the accounts with regards to the assumptions made in quantifying fair value could play a significant role in terms of the reliability of the financial information based on this evaluational criterion. In accordance with accounts regulations, the notes constitute an annual account that fundamentally intends to explain, clarify and develop the content of the financial reports presented (IASB, 2009a; Royal Decree 1514/2007). In short, this second block aims to identify the possible problems of reliability in a fair value estimation of real estate assets, and the effectiveness of the measures that might be taken to overcome any problems that are found.

The third part of the questionnaire studies the attitudes of the respondents with regards to the viability of applying the fair value approach to the accounts record of real estate assets. In view of our exploratory study results, and following Barth and Landsman (1995), Bradbury (2000), Khurana and Kim (2003), and Herrmann et al. (2006), we have included two items to study whether fair value estimations are economically viable (items 10 and 14), and another three items (numbers 11-13) that aim to test the applicability of certain proposals and methods published by the IFRS on quantifying the fair value of asset items.

As can be seen, item 14 is once again present in the repercussions of fair value on financial auditing, as this aspect is considered to be greatly important in accordance with the conclusions of the exploratory study.

The replies to the questionnaire items were measured on a five-point Likert scale, which ranges from 1 (totally disagree) to 5 (totally agree) for each statement. All the items refer to the application of fair value in the evaluation of real estate assets in company financial reports, in contrast to the use of the historical cost method. The aim of this exercise is to determine whether the replacement of historical cost by fair value would improve the usefulness of the financial reports of construction companies. At present, all the companies in our sample utilize the historical cost method as their criterion to evaluate real estate assets.

Another point to keep in mind is that as companies in the construction sector may dedicate their real estate assets to productive use or investment (to obtain capital gains and/or rental income), then the use made by each company in either of these aspects may in fact influence the opinions of the respondents. Therefore, we sought their opinion in both respects (real estate as productive property or as an investment asset - henceforth, property or investment). This distinction is interesting for the purposes of this study, because the real capability of the company to realise the worth of a real estate item might not

be the same when this asset is incorporated as part of the productive process as when it is held for the purposes of earning income or capital gains.

In the questionnaire text, fair value is defined as "the amount for which a real estate item can be exchanged (bought or sold) in an operation carried out between two interested parties, each of whom is well informed about the characteristics of the item in question, and who is acting freely and with mutual independence". This definition is based upon the recommendations of IFRS Nos. 16 and 40 (IASB, 2009a). Moreover, so that the text on each item is made clear to the respondents, with the least possible ambiguity and imprecision, we also included a series of explanations and definitions in the questionnaire to specifically define the meaning of each term and expression employed. In addition, e-mail and telephone as the means of contact were made available to resolve possible doubts. Thus, for example, in relation to item 7, it was clarified that the expression "most favourable criterion for financial auditing" means that fair value may facilitate the performance of auditing tests – in terms of both time and effort – and specifically those aimed to check the veracity and accuracy of the accounts values assigned to real estate assets in company financial reports. In addition, before sending the final version of the questionnaire to the respondents, we held a working session with three financial directors of construction companies, not to seek their opinion on the subject matter of the questionnaire, but to determine their views with regards to its clarity and understandability. We then incorporated the suggestions to ensure that the statements made in the text of the questionnaire did indeed refer to the principal topics that are targeted for this research project.

In parallel, based on the conceptual frameworks cited above (FASB, IASB, and IFAC), we provided definitions of the principal terms employed, such as "objectivity", which is stated as the possibility of quantifying fair value via procedures and techniques that to the greatest possible extent prevent the introduction of subjective criteria. Thus, different persons, who use similar sources of information, might arrive at value estimates with no significant differences. The term "verifiability" is taken as the possibility of subjecting value estimations to processes of control and review, i.e. it is practical to test the coincidence between the values assigned and the results of tests made as to how they were calculated. In this respect, the questionnaire text also clarifies that the expression "valuation professionals" is taken to mean "qualified valuers", who, in accordance with international valuation standards (IVSC, 2007), must identify themselves as such to the company officials who are responsible for preparing and supervising valuations for inclusion in financial reports, and meet a series of requirements, such as possessing appropriate qualifications, having sufficient local knowledge and experience, meeting legal stipulations related to the commission, and having insurance cover for civil responsibility.

