REVISTA DE CONTABILIDAD

SPANISH ACCOUNTING REVIEW

revistas.um.es/rcsar

Capital markets and valuation models of investment properties. A pre and post crisis analysis

María Paz Horno-Bueno[a], Ana Licerán-Gutiérrez[b], Rafael Bautista-Mesa[c]

a), b) Departamento de Economía Financiera y Contabilidad, Universidad de Jaén, Jaén-SPAIN.
c) Departamento de Economía Financiera y Contabilidad, Universidad Loyola de Andalucía, Córdoba-SPAIN.

[b]Corresponding author.
E-mail address: aliceran@ujaen.es

ARTICLE INFO

Article history:
Received 8 June 2020
Accepted 18 December 2020
Available online 1 July 2022

JEL classification:
G11
M41

Keywords:
Investment property
Relevance
Ohlson model
Fair value model
Historical cost model

ABSTRACT

This work analyses the effect of the fair value and historical cost models, optionally applicable under IAS 40 for investment properties on the market value of Spanish groups of real estate listed companies between 2005 and 2018. The results of the application of the Ohlson Model do not suggest any relationship of financial information with the market value in the pre-crisis and economic crisis periods. However, in the post-crisis period, financial information represented by book value gains relevance, showing a significant positive relationship with the market value of real estate companies, although suggesting a reduction in the asymmetry of financial information in companies using the fair value method.

Mercados de capitales y modelos de valoración de inversiones inmobiliarias. Un análisis pre y post-crisis

Códigos JEL:
G11
M41

Palabras clave:
Inversiones inmobiliarias
Relevancia
Modelo de Ohlson
Modelo de valor razonable
Modelo de coste histórico

RESUMEN

Este trabajo analiza el efecto de los modelos de valor razonable y coste histórico, aplicables opcionalmente según la NIC 40 para las inversiones inmobiliarias, sobre el valor de mercado de los grupos inmobiliarios cotizados españoles entre 2005 y 2018. Los resultados de la aplicación del Modelo de Ohlson no sugieren relación alguna de la información financiera con el valor de cotización en los períodos de pre-crisis y crisis económica. Sin embargo, en el período post-crisis, la información financiera representada por el valor en libros gana en relevancia, mostrando una relación positiva significativa con el valor de mercado de las empresas inmobiliarias, aunque sugiriendo una reducción en la asimetría de la información financiera en las empresas que utilizan el método del valor razonable.

https://www.doi.org/10.6018/rcsar.431411

1. Introduction

The study of the explanatory power of financial statements of real estate companies on their share value has generated continuous interest in recent decades (i.e. Aliberch and Blandón, 2012; Argilés et al., 2011; Cairns et al., 2011; Collins et al., 1997; Devalle & Rizzato, 2011; Ghosh et al., 2020; Guthrie et al., 2011; Israeli, 2015; Liang & Riedl, 2014; Liao et al., 2020; Mäki et al., 2016; Nellessen & Zuelch, 2011; Pinto & Pais, 2015; De Souza et al., 2015; Sundgren et al., 2018; De Vicente-Lama et al., 2017; Wahyuni et al., 2019). Our work also aims to analyse the influence of alternative valuation models of investment properties based on historical cost and fair value, respectively, on the market value of real estate companies, in a context of particular market sensitivity by the influence of the economic crisis.

To do this, we analysed a sample of listed, Spanish real estate groups in the period going from 2005 to 2018, thereby considering the effect of the economic crisis, with a special impact in Spain on the market prices of investment properties.

Interest in this issue was accelerated in the first years of this century, along with a trend towards the implantation of fair value criteria, based on the hypothesis that financial information under the traditional criteria of historical cost had lost utility for investors. The historical cost does not include, as such, changes in the prices of real estate assets, although it does include other changes such as depreciation or impairment. Its assessment is not free from subjectivism (IASB, 2018, Conceptual Framework for Financial Reporting, 6.6-6.7) and has been subject to criticism due to its lack of relevance because the assets valued at cost, over time, have values that are not in line with the current equity situation (De Andrés Suárez & Lorca Fernández, 2003; Pulido Álvarez, 2000). This has caused a trend towards more market-oriented criteria and changes in value, such as fair value (Allen & Ramanna, 2013; Dichev & Tang, 2008; Givoly et al., 2017; Magnan, 2009; Sutton et al., 2015). Fair value was about responding to the growing need for updated information in a more globalized world (Marra, 2016) providing, ultimately, more relevant information for decision-making, by incorporating current economic events, which occurred, therefore, after the recognition of the element in the company's assets (Barth, 2007).

The need for a market with liquidity, with constant quotations and available to the user at any time, has traditionally made the assets that are most valued by the fair value criterion to be, for the most part, financial assets (Cairns et al., 2011; Eccher et al., 1996; Rodríguez-Bolívar & Navarro-Galera, 2012; Tahat et al., 2016). Thus, fair value is less widespread in other types of non-financial assets such as biological assets or investment property (Argilés et al., 2011; Cairns et al., 2011; Christensen & Nikolaev, 2013), many times due to the continuous use of the historical cost criterion (Cairns et al., 2011; Quagli et al., 2010), or even due to a lack of knowledge of the advantages of the fair value criterion and applicability conditions (Laux & Leuz, 2009). However, this criterion could be applied to all types of assets (Linsmeier, 2016).

Specifically for investment properties which obtain income and/or capital gains, IAS 40 allows to choose between two subsequent valuation criteria: the cost model or the fair value model. Some opinions believe that fair value is more useful to represent the true image of equity, as well as to improve the timeliness of the financial statements (Navarro-Galera, 2010; Rodríguez-Bolívar & Navarro-Galera, 2012). The *International Accounting Standards Board* (IASB) even considered it initially as the sole criterion in the subsequent valuation of investment property, although it rejected this idea due to the lack of maturity of the markets that prevented the fair value model from working satisfactorily (IASB, 2018; NIC 40: FC.12).

Our results show that, despite the better perceived relevance and explanatory power of information under fair value criterion in crisis periods, after the crisis, in recent times, there is a similar tendency in terms of the markets' perception of financial information regardless of the valuation criteria applied to investment properties. Earnings per share are not relevant in determining the market price during the whole period analysed. In the post-crisis period, our results confirm that the financial information represented by the book value of real estate companies gains relevance significantly. Thus, the net worth shows a positive relationship with the market value, slightly more strongly in the case of companies that use the historical cost method, which suggests a further reduction in the asymmetry of financial information in companies under the fair value method. Such results show the relevance of financial information for investors in the capital market during the analysed period on a kind of assets that has been less studied empirically, as it is the case of investment properties. The results may have implications as well for accounting regulators given that, as suggested in the Conclusions section, current regulation could improve by opting for a dual system that combines historical cost with fair value criteria for investment properties valuation, joining thus the advantages that are derived from either of these criteria. Finally, our study contributes to prior literature in providing empirical evidence of the comparison of both criteria in a double sense: i) Analysing the effect of the valuation criterion on investment properties, whose attention in prior literature is scarce; and, ii) taking as a key element to consider in further research analyses the consequences of the whole economic cycle, including a large period of time.

The work begins with a review of the treatment of historical cost and fair value models by the previous literature. It continues with the description of the theoretical framework around the relevance of financial information regarding financial investments that justifies the development of the hypotheses proposed. The methodology to be followed and the main results obtained are explained in sections 4 and 5, respectively. Lastly, the work concludes with the main findings.

2. Fair value in investment property

IAS 40 establishes the cost model as the initial valuation criterion, but for the subsequent valuation it offers the option of choosing between two alternatives: the historical cost model and the fair value model (IASB, 2018; NIC 40:20 & 30). This possibility of choice highlights the tension between two qualitative characteristics of financial information: relevance and reliability (Livne & Markarian, 2018). Whereas with the application of cost price, one chooses accurate and objective information, that is, features associated with reliability, the use of fair value provides timelier and therefore more relevant information (De Vicente-Lama et al., 2013). IAS 40 offers a pure accounting alternative, since it is the preparer of financial information who will select the option that will best serve to communicate the results or resources that the entity has, although it may harm the comparability of financial statements since they choose a different valuation criterion for properties with the same purpose (De Vicente-Lama et al., 2012; Pérez & Tey, 2007).

IAS 40 itself leans towards the fair value model, indicating the mandatory disclosure of fair value in investment properties, regardless of the subsequent valuation model chosen (i.e. Caparrós & Manzanares, 2007; De Vicente-Lama & Sánchez, 2010; Quagli et al., 2010). Unlike IAS 16, that allows a revaluation model against equity, the IASC determined that the changes in value under this model should be allocated to the result of the year, for the fair value model had been constructed to give greater relevance and transparency to the results coming from investment properties. It was therefore considered incongruous to allow or require its recognition in the equity (IASB, 2018; NIC 40: FC. B 65 a).

International accounting standards presumes that fair value can always be measured reliably and continuously. This fair value is a starting price (IASB, 2017; NIIF 13:9), based on the market, which does not depend on the specific conditions of an entity. Hence, the company must act as a market participant setting the price of the asset or liability under current conditions, taking into account some risky circumstances. In this sense, a hierarchical fair value measurement basis is proposed, giving priority to listed prices and lastly, to values that are not observable, in the latter case it is necessary to use estimation techniques, such as updating expected cash flows from the asset over its useful life (IASB, 2017; NIIF 13:72). As there is no single option for estimation, the relevance of such value varies and so does the effect or result on the information provided to investors (Ronen, 2008).

In determining fair value, the starting point is level 1, a scenario where there are active markets and therefore the price is known by both parties, until level 3, where estimation techniques used to determine fair value are based on some unobservable inputs, involving the subjectivism of the preparers of financial information. Landsman (2007) even proposes the use of a mixed model (historical cost/fair value) to avoid making erroneous estimations of fair value when there is no active market. As the level rises, the information asymmetry between preparers and users increases due to the increase of uncertainty in assessing the fair value (Majercakova & Skoda, 2015: 315-316).

Exceptionally, it may happen that there is a property that has been converted into investment property due to its change of use and at that time the determination of its fair value is not reliable, because the market is not considered active and alternative fair value techniques, such as discounted cash flow projections are not available either (IASB, 2018; NIC 40: 30, 53 & 54). Despite this presumption, there are studies that determine the extent to which fair value is used, as an opportunistic option, since they have the possibility of reflecting gains or losses according to managers' intention, as a consequence of changes in this value, and which has an immediate impact on financial markets (Guthrie et al., 2011).

Unlike financial instruments, and even other assets with a higher activity in markets (e.g. raw materials, agricultural products, etc.), real estate that is classified as investment properties usually do not have an active market where their prices are frequent and regularly available. Therefore, it is necessary to estimate the fair value through various valuation methods, on many occasions of an indirect nature; noting that the use of them frequently implies the use of professional judgments, which supposes a certain degree of subjectivity and manipulation in the valuation (Díaz, 2010), because the company's own assumptions are unavoidable.

It should be noticed that the valuation aims to be useful for users of financial information, which is conditioned by the characteristics of the environment at the time of valuation (AECA, 1989: 18-20); this also implies to choose the valuation model that best suits these circumstances (Requena Rodríguez, 1977: 222). In this line, the value of an element in accounting is not an intrinsic quality but a concept related to people and their motivations to know this valuation (Barnay & Calba, 1998: 22-38; Becker Gómez, 1985: 193). The inherent subjectivity of the valuation can be reduced by starting from an analysis of the data and by requiring the opinion of experts to justify the application of different methods (Sanjurjo, 1999: 22).

The difficulty in calculating fair value increases with the lack of objective data provided by the market, and when this is not possible, one must even resort to accepted methods of indirect estimation (Constans, 2007). In investment properties, full advantage should be taken of the information that comes from the market, whenever it exists and has a certain activity. If this is not the case, it should be considered using indirect valuations based on the market, such as appraisals by independent professionals or other experiences or sufficiently experienced calculation methods. Whenever it is necessary to make estimates to determine the fair value, the best method is the market approach in the case of investment properties. This method is based on prices and other relevant information that has taken place in market transactions with real estate that is identical or similar to the one we want to measure, such as the price per square meter (Palavecinos & Azúa-Álvarez, 2006).

3. Theoretical framework and development of hypothesis

The quality of financial information is understood on the basis that it is useful for decision-making of its main users (owners, lenders and other creditors) (IASB & FASB, 2006. OB2-4). This quality is mainly summarised in two characteristics: reliability and relevance (IASB & FASB, 2006. QC-1). Reliability is associated with the faithful representation of economic events, so that they describe the economic essence of the underlying transaction, indicating that it must be complete, neutral and free from material error (IASB & FASB, 2006, 2008). Relevance, on the other hand, focuses on the capacity of the information to make a difference in the users when making decisions, indicating that it must have predictive and/or confirmatory value (IASB & FASB, 2008. QC-3). However, these qualities come into conflict, with the understanding of the literature that they are contradictory and exclusive (Argilés et al., 2011; Christensen & Nikolaev, 2013; Hitz, 2007; Quagli et al., 2010).