Table 2 sets out the technical characteristics of the final questionnaire and survey results, and shows that in the total number of persons addressed, 151 finally responded, which represent 30.2% of the total sample population. Logically, only one completed questionnaire was received from each responding company.

Table 2 Technical Characteristics of the Survey

Level of confidence	95%
Error admissible for estimation of proportions for P = Q = 0.5	7%
Population	1941 companies
Size of the sample	151
Type of survey	Face-to-face interviews, telephone surveys, email and fax

Finally, for the purposes of our research goals, after performing a descriptive data analysis, four hypotheses were formulated. These four, in particular, were selected for analysis given the following reasons:

1) In accordance with current conceptual frameworks (FASB, IASB), relevance is considered to be one of the basic characteristics of financial information. Moreover, according to some previous studies, (Barth & Clinch, 1998; Easton et al., 1993; Aboody et al., 1999; Bies, 2005; Ball, 2006), fair value is recognised as a valuation method that, in general, is capable of providing more relevant financial information than that determined by the historical cost method. As regards the relevance of financial information obtained by applying fair value methods to real estate assets, in the present study, we examine three qualitative characteristics of this information, which are directly related to its relevance for stakeholders: comparability, understandability and timeliness. Furthermore, in accordance with the results of the preliminary survey, we also study the usefulness of fair value for valuing company solvency.

2) The reliability of financial information, together with relevance, is a basic characteristic under various conceptual frameworks. The importance of this factor accounts for our research interest and in determining information verifiability, in which the latter is closely associated with reliability. According to prior studies, fair value is a less reliable criterion than historical cost (Häusler, 2004; Betts & Wines, 2004; Elad, 2004; Bradbury, 2000).

3) We wish to determine whether the usefulness of the fair value approach to real estate assets, as a means of enhancing the relevance of financial information, might be limited by the reliability of its quantification.

Accordingly, we formulated four hypotheses, taking into account that knowledge of the value of real estate assets could be useful for purposes other than determining solvency, and that doubts with regards to the reliability of valuations made by applying fair value methods to real estate assets might have an effect on three characteristics that are associated with the usefulness of the financial reports of construction companies: understandability, comparability and timeliness.

H1: The usefulness of fair value to evaluate solvency is not associated with the reliability of the estimations made.

H2: The capability of the fair value method, which is used to evaluate real estate assets, to improve the understandability of financial reports is not associated with the reliability of the estimations made.

H3: The capability of the fair value method, which is used to evaluate real estate assets, to enhance the comparability of financial reports (between different companies and also within the same company over a given period of time) is not associated with the reliability of the estimations made.

H4: The capability of the fair value method, which is used to evaluate real estate assets, to improve the timeliness of financial reports is not associated with the reliability of the estimations made.

To test the above hypotheses, we selected the results obtained for certain items included in the final questionnaire. Thus, we selected item 1 for solvency, item 2 for understandability, items 3 and 4 for comparability, and item 5 for timeliness. For reliability, we computed the results obtained for the four items associated with the second block of the questionnaire. In doing so, we were well aware that items 6 and 7 refer to the problems of reliability, while items 8 and 9 refer to the possible solutions to these problems. The items used to test the hypotheses are shown in Table 3.

Table 3 Items Included in the Testing of the Hypotheses

HYPOTHESIS	ITEMS USED IN THE TEST	
	Relevance	Reliability
H1 (Solvency)	Item 1	Items 6, 7, 8 and 9
H2 (Understandability)	Item 2	Items 6, 7, 8 and 9
H3 (Comparability)	Items 3 and 4	Items 6, 7, 8 and 9
H4 (Timeliness)	Item 5	Items 6, 7, 8 and 9

To test the hypotheses, we analyzed the significance of the difference at the 5% level, which was performed with a t-test of related samples. According to authors such as Rohatgi (1976) and Lehmann & Romano (2005), this test is

generally used in situations in which the hypotheses of normal distribution are assumed. Given the absence of evidence of normality in the sample selected for this study, we chose to apply, in addition, the Wilcoxon range test which is a nonparametric technique. According to Hollander and Wolfe (1999), and Gibbons and Chakraborti (2003), the Wilcoxon range test is very effective. Other than to confirm the hypotheses, these tests were used to identify possible differences among the opinions received with regards to real estate assets and investment goods. The t-test is normally used to examine the hypothesis of equality of the means, and is the strongest test available when the normality hypothesis is fulfilled (Rohatgi, 1976; Lehmann & Romano, 2005). However, if this is not the case, then the t-test may not be effective. In such circumstances, nonparametric methods such as the Wilcoxon signed rank test, the sign test or permutation (Good, 2005) can be used. Of these, the Wilcoxon test is most commonly recommended (Gibbons & Chakraborti, 2003), and so, was selected to test the results obtained with the t-test of the means.

3.2 Results

Table 4 shows the main descriptive statistical results with respect to the items included in the questionnaire, together with an analysis of the differences between the responses on the two categories of real estate assets: property and investment goods.

According to the results shown in the last two columns of Table 4, all the questionnaire items present a level of significance greater than 0.05 which is similar to the t-test and the Wilcoxon test. Thus, there are no statistically significant differences at a significance level of 5% between the replies on real estate assets dedicated to productive activity (property) and those on real estate investment assets (investment). Nevertheless, there are certain differences in the results obtained for the different items in the questionnaire. Thus, for all the items that focused on the reliability of fair value for real estate assets (items 6-9) with a level of significance of 1, the opinions of the respondents are independent from the use of the real estate asset that belongs to the company. With respect to the relevance of fair value for the purpose of financial reporting, items 1, 2 and 4 present values between 1 and 0.05. In these cases, there exist differences among the opinions of the respondents, depending on whether the real estate is used as property or investment, although these differences are not statistically significant. From the t-test and Wilcoxon test, the largest significance values are for the evaluation of solvency ($p=0.319$ and $p=0.317$, respectively); the corresponding values for understandability are $p=0.166$ and $p=0.166$, respectively and for comparability, $p=0.158$ and $p=0.157$, respectively.

In the items dedicated to the viability of fair value (items 10-14), with the exception of item 10, the others all show certain differences ($p=0.158$ and $p=0.157$). As these significance levels are greater than 0.05, they are not

significant at the 5% level. Therefore, the use made of real estate assets is independent of the possibility that the company will assume the costs of quantifying the fair value of its assets. However, there are some differences, although not statistically significant, as outlined in the following: the possibility of this criterion being quantified by their own staff or valuation professionals; the possibility of estimating fair value by using credible, generally accepted methods; and the greater cost involved under fair value as regards the financial auditing work.

Table 4 Descriptive Statistics and Analysis of the Differences for the Overall Results from the Questionnaire

	ITEM		Mean	Std. Dev.	Significance Level	
					T test	Wilcoxon
Relevance	1	Property	3.48	0.71	0.319	0.317
		Investment	3.52	0.68		
	2	Property	3.30	0.89	0.166	0.166
		Investment	3.33	0.88		
	3	Property	3.40	1.15	*	1
		Investment	3.40	1.15		
	4	Property	3.26	1.20	0.158	0.157
		Investment	3.33	1.13		
	5	Property	3.63	0.98	*	1
		Investment	3.63	0.98		
Reliability	6	Property	1.93	1.08	*	1
		Investment	1.93	1.08		
	7	Property	1.83	0.87	*	1
		Investment	1.83	0.87		
	8	Property	4.08	0.82	*	1
		Investment	4.08	0.82		
	9	Property	4.17	0.67	*	1
		Investment	4.17	0.67		
Viability	10	Property	2.42	1.11	*	1
		Investment	2.42	1.11		
	11	Property	1.93	1.20	0.158	0.157
		Investment	1.94	1.20		
	12	Property	3.96	1.19	0.158	0.157
		Investment	3.95	1.19		
	13	Property	2.72	0.84	0.158	0.157
		Investment	2.74	0.82		
	14	Property	3.72	0.74	0.158	0.157
		Investment	3,70	0,73		