In this sense, there is a great deal of literature on the study of the relevance of financial information (i.e. Barth et al., 2001; Batista & Paulo, 2017; Holthausen & Watts, 2001; Jenkins et al., 2009; Song et al., 2010; Sundgren et al., 2018). In the case of financial assets, the previous research finds a greater influence of their fair value, compared to their historical cost, on the market price of the company (Barth, 1994; Barth et al., 1996; Eccher et al., 1996; Nelson, 1996). However, in the case of non-financial assets, the fair value may not provide greater relevance (Christensen & Nikolaev, 2013), probably because it is affected by the amount of measurement error and the source of estimations (Landsman, 2007). Additionally, in the case of non-financial assets, this problem is affected by the lack of explanation of the motivations behind the accounting choice between historical cost and fair value (i.e. Ball & Shivakumar, 2006; Hail et al., 2010; Laux & Leuz, 2009).

Thus, in the case of investment properties, there is a great

discrepancy in the existing literature. On one hand, those who consider greater relevance of fair value versus historical cost (Allen & Ramanna, 2013; Baboukardos & Rimmel, 2014; Barth, 2014; Ehalaiye et al., 2017; Magnan, 2009; Zamora-Ramirez & Morales-Díaz, 2018); on the other, the position in favour of historical cost (Acaranupong, 2017; Liao, 2013; Machado & Machado, 2013; Magnan, 2009; Müller et al., 2015; Siam & Abdullatif, 2011). Other studies have found no empirical evidence that the fair value model increases the explanatory power of the price based on financial information (Hassan et al., 2006; Machado & Machado, 2013; McInnis et al., 2018), or they show mixed evidence (Danbolt & Rees, 2008; Hitz, 2007; Koonce et al., 2011; Sellhorn & Stier, 2019).

Among the arguments in favour of fair value as an instrument to increase the relevance of the financial information, fair value uses market-based criteria, which theoretically contributes to financial information connecting better with the economic reality of the company (Dichev & Tang, 2008). This leads to a decrease in the company's equity valuation error (Boone, 2002; Hitz, 2007), because fair value, given the greater discretion for managers, provides more information than the strict historical cost criterion (Hitz, 2007; Lev et al., 2010; Marra, 2016; Tahat et al., 2016). Thus, fair value improves other qualitative characteristics of financial information: Given that market data is more universal, easily observable and accessible to the user than the information from the historical cost criterion, more dependent on each company, fair value allows to increase comparability (Hail, 2013; Navarro-Galera, 2010; Rodríguez-Bolívar & Navarro-Galera, 2012) and comprehensibility (Navarro-Galera, 2010; Rodríguez-Bolívar & Navarro-Galera, 2012). In addition, it facilitates future estimations based on financial information (Hail, 2013), especially from future operating cash flows (Argilés et al., 2011; Ehalaiye et al., 2017; He et al., 2018), although to a greater extent for concepts related to balance sheet figures than for those based on earnings (Beisland & Knivsfla, 2015; Danbolt & Rees, 2008).

In this sense, although some results have not been conclusive (i.e. Barth & Clinch, 1998), previous research suggests the existence of a significant positive relationship between share prices and revaluations of property, plant and equipment (Aboody et al., 1999; Gómez & Álvarez, 2013). This leads us to our first hypothesis:

> **H1.** The fair value measurement model of investment properties has a greater explanatory power of the market price than the historical cost model.

Although not conclusive, current stream of literature is focused on the procyclicality of fair value accounting and how it possibly produces a negative amplification of business cycles during the international financial crisis (see discussion at IMF, 2009). Fair value is supposed to reflect the sum of all the risks the market assigns to the asset, but even under market input observations, it would be considered that markets may fail when pricing risks appropriately. It seems to be accepted that "fair" market value may diverge from the underlying economic value of an asset, due to market tendencies to overshoot the underlying value of an asset both during upturns and downturns. Procyclical and self-reinforcing "write-ups" of assets may be caused by incentives of investors during expansive cycles. Then, the use of fair value accounting could itself exaggerate rising prices during upturns as well as lead to sharper fall during the downturn (Caruana & Pazarbasioglu, 2008).

Among limitations of fair value accounting, the existing literature remarks the greater subjectivity (Liu et al., 2012; Marra, 2016), as well as the ambiguity of the standards themselves regarding its application (Siam & Abdullatif, 2011). This can lead to the increase earnings management (Danbolt & Rees, 2008; Magnan, 2009), and even, investor fraud cases (Siam & Abdullatif, 2011). In general, it is observed that, although the fair value improves the prediction of operating cash flows (Ehalaiye et al., 2017; Lev et al., 2010), it does not offer much more information than the one provided by working capital, and may even diminish earnings predictability (Beisland & Knivsfla, 2015; Ehalaiye et al., 2017; Lev et al., 2010; McInnis et al., 2018).

This subjectivity in the estimation of the fair value, which lacks the justification in the transaction as it happens with historical cost, causes fair value to diminish the reliability of the financial information (Allen & Ramanna, 2013; Bick et al., 2018; Lev et al., 2010; Lhaopadchan, 2010; Magnan, 2009; Müller et al., 2015). Its difficulty in obtaining or estimating also contributes to the conclusion that the usefulness of the fair value criterion is not common in all cases, but it will depend on the circumstances (Givoly et al., 2017; Kothari et al., 2010; Linsmeier, 2016). Primarily, it requires the existence of a secondary market for the asset with liquidity (Allen & Ramanna, 2013; Eccher et al., 1996; Milburn, 2008; Rodríguez-Bolívar & Navarro-Galera, 2012), in a sense that is possible to obtain the information for the valuation in a reliable way and at a cost that is not very high (Christensen & Nikolaev, 2013; Danbolt & Rees, 2008; Quagli et al., 2010). In addition, the reference market to establish the price that serves as an estimation of fair value is required to be efficient (Hail, 2013; Lhaopadchan, 2010; Milburn, 2008), so that investors are not influenced by any non-neutral information of the company, given that this information is incorporated into the market price (Lhaopadchan, 2010). In this sense, the greater fair value estimation level, the more information must access the investor, because the measures of such value are not observable (Landsman, 2007). In addition, the existing literature suggests other circumstances that may vary the effectiveness of fair value, such as the type of users who receive the information (it is valued differently by equity investors and debt investors) (Givoly et al., 2017), and that the company under fair value criterion is not in a situation where it is expected that it will have to sell the asset under valuation before the end of its maturity or useful life (Linsmeier, 2016).

This loss of reliability may also stem from the greater difficulty in obtaining fair value (Hail, 2013; Müller et al., 2015) and the volatility of the markets on which it is based (Hail, 2013; Song, 2015). This eventually decreases the liquidity of the assets (Ghosh et al., 2020; Magnan, 2009), which may appear in the balance sheet with a continuous spiral of undervaluation in times of crisis (Hail, 2013). Considering that, we formulate our second hypothesis as follows:

> **H2.** The explanatory power on the price of valuation models at fair value and historical cost is modified in situations of economic crisis.