* The significance of the difference cannot be calculated because the typical error of the difference is 0.

According to these results, the opinions of the respondents are not affected by the use made of real estate assets, which means that the repercussion of fair value on the relevance and reliability of financial reports is independent of whether the company dedicates its real estate to productive activity or considers it an investment for the purposes of obtaining rental income and/or capital gains. Moreover, the opinions of the respondents on the viability of applying fair value to real estate assets is not significantly affected by their use (as property or investment). This situation enables us to make the following comments without the need to differentiate between the results for the two types of real estate.

If real estate assets were valued using the fair value approach in financial reporting, this would improve the evaluation of solvency among construction companies (item 1, 3.48 and 3.52) and the timeliness of the reports made (item 5, 3.63). This is also true, although to a lesser degree, for the comparability of financial information between different companies (item 3, 3.40). However, it is less clear that the fair value approach would lead to an increased understandability of the financial reports (item 2, 3.30 and 3.33) or their comparability over time (item 4, 3.26 and 3.33). Furthermore, the replies that concern solvency are more uniform (0.71, 0.68) than those for the items on understandability and comparability (items 2, 3 and 4) and on timeliness (0.98).

This state of opinion is coherent with some problems that, with respect to reliability and viability, were associated by the respondents with the use of fair value for real estate assets. Mention was made of the possible problems of objectivity (item 6, 1.93) and the possible non-existence of generally accepted methods of estimation (item 13, 2.72 and 2.74). There was no majority opinion as to the existence of generally accepted methods of estimation (item 13) or whether the cost of applying the fair value method could be assumed by companies (item 10, 2.42).

In contrast, there was a higher degree of agreement that the use of fair value for real estate evaluation would increase the costs of financial auditing (item 14, 3.72 and 3.70). There was also general agreement that it was impossible for fair value to be measured by the company's own staff (item 11, 1.93 and 1.94) and, logically therefore, it was agreed that there was the need to hire external valuers for this purpose (item 12, 3.96 and 3.95). Nevertheless, this third block presented a greater disparity of opinions than the other two, especially as regards opinions on the possibility of fair value being estimated by the company's own staff (item 11), external evaluation services (item 12) and the cost of such estimations (item 10).

3.3 Testing the Hypotheses

Table 5 summarises the hypothesis tests that were carried out: the parametric t-test and the nonparametric Wilcoxon test. As discussed above, no

statistically significant differences were obtained with respect to real estate assets used for the company's own purposes and those classified as investments, and therefore, the results shown in Table 5 simply refer to real estate as a whole. Nevertheless, we calculated the differences for the combinations of items when real estate was used for investment purposes, and found the latter concept to coincide with the values for all real estate.

The information shown in Table 5 is intended to enable us to accept or reject the four proposed hypotheses, taking into account the values obtained in the significance analysis of the differences in the t-tests and Wilcoxon range tests. When the results from both tests presented a significance level of the differences that was less than 5%, this indicates that the hypothesis in question is supported and should be accepted. However, when the significance levels of the differences exceeded 5%, the hypothesis is not supported and should be rejected.