4. Methodology

4.1. Sample Selection

The period under analysis covers 13 years, from 2005, the year in which the mandatory application of IAS-IFRS for Spanish consolidated financial statements began, until 2018. This time interval is especially relevant in the Spanish real

Table 1. Distribution of the sample

Company	Available years	%	Historical Cost Method	%	Fair Value Method	%
REALIA	2005-2018		2005-2014		2015-2018	
QUABIT	2005-2017				2005-2017	
INMOBILIARIA COLONIAL	2005-2018		2005		2006-2018	
AXIARE PATRIMONIO SOCIMI	2015-2017				2015-2017	
INMOBILIARIA DEL SUR	2005-2018		2005-2018			
LAR REAL ESPAÑA ESTATE	2014-2018				2014-2018	
MERLIN PROPERTIES	2014-2018				2014-2018	
SOTOGRANDE	2008-2016		2008-2016			
REYAL URBIS	2006-2016		2006-2016			
TESTA INMUEBLES	2005-2015		2005-2015			
HISPANIA ACTIVOS	2014-2018				2014-2018	
NYESA VALORES CORP.	2005-2018		2005		2006-2018	
Total available years	103		56	54.4%	47	45.6%
Deletions	-9	-8.7%	-8	-14.3%	-1	-2.1%
Pre-crisis (2005-2007)	12	12.8%	8	66.7%	4	33.32%
Crisis (2008-2014)	41	43.6%	29	70.7%	12	29.3%
Post-crisis (2015-2018)	41	43.6%	11	26.8%	30	73.2%
Total observations	**94**	**100%**	**48**	**51.1%**	**46**	**48.9%**

estate sector, given that it begins with the last years of the expansionist cycle interrupted in 2008, in the second quarter in which Spain entered into recession (i.e. Ortega & Peñalosa, 2012). The analysed period is therefore subdivided into three sub-periods: (i) *pre-crisis*, between 2005 and 2007; (ii) *crisis*, from 2008 to 2014, the year in which Spain emerged from the economic recession, according to macroeconomic data by the Spanish Ministry (INE, 2014); and (iii) *post-crisis*, from 2015 to 2018.

The selection of the sample under study starts from the groups of Spanish companies listed on the Spanish Stock Exchange Market, belonging to the sub-sector "Real Estate and Others" within the "Financial and Real Estate Services" sector[1]. As defined by the Spanish stock exchange authority, this sub-sector includes those companies whose activity is real estate development, rental and management of real estate assets, whether on their behalf or on behalf of third parties (BME, 2019); thus, this selection avoids the influence in our analysis of market value of other assets. The distribution of the analysed sample by periods is detailed in Table 1, differentiating the financial years with available information and, among them, those years in which every entity has applied one or another subsequent valuation model for their investment properties (cost model and fair value model).

Out of the 103 previous observations, 9 have been eliminated due to lack of market value, resulting in a final sample of 94 observations, distributed as summarised in Table 1 according to the valuation model used in these investment properties and in the three temporary sub-periods analysed. In the distribution of the sample, there is proportionality between the companies valued at fair value (48.9%), compared to those using historical cost (51.1%) and some decompensation in the number of observations from the pre-crisis period, as they are conditioned by the start date of application of the IAS-IFRS in 2005.

[1]There is only one company belonging to this sector which has not been included in the sector. This company is "Colonial". The reason to exclude this company is because, analyzing the descriptive statistics by company (untabulated) we have observed that Colonial shows a considerable high dispersion both in the stock price and in the book value per share. We have carefully analyzed the notes of the company that are referred to the equity. It can be observed that the company does not show a stable share capital policy (as an example, the company had a share capital increase converting bonds into shares in 2010; share capital amortization to compensate accumulated losses in 2011; a new share capital increase in 2016...). Furthermore, the stock price shows a high extent of volatility, because of the continuous change into split and contra-split operations. All these things together, we consider the deletion of this company, for the Ohlson model is fully determined by both share prices and equity policies of the firm.

4.2. Definition of Variables. Ohlson Model

The Ohlson model is widely used by previous literature to explain the market value of companies listed on financial markets (Feltham & Ohlson, 1995; Kuo, 2017; Larrán Jorge & Piñero López, 2005; Ohlson, 2001). Its use as a useful tool to explain the share price under different scenarios as a consequence of different economic situations, is justified in its flexibility, which allows it to adapt to various business situations, allowing an adapted definition of the explanatory variables.

In the resulting model, the value of the price (dependent variable) will be explained by the independent variables, book value and earnings per share, related to the value of its equity, according to the following expression:

$$\text{LST}_t = \alpha + \beta_1 \text{BOOK VALUE} + \beta_2 \text{RESULT PER SHARE} + \varepsilon$$

This general model has been applied specifically for each valuation method of investment properties, in accordance with the following definition of variables:

Model 1. Historical cost:

$$\text{LST}_t = \alpha + \beta_1 \text{V\_BKS\_HISTC} + \beta_2 \text{EPS\_HISTC} + \varepsilon$$

Model 2. Fair value:

$$\text{LST}_t = \alpha + \beta_1 \text{V\_BKS\_FRV} + \beta_2 \text{EPS\_FRV} + \varepsilon$$

Where,

- LST_t: Listed price of the company's stock at the end of the financial year.
- V_BKS_HISTC: Equity per share of the company that applies the historical cost model for the valuation of investment property.
- V_BKS_FRV: Equity per share of the company that applies the fair value model for the valuation of investment property.
- EPS_HISTC: Income before taxes for the year per share, obtained from the profit and loss statement, if the valuation model applied is the historical cost.

EPS_FRV: Income before taxes for the year per share, obtained from the profit and loss statement, if the valuation model applied is that of fair value.

Given that some variables are prone to have extreme values that may mislead the results in the analyses, to overcome such problem we have winsorized the variables at 1% level. We have opted for the winsorization technique rather than trimming the sample due to the reduced sample size.

5. Results and discussion

The descriptive results in Table 2 (winsorized values) show how fair value is valued on an average lower than historical cost (0.005 vs. 0.050). In the same way, the standard deviation in the case of fair value is lower than the historical cost (0.006 vs. 0.312). This notably smaller deviation is indicative of a more uniform valuation, where there is less incidence of extreme values. Therefore, in general terms, it can be considered that the average book value is more representative of the population in companies with subsequent measurement at fair value.

Regarding earnings per share, we can observe that, on average, the values are close in both cases, although it is slightly higher when the valuation is with historical cost compared to the fair value (0.006 vs. 0.000). The standard deviation at historical cost (0.038) is also greater than at fair value (0.001), which leads us to conclude again that the average earnings per share of companies that use the fair value method is more representative of the population. In this sense, it can be seen that the minimum values in both cases are the same (-0.003), but the maximum differs substantially in the case of fair value (0.003 vs. 0.265), so the range of values is much larger for the first case (fair value).