Table 5 Testing the Hypotheses

HYPOTHESIS	ITEM	T test	Wilcoxon
H1	1 and 6	0.001	0.002
	1 and 7	0.000	0.000
	1 and 8	0.012	0.018
	1 and 9	0.034	0.040
H2	2 and 6	0.000	0.000
	2 and 7	0.000	0.000
	2 and 8	0.049	0.041
	2 and 9	0.155	0.216
H3	3 and 6	0.009	0.000
	3 and 7	0.000	0.000
	3 and 8	0.123	0.082
	3 and 9	0.106	0.091
	4 and 6	0.001	0.002
	4 and 7	0.000	0.000
	4 and 8	0.293	0.284
	4 and 9	0.083	0.075
H4	5 and 6	0.009	0.018
	5 and 7	0.001	0.002
	5 and 8	0.049	0.041
	5 and 9	0.106	0.091

The results for the first hypothesis show, for all combinations of items, significance values that are less than 0.05, which means that H_1 is corroborated and must be accepted. Thus, in the opinion of the respondents, the problems related to the reliability of fair value estimations of real estate

assets considered in this study (objectivity and auditability), although greater than the case that uses the historical cost method, would not limit the possible usefulness of financial reports based on fair value as regards determining company solvency. In addition, the parameters obtained for the item combinations of 1 and 8, and 1 and 9 seem to show that the advantages derived from disclosure in the notes to the accounts of the methods used to estimate fair value are not associated with their usefulness in evaluating solvency, although in this latter case, the significance level is very close to 0.05 (0.034 and 0.040).

In the case of the second hypothesis, the first two combinations of items present significance values of 0.000. Therefore, there is no association between the lesser objectivity of fair value and the improved understandability of financial reports based on this criterion. Neither did we find a relation between the consideration of fair value as being less favourable for performing auditing tasks and the increased understandability of financial reports. However, in the combination of items 2 and 8, the level of significance obtained is very close to 0.05 (p=0.49 and p=0.41). In this case, there is not such a clear association between the greater objectivity of fair value when information is included in the notes to the accounts and a greater understandability of financial reports when the fair value method is adopted. Finally, the level of significance for the combination of items 2 and 9 is well above 0.5, and so there is indeed an association between the greater verifiability of fair value when information is included in the notes to the accounts and the understandability of financial reports is prepared on the basis of the fair value of real estate assets. Therefore, as the first two combinations of items present significance levels below 0.5, hypothesis 2 is corroborated and must be accepted, although taking into account that the usefulness of the fair value of real estate assets to improve the understandability of financial reports is subject to the condition in which the notes to the accounts should disclose the methods and hypotheses used to derive these values, especially because disclosure would improve the verifiability of fair value estimations.

With respect to the third hypothesis, the significance levels are below 0.5 for combinations 3 and 6, 3 and 7, 4 and 6, and 4 and 7. Therefore, there is no association between the problems of the reliability of the fair value approach to real estate assets and its usefulness for the comparability of financial reports (between different companies and within a single company, over a period of time). Thus, H_3 is corroborated and must be accepted. Nevertheless, the significance levels are higher than 0.5 for the other combinations (i.e., in these cases, there is statistical significance), and this means that the usefulness of fair value, applied to real estate assets to improve the comparability of financial reports, would require publication in the notes to the accounts of the methods and hypotheses used to derive these values.

Finally, the results obtained in testing H_4 reveal that the levels of significance for combinations 5 and 6, and 5 and 7 are below 0.5, and so, this hypothesis is

corroborated and must be accepted. The results obtained reflect the absence of a clear association between the problems of objectivity and auditability of fair value and its usefulness for improving the timeliness of financial reports. Moreover, with a level of significance that is very close to 0.5 (p=0.049 and p=0.041), the results show that there is unlikely to be any association between the timeliness of financial reports and the advantages derived from including the information in the notes to the accounts on the methods and hypotheses used to derive the fair value. On the other hand, there is seen to be a clear association between the timeliness of financial reports and the greater verifiability that would be obtained by including this information in the notes to the accounts (combination 5 and 9).