Table 2. Descriptive statistics

Variable	Nº of Obs.	Mean	Std.Dev.	Minimum value	Maximum value
LST	94	30.768	200.380	0.017	1,937.29
V_BKS_FRV	46	0.005	0.006	-0.002	0.016
V_BKS_HISTC	48	0.050	0.312	-0.002	2.167
EPS_FRV	46	0.000	0.001	-0.003	0.003
EPS_HISTC	48	0.006	0.038	-0.003	0.265

The analysis of the Ohlson Model for the different periods of time is presented below. Specifically, Table 3 shows the results of the regression of the price on book value and earnings per share of companies that are valued with the historical cost, while Table 4 shows the results of the regression in companies that use the fair value method.

Table 3. Ohlson Model with investment properties at historical cost

	Period PRE_CRISIS	Period of CRISIS	Period POST_CRISIS
	LST_t $\beta(p)$	LST_t $\beta(p)$	LST_t $\beta(p)$
Constant	18.439*** (0.008)	4.309** (0.032)	0.505 (0.713)
V_BKS_HISTC	-1,215.051 (0.148)	360.209 (0.295)	2,010.771*** (0.002)
EPS_HISTC	9,974.808 (0.147)	1,432.782 (0.219)	-5,813.748 (0.144)
Nº of Obs.	8	29	11
Prob>F (p-value)	0.28	0.02**	0.00***
R2 (R2 adjusted)	0.40 (0.16)	0.26 (0.20)	0.86 (0.83)

*p<0.1, **p<0.05 and ***p<0.01 (significance at 10%, 5%, and 1%, respectively)

Table 4. Ohlson Model with investment properties at fair value

	Period PRE_CRISIS	Period of CRISIS	Period POST_CRISIS
	LST_t $\beta(p)$	LST_t $\beta(p)$	LST_t $\beta(p)$
Constant	-97.028 (0.979)	5.354*** (0.008)	0.167 (0.754)
V_BKS_FRV	134,604 (0.814)	3,622.006** (0.017)	1,001.672*** (0.000)
EPS_FRV	169,337 (0.744)	-916.32 (0.660)	-321.229 (0.581)
Nº of Obs.	4	12	35
Prob>F (p-value)	0.84	0.01***	0.00***
R2 (R2 adjusted)	0.29(-1.13)	0.69 (0.63)	0.84 (0.83)

*p<0.1, **p<0.05 and ***p<0.01 (significance at 10%, 5%, and 1%, respectively)

Regarding the influence of earnings per share, it is confirmed that this variable is not significant to explain the listing of real estate companies at any time, regardless of whether historical cost or fair value criteria are used as valuation standard. This suggests that earnings per share is less relevant for investors, regardless of whether the company uses fair value or historical cost as a criterion to value its investment property. Although in the post-crisis era, greater relevance of the historical cost in terms of earnings per share could be expected, given the orientation to earnings figures versus balance sheet figures of this criterion (Acaranupong, 2017; Beisland & Knivsfla, 2015), in both cases earnings per share is not decisive to explain the listing of real estate companies in the market. In the case of fair value, the lack of relevance of earnings per share is in line with the literature that defends that the fair value is perceived with greater utility to predict cash flows but not to predict earnings (Ehalaiye et al., 2017; Lev et al., 2010; McInnis et al., 2018), given its greater orientation to equity (balance) figures versus earnings figures (Beisland & Knivsfla, 2015; Danbolt & Rees, 2008).

Regarding the book value, the results in Table 3 indicate that the book value in companies whose investment properties are valued by the historical cost model has a positive and statistically significant influence on the market price of these companies in the post-crisis period (β_1=2,010.771; p=0.002). Therefore, the book value of companies that used the historical cost model is relevant for the investor to explain their market price in the post-crisis period.

The results about book value under the fair value method (Table 4) are quite better for this criterion. The book value of companies that use the fair value model is not significant to explain their market price only in pre-crisis period. However, it is important to note that the small number of observations compromises the predictive power of the model in the pre-crisis period. In the crisis period, opposite to the historical cost criterion, the book value of those companies in the sample adopting the fair value criterion is significant to explain the valuation of the companies in the market at 5% (β_1=3,622.006; p= 0.017). Moreover, the model, which is globally acceptable (Prob > F = 0.01), also shows a considerably high estimation power (R2 (R2 adjusted) = 0.69 (0.63)), thereby confirming the ability of the fair value model to fit information in convulse periods to an accurate valuation (two of third parts of share price valuation is explained by accounting information relative to book value of firms adopting fair value criteria). Hence, the adopted criterion for investment properties valuation makes a difference in periods of higher instability in the economy, being perceived as more relevant for investors the accounting information under the fair value valuation over the historical cost one, and with greater es-

timation power (0.69 versus 0.26 in terms of R2). These results are in line with studies that empirically prove the better perception of information by investors when accounting information has been disclosed under fair value criterion (Hitz, 2007; Lev et al., 2010; Tahat et al., 2016). This fact can be explained by the fact that, although the fair value criterion could decrease the relevance of earnings, it does increase the relevance of Balance Sheet information (Beisland & Knivsfla, 2015; Danbolt & Rees, 2008) due to a better matching of accruals (Dichev & Tang, 2008) and a higher predictability of cash flows (Argilés et al., 2011; Ehalaiye et al., 2017; He et al., 2018) Such perceived relevance of information under fair value criterion is also reflected (even in a stronger way) in the post-crisis period. As observed in Table 4, the book value of companies that opt for fair value in post-crisis is positive and statistically significant (β_1=1,001.672; p= 0.000), increasing the relevance of this financial information for the investor when explaining the company's price. Furthermore, the explanatory power is also high, being explained share price by book value accounting information under fair value criterion on more than 80% (R2 (R2 adjusted) = 0.84 (0.83)).

In conclusion on both criteria, the results confirm the similar behaviour regarding the relevance of the historical cost and fair value criteria for investment properties (Hassan et al., 2006; Machado & Machado, 2013; McInnis et al., 2018) in present times (post-crisis period), despite the superiority of fair value criterion in the crisis period. This represents a contribution to the literature on accounting election for investment properties, a kind of assets that has been less empirically studied (Sellhorn & Stier, 2019) and that particularly affected by the election between the two valuation models (Ghosh et al., 2020). In this sense, for companies with investment properties it is appropriate the trending stream of accounting literature that points to the advantages of combining the relevance of fair value and the reliability of historical cost, establishing a dual system that allows taking advantage of both qualities. This would increase the relevance of financial information for investors, as evidenced for other types of companies (Palea, 2014; Rashad Abdel-Khalik, 2010).

However, our results also suggest that the use of the fair value method reduces the asymmetry of the information compared to the historical cost method in post-crisis times, as evidenced by a higher coefficient in the case of historical cost (β_1=2,010.771 vs. β_1=1,001.672). This would be in line with recent results that confirm a negative relationship between the extent of fair value disclosures and the bid-ask spread in the stock markets (Vergauwe & Gaeremynck, 2019).

6. Conclusions

The tension between two main qualities of financial reporting, reliability and relevance, has been extensively studied by previous research. The study of the relevance of fair value on the markets, finds its foundation precisely in the relevance vs. reliability balance. However, the evidence shows inconclusive results, or even suggests loss of relevance of the financial information with the use of the fair value method versus the historical cost method.

In this sense, our analysis evidences differences between the valuation criterion in terms of perceived relevance by investors depending on the economic circumstances. In convulse periods, as it happens in a crisis, investors perceived as more relevant the fair value criterion (which updates accounting information, making it be in line with market information) versus historical cost criterion (which shows the initial recognition values, which may considerably differ from the volatile values in the stock market). Hence, investors prefer values that are more alike to market conditions to compensate the instability of the economic environment. However, whenever the situation is somewhat more stable, results confirm a similar explanatory power of the financial information on the listing of real estate companies, regardless the use of a valuation model for investment properties based on historical cost or fair value. The study also highlights the greater utility for share price prediction of the Balance Sheet information versus the income one, as evidenced by earnings per share being not significant throughout the study period, neither in times of economic growth nor in times of crisis.

However, our results find evidence of the increased relevance of the financial information provided by the equity of real estate companies just in the years after the economic crisis. This suggests the tendency towards increasing the relevance of book value for decision-making for users of financial information in capital markets. Thus, both under the historical cost model and the fair value model, equity comes to have a significant explanatory power for the market price, although a reduction in the asymmetry of financial information in favour of the fair value method is suggested.

The present study contributes from the empirical point of view to treat the evolution of the perception of relevance of financial information for the capital market investor in a type of assets less empirically studied such as investment properties. As an implication for the accounting regulator, it is suggested to combine the advantages of historical cost and fair value in the real estate sector, in a possible dual valuation system, as the literature already indicates for other types of companies.

The main limitation of this study comes from the small number of observations of companies that measures through the fair value method at the beginning of the analysed period. This is due to the transition period for election between historical cost or fair value criterion, from the mandatory implementation of international accounting standards in Spain in 2005. Anyway, future lines of research may extend the study period in order to have a broader view of the behaviour of the two valuation models. Further research, as well, could be oriented towards a comparative study with other European countries about the optionality of IFRS 40, as well as the possibility to include the fair value disclosed in the annual report of those firms who adopt historical cost criterion for investment valuation. These two lines of research may be interesting to have a broader view on the behaviour of the two valuation criteria, thereby serving as a way to overcome the limitation of sample size in our current research.

Funding

This research did not receive any specific grant from funding agencies in the public, commercial or not-for-profit sectors.

Conflict of interests

The authors declare no conflict of interests.

References

Aboody, D., Barth, M. E., & Kasznik, R. (1999). Revaluations of fixed assets and future firm performance: Evidence from the UK. *Journal of Accounting and Economics*, *26*(1-3), 149-178. https://doi.org/10.1016/S0165-4101(98)00040-8

Acaranupong, K. (2017). Accounting Practices and Value Relevance of Investment Property: Evidence from Firms Listed on the Stock Exchange of Thailand. *Asian Journal of Business and Accounting*, *10*(2), 1-41.

AECA. (1989). *Documento nº 1, Principios de valoración de empresas: "Propuesta de una metodología."* AECA.

Allen, A., & Ramanna, K. (2013). Towards an understanding of the role of standard setters in standard setting. *Journal of Accounting and Economics*, *55*(1), 66-90. https://doi.org/10.1016/j.jacceco.2012.05.003

Aliberch, A. S., & Blandón, J. G. (2012). A comparative study of difficulties in accounting preparation and judgement in agriculture using fair value and historical cost for biological assets valuation. *Revista de Contabilidad-Spanish Accounting Review*, *15*(1), 109-142. https://doi.org/10.1016/S1138-4891(12)70040-7

Argilés, J. M., Garcia-Blandon, J., & Monllau, T. (2011). Fair value versus historical cost-based valuation for biological assets: predictability of financial information. *Revista de Contabilidad-Spanish Accounting Review*, *14*(2), 87-113. https://doi.org/10.1016/S1138-4891(11)70029-2

Baboukardos, D., & Rimmel, G. (2014). Goodwill under IFRS: Relevance and disclosures in an unfavorable environment. *Accounting Forum*, *38*(1), 1-17. https://doi.org/10.1016/j.accfor.2013.11.001

Ball, R., & Shivakumar, L. (2006). The Role of Accruals in Asymmetrically Timely Gain and Loss Recognition. *Journal of Accounting Research*, *44*(2), 207-242. https://doi.org/10.1111/j.1475-679X.2006.00198.x

Barnay, A., & Calba, G. (1998). *Comments to the Draft Statement of Principles on Agriculture*. IASC.

Barth, M. E. (1994). Fair value accounting: evidence from investment securities and the market valuation of banks. *The Accounting Review*, *69*, 1-25. https://www.jstor.org/stable/248258

Barth, M. E. (2007). Standard-setting measurement issues and the relevance of research. *Accounting and Business Research*, *37*(sup1), 7-15. https://doi.org/10.1080/00014788.2007.9730079

Barth, M. E. (2014). Measurement in Financial Reporting: The Need for Concepts. *Accounting Horizons*, *28*(2), 331-352. https://doi.org/10.2308/acch-50689

Barth, M. E., Beaver, W. H., & Landsman, W. R. (1996). Value-relevance of banks fair value disclosures under SFAS 107. *The Accounting Review*, *71*, 513-537. https://www.jstor.org/stable/248569

Barth, M. E., Beaver, W. H., & Landsman, W. R. (2001). The relevance of the value relevance literature for accounting standard-setting: another view. *Journal of Accounting and Economics*, *31*(1-3), 77-104. https://doi.org/10.1016/S0165-4101(01)00019-2

Barth, M. E., & Clinch, G. (1998). Revalued financial, tangible, and intangible assets: associations with share prices and non market-based value estimates. *Journal of Accounting Research*, *36*, 199-233. https://doi.org/10.2307/2491314

Batista, F. F., & Paulo, E. (2017). Value relevance of investment property in the real state industry. *Reunir-Revista de Administracao Contabilidade e Sustentabilidade*, *7*(3), 99-115. https://doi.org/10.17576/AJAG-2014-5-01

Becker Gómez, F. (1985). Los principios generales de valoración. *Técnica Contable*, *437*, 193-196.