4. Conclusions

The financial reports published by companies in the construction sector contain information that is used in decision taking both by their financial directors and external economic agents, including financial organizations, auditing companies, suppliers, investors, shareholders, customers and public administrations. The choice of a particular model to obtain accounts valuations (i.e. fair value or historical cost) may influence the satisfaction of the information demands made by the above users, especially in view of the fact that within the financial reports of construction companies, the accounts value of real estate assets is generally used to demonstrate the company's solvency to financial institutions, suppliers, creditors, customers and public administrations. At the same time, the accounts value of real estate assets is a crucial element in justifying to auditors the accounts criteria adopted, and also to provide proof of the coherence of business projects to shareholders, investors and public institutions.

The financial managers who took part in this survey have no experience in the use of financial reports based on the fair value of real estate assets, but their perceptions are very well grounded from a professional standpoint. Hence, the conclusions are based on the perceptions of the financial managers on the possible effect of the application of the fair value approach to real estate assets, with regards to the usefulness of construction company financial reports.

On the basis of the perceptions of financial managers, if fair value is used for the accounts evaluation of the real estate assets of construction companies, their financial reports would be more relevant as regards evaluating company solvency and would enhance timeliness and comparability between different companies; therefore, the usefulness of these reports would be greater than those that are derived by using the historical cost method. However, the advantages of the fair value approach are not so apparent with regards to the improved understandability and comparability over time of the financial

reports of construction companies. In addition, the types of real estate assets in question would not affect the usefulness of financial reports based on the fair value of these assets, as neither the relevance nor questions of reliability and viability depend on the use made by such assets by these companies.

In accordance with all of the above, the adoption of fair value by construction companies would lead to the production of financial reports that are more useful for users who need to evaluate company solvency; such users might include financial organizations, suppliers, creditors, customers and public administrations. This greater usefulness would be even more significant by the improved comparability achieved, as these users would be able to take decisions on the basis of comparative analyses carried out using aggregated data from the construction sector. Moreover, the greater timeliness of financial reports based on the fair value method that is applied to the evaluation of real estate assets could be beneficial for users who need to take decisions rapidly, at given moments of time; such users might include investors, potential customers or auditors. In the same way, application of the fair value approach to real estate assets could improve the usefulness of these financial reports for users who are not experts in the use of financial information, such as customers or trade unions, in so far as this evaluation criterion would improve the understandability of the reports produced.

In comparison with the historical cost approach, the application of fair value methods to real estate assets could bring about problems of information reliability given in the financial reports of construction companies, thus limiting their usefulness. Accounts valuations of real estate assets derived on the basis of fair value would involve a loss of objectivity and verifiability, which increase the complexity of the work to be done by companies responsible for auditing the financial reports of construction companies. At the same time, the application of fair value to real estate asset evaluation would run into problems derived from the high cost of obtaining these estimations, together with the non-existence of generally accepted evaluation methods, and difficulties in recruiting suitably qualified staff to perform this task. All of these factors could have a negative influence on the usefulness of the financial reports of construction companies.

Nevertheless, some of these drawbacks could be overcome, and thus increase the usefulness of using the fair value of real estate assets to improve the informational content of financial reports. If the notes to the accounts include information on the methods and hypotheses used to derive fair value estimations, this would considerably improve the objectivity and verifiability of this evaluation method, which in turn, would allow the auditors to confirm the reasonableness of the assumptions that are made underlying the estimations. On the other hand, it is true that the fair value quantification of real estate assets would require the company to obtain external evaluation services, due to the impossibility, in most cases, of their own staff performing this task. Accordingly, among the users of the financial reports of construction

companies, the auditors would probably be one of the most affected groups by the adoption of the fair value approach, although relevant information provided in the notes to the accounts would greatly facilitate the performance of the tests required to corroborate the auditing reports.

Our tests of the different hypotheses show that problems of reliability which arise from the application of the fair value method to the evaluation of real estate assets, although greater than those posed by historical cost, would not limit the usefulness of the corresponding financial reports with respect to evaluating the solvency of construction companies. Neither would the reduced objectivity and auditability of the fair value method (in comparison with the historical cost method) applied to real estate assets constitute as an obstacle to improving the understandability of financial reports based on this criterion, although in this case, it would be essential to disclose the methods and hypotheses used to obtain the accounts valuations in the notes to the accounts, especially to ensure their verifiability. In a similar way, the problems of reliability that have been encountered would not necessarily limit the comparability of financial reports based on fair value, although once again, the information provided in the notes to the accounts would play an essential role. Finally, the advantages obtained from using the fair value method for real estate assets, with respect to improving the timeliness of financial reports, would not be reduced by its reduced reliability, compared with historical cost, provided explanations are included in the notes to the accounts with regards to the value estimations thus obtained.

If fair value is used for the accounts evaluation of the real estate assets of construction companies, their financial reports would be more relevant as regards evaluating company solvency and would enhance timeliness and comparability between different companies; therefore, the usefulness of these reports would be greater than that of those derived by using the historical cost method. However, the advantages of the fair value approach are not so apparent with regards to the improved understandability and comparability over time of the financial reports of construction companies. In addition, the types of real estate assets in question would not affect the usefulness of financial reports based on the fair value of these assets, as neither the relevance nor problems of reliability and viability depend on the use made of such assets by these companies.

In comparison with the historical cost approach, the application of fair value methods to real estate assets could bring about problems in the reliability of the information given in the financial reports of construction companies, and thus limits their usefulness. Accounts valuations of real estate assets derived on the basis of fair value would involve a loss of objectivity and verifiability, which increases the complexity of the work to be done by companies that are responsible for auditing the financial reports of construction companies. Some of these drawbacks could be overcome, and thus increase the usefulness of using the fair value of real estate assets to improve the informational content

of the financial reports of construction companies. If the notes to the accounts include information on the methods and hypotheses used to derive the fair value estimations, this would considerably improve the objectivity and verifiability of this evaluation method, which in turn, would allow the auditors to confirm the reasonableness of the assumptions that are made underlying the estimations. On the other hand, it is true that the fair value quantification of real estate assets would require the company to obtain external evaluation services, due to the impossibility, in most cases, of their own staff performing this task. Our tests of the different hypotheses show that problems of reliability that arise from the application of the fair value method to the evaluation of real estate assets, although greater than those posed by historical cost method, would not limit the usefulness of the corresponding financial reports with respect to the evaluation of the solvency of construction companies**.**

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Annexe I. Questionnaire Items

		Property					Investment				
		1	2	3	4	5	1	2	3	4	5
Relevance	1. Fair value is more relevant than historical cost for evaluating solvency										
	2. Fair value is a more appropriate criterion than historical cost for improving the understand ability of financial reports										
	3. Fair value is a more appropriate criterion than historical cost for improving the comparability of the financial reports of different companies										
	4. Fair value is a more appropriate criterion than historical cost for improving the comparability of the financial reports of a single company, over a period of time										
	5. Applying the fair value approach would improve the timeliness of the preparation of financial reports, with respect to the use of the historical cost method										
Reliability	6. The application of fair value methods enables companies to evaluate their assets with more objectivity than is the case with the historical cost approach										
	7. For the work involved in financial auditing, fair value is a more favourable criterion than historical cost										
	8. The inclusion in the Notes to the Accounts of the methods and hypotheses used in the quantification of fair value would improve its objectivity										
	9. The inclusion in the Notes to the Accounts of the methods and hypotheses used in the quantification of fair value would improve its verifiability										
Viability	10. The quantification of fair value over an extended period of time would be an expense that could be assumed by the company										
	11. If the company decided to apply the fair value method over an extended period of time, this activity could be reasonably undertaken by its own staff										
	12. If the company decided to apply the fair value method over an extended period of time, it would be necessary to contract the services of professional valuers										
	13. At present, the fair value of assets can be quantified by methods that re sufficiently credible and generally accepted										
	14. To perform the tasks of financial auditing, the use of fair value methods would involve a greater cost than that of historical cost methods										