Beisland, L. A., & Knivsfla, K. H. (2015). Have IFRS changed how stock prices are associated with earnings and book values? Evidence from Norway. *Review of Accounting and Finance*. https://doi.org/10.1108/RAF-06-2013-0079

Bick, P., Orlova, S., & Sun, L. (2018). Fair value accounting and corporate cash holdings. *Advances in Accounting*, *40*, 98-110. https://doi.org/10.1016/j.adiac.2017.12.002

Boone, J. P. (2002). Revisiting the reportedly weak value relevance of oil and gas asset present values: The roles of measurement error, model misspecification, and time-period idiosyncrasy. *The Accounting Review*, *77*(1), 73-106. https://www.jstor.org/stable/3068857

BME (Bolsas y Mercados Españoles) (2019). Stock Exchange Sector Classification, defintitions by sector and subsector. Available at https://www.bolsamadrid.es/docs/Acciones/secteng.pdf

Cairns, D., Massoudi, D., Taplin, R. H., & Tarca, A. (2011). IFRS fair value measurement and accounting policy choice in the United Kingdom and Australia. *The British Accounting Review*, *43*(1), 1-21. https://doi.org/10.1016/j.bar.2010.10.003

Caparrós, M. J. M., & Manzanares, M. A. B. (2007). El inmovilizado material en el modelo del IASB: Especial referencia a las propiedades de inversión según la NIC/NIIF40. *Revista de Contabilidad y Dirección*, *4*, 165-180.

Caruana, J., & Pazarbasioglu, C. (2008). Revisiting valuation practices throughout the business cycle: some symmetry is needed. *Financial Stability Review*, *12*, 15-22. RePEc:bfr:fisrev:2008:12:3

Christensen, H. B., & Nikolaev, V. V. (2013). Does fair value accounting for non-financial assets pass the market test? *Review of Accounting Studies*, *18*(3), 734-775. https://doi.org/10.1007/s11142-013-9232-0

Collins, D. W., Maydew, E. L., & Weiss, I. S. (1997). Changes in the value-relevance of earnings and book values over the past forty years. *Journal of Accounting and Economics*, *24*(1), 39-67. https://doi.org/10.1016/S0165-4101(97)00015-3

Constans, A. (2007). El valor razonable en la nueva contabilidad. *Revista Harvard Deusto. Finanzas y Contabilidad*, *76*, 24-39.

Danbolt, J., & Rees, W. (2008). An experiment in fair value accounting: UK investment vehicles. *European Accounting Review*, *17*(2), 271-303. https://doi.org/10.1080/09638180701819865

De Andrés Suárez, J., & Lorca Fernández, P. (2003). La sustitución del coste histórico por el fair value. *Estudios Financieros. Revista de Contabilidad y Tributación: Comentarios, Casos Prácticos*, *248*, 195-238.

De Souza, F. Ê. A., Botinha, R. A., Silva, P. R., & Lemes, S. (2015). Comparability of accounting choices in future valuation of investment properties: An analysis of Brazilian and Portuguese listed companies. *Revista Contabilidade e Finanças*, *26*(68), 154-166. https://doi.org/10.1590/1808-057x201500580

De Vicente-Lama, M., & Sánchez, H. M. (2010). El valor razonable gana terreno en la valoración de las inversiones inmobiliarias. *Revista de La Asociación Española de Contabilidad y Administración de Empresas*, *91*, 31-34.

De Vicente-Lama, M., Molina-Sánchez, H., & Ramírez, J. N. (2012). La eliminación de las alternativas contables. El caso de las inversiones inmobiliarias en las NIIF de Pymes

y en la Propuesta del FASB sobre Entidades de Inversiones Inmobiliarias. *XV Encuentro AECA*, 20-22.

De Vicente-Lama, M., Molina-Sánchez, H., & Ramírez-Sobrino, J. (2013). Inversiones inmobiliarias: la elección contable valor razonable versus coste en los grupos cotizados españoles. *Cuadernos de Contabilidad*, *14*(34), 25-51.

De Vicente-Lama, M., Sánchez, H. M., Ramírez Sobrino, J. N., & Torres Jiménez, M. (2017). Elección contable para la valoración de las inversiones inmobiliarias. Contribución de las técnicas de minería de datos para determinar patrones de decisión. *Revista de Metodos Cuantitativos Para La Economia y La Empresa*, *23*(1), 234-256. http://hdl.handle.net/10419/195421

Devalle, A., & Rizzato, F. (2011). Fair value application and disclosure of investment properties (IAS 40). An empirical analysis of European listed companies. *International Journal of GSTF Business Review*, *1*(1), 8-15.

Díaz, J. M. (2010). ¿Se debería aplicar el valor razonable a todos los instrumentos financieros? Opiniones y argumentos. *Revista Española de Financiación y Contabilidad*, *39*(145), 169-195.

Dichev, I., & Tang, V. W. (2008). Matching and the changing properties of accounting earnings over the last 40 years. *The Accounting Review*, *83*(6), 1425-1460. https://doi.org/10.2308/accr.2008.83.6.1425.

Eccher, E. A., Ramesh, K., & Thiagarajan, S. R. (1996). Fair value disclosures by bank holding companies. *Journal of Accounting and Economics*, *22*(1-3), 79-117. https://doi.org/10.1016/S0165-4101(96)00438-7

Ehalaiye, D., Tippett, M., & Van Zijl, T. (2017). The predictive value of bank fair values. *Pacific-Basin Finance Journal*, *41*, 111-127. https://doi.org/10.1016/j.pacfin.2016.10.008

Feltham, G. A., & Ohlson, J. A. (1995). Valuation and clean surplus accounting for operating and financial activities. *Contemporary Accounting Research*, *11*(2), 689. https://doi.org/10.1111/j.1911-3846.1995.tb00462.x

Ghosh, C., Liang, M., & Petrova, M. T. (2020). The Effect of Fair Value Method Adoption: Evidence from Real Estate Firms in the EU. *The Journal of Real Estate Finance and Economics*, *60*(1), 205-237. https://doi.org/10.1007/s11146-019-09721-z

Givoly, D., Hayn, C., & Katz, S. P. (2017). The changing relevance of accounting information to debt holders over time. *Review of Accounting Studies*, *22*(1), 64-108. https://doi.org/10.1007/s11142-016-9374-y

Gómez, O., & Álvarez, R. (2013). Fair Value Measures in Financial Accounting. *Cuadernos de Contabilidad*, *14*(35), 441-461.

Guthrie, K., Irving, J. H., & Sokolowsky, J. (2011). Accounting choice and the fair value option. *Accounting Horizons*, *25*(3), 487-510. https://doi.org/10.2139/ssrn.1471670

Hail, L. (2013). Financial reporting and firm valuation: relevance lost or relevance regained? *Accounting and Business Research*, *43*(4), 329-358. https://doi.org/10.1080/00014788.2013.799402

Hail, L., Leuz, C., & Wysocki, P. D. (2010). Global accounting convergence and the potential adoption of IFRS by the United States (Part 1): Conceptual underpinnings and economic analysis. *Accounting Horizons*, *24*(3), 355-394. https://doi.org/10.2308/acch.2010.24.3.355

Hassan, M. S. B., Percy, M., & Stewart, J. D. (2006). The value relevance of fair value disclosures in australian firms in the extractive industries. *Asian Academy of Management Journal of Accounting and Finance*, *2*, 21-41.

He, L. Y., Wright, S., & Evans, E. (2018). Is fair value information relevant to investment decision-making: Evidence from the Australian agricultural sector? *Australian Journal of Management*, *43*(4), 555-574. https://doi.org/10.1177/0312896218765236

Hitz, J. M. (2007). The decision usefulness of fair value accounting - A theoretical perspective. *European Accounting Review*, *16*(2), 323-362. https://doi.org/10.1080/09638180701390974

Holthausen, R. W., & Watts, R. L. (2001). The relevance of the value-relevance literature for financial accounting standard setting. *Journal of Accounting and Economics*, *31*(1-3), 3-75. https://doi.org/10.1016/S0165-4101(01)00029-5

IASB (2017). NIIF 13, Valoración del valor razonable. Available at http://www.icac.meh.es/Documentos/Contabilidad/2.Internacional/020.NIIF-UE/010.NIIF%20Vigente/130.NIIF%2013%20Valoraci%C3%B3n%20del%20valor%20razonable.pdf

IASB (2018). NIC 40, Inversiones Inmobiliarias. Available at file:///C:/Users/rjbautista/Downloads/20200802190124.pdf

IASB (2018). Conceptual Framework for Financial Reporting. Available at: https://www.ifrs.org/issued-standards/list-of-standards/conceptual-framework/

IASB & FASB (2006). Preliminary views on an improved Conceptual Framework for Financial Reporting. The objective of financial reporting and qualitative characteristics of decision-useful financial reporting information. Discussion Papers. Available at https://www.fasb.org/jsp/FASB/Document/_C/DocumentPage?cid=1218220340119&acceptedDisclaimer=true. .

IASB & FASB (2008). An Improved Conceptual Framework for Financial Reporting. Exposure Draft. Available at https://www.ifrs.org/-/media/project/conceptual-framework/exposure-draft/published-documents/ed-conceptual-framework.pdf

IMF (International Monetary Fund) (2009). Procyclicality and Fair Value Accounting, (Prepared by Alicia Novoa, Jodi Scarlata, and Juan Solé), *IMF Working Paper*. Available at https://www.bis.org/bcbs/events/cbrworkshop09/novoascarlatasole.pdf/#page=6&zoom=100,0,0.

INE (Instituto Nacional de Estadística) (2014). La economía española cierra 2013 con un crecimiento del 0,2%, una décima superior al trimestre previo. Available at https://portal.mineco.gob.es/es-es/comunicacion/Paginas/140227_NP_rpCN4T13.aspx

Israeli, D. (2015). Recognition versus disclosure: evidence from fair value of investment. *Review of Accounting Studies*, *20*(4), 1457-1503. https://doi.org/10.1007/s11142-015-9335-x

Jenkins, D. S., Kane, G. D., & Velury, U. (2009). Earnings conservatism and value relevance across the business cycle. *Journal of Business Finance and Accounting*, *36*(9-10), 1041-1058. https://doi.org/10.1111/j.1468-5957.2009.02164.x

Koonce, L., Nelson, K. K., & Shakespeare, C. M. (2011). Judging the Relevance of Fair Value for Financial Instruments. *The Accounting Review*, *86*(6), 2075-2098. https://doi.org/10.2308/accr-10134

Kothari, S. P., Ramanna, K., & Skinner, D. J. (2010). Implications for GAAP from an analysis of positive research in accounting. *Journal of Accounting and Economics*, *50*(2-3), 246-286. https://doi.org/10.1016/j.jacceco.2010.09.

003

Kuo, C. Y. (2017). Is the accuracy of stock value forecasting relevant to industry factors or firm-specific factors? An empirical study of the Ohlson model. *Review of Quantitative Finance and Accounting*, *49*(1), 195-225. https://doi.org/10.1007/s11156-016-0587-8

Landsman, W. R. (2007). Is fair value accounting information relevant and reliable? Evidence from capital market research. *Accounting and Business Research,*. https://doi.org/10.1080/00014788.2007.9730081

Larrán-Jorge, M., & Piñero López, J. M. (2005). El modelo de Ohlson (1995): ¿Hemos llegado realmente a comprenderlo? *Revista de Contabilidad-Spanish Accounting Review, 8*(16), 115-149. Retrieved from https://revistas.um.es/rcsar/article/view/388681

Laux, C., & Leuz, C. (2009). The crisis of fair-value accounting: Making sense of the recent debate. *Accounting, Organizations and Society*, *34*(6-7), 826-834. https://doi.org/10.1016/j.aos.2009.04.003

Lev, B., Li, S., & Sougiannis, T. (2010). The usefulness of accounting estimates for predicting cash flows and earnings. *Review of Accounting Studies*, *15*(4), 779-807. https://doi.org/10.1007/s11142-009-9107-6

Lhaopadchan, S. (2010). Fair value accounting and intangible assets Goodwill impairment and managerial choice. *Journal of Financial Regulation and Compliance*, *18*(2), 120-130. https://doi.org/10.1108/13581981011033989

Liang, L., & Riedl, E. J. (2014). The effect of fair value versus historical cost reporting model on analyst forecast accuracy. *Accounting Review*, *89*(3), 1151-1177. https://doi.org/10.2308/accr-50687

Liao, L., Kang, H., & Morris, R. D. (2020). The value relevance of fair value and historical cost measurements during the financial crisis. *Accounting and Finance, 61,* 2069-2107. https://doi.org/10.1111/acfi.12655

Liao, Y. P. (2013). The impact of fair-value-accounting on the relevance of capital adequacy ratios Evidence from Taiwan. *Managerial Finance*. https://doi.org/10.1108/03074351311293990

Linsmeier, T. J. (2016). Revised Model for Presentation in Statement(s) of Financial Performance: Potential Implications for Measurement in the Conceptual Framework. *Accounting Horizons*, *30*(4), 485-498. https://doi.org/10.2308/acch-51543

Liu, C., Yao, L. J., & Yao, M. Y. (2012). Value Relevance Change Under International Accounting Standards: An Empirical Study of Peru. *Review of Pacific Basin Financial Markets and Policies*, *15*(02), 1150008. https://doi.org/10.1142/S0219091511500081

Livne, G., & Markarian, G. (2018). *The Routledge Companion to Fair Value in Accounting*. Abingdon, UK: Routledge.

Machado, M. A. V, & Machado, M. R. (2013). Historical cost X fair value: which information is more relevant on the measurement of biological assets? *CEP, 58059*, 900.

Magnan, M. L. (2009). Fair Value Accounting and the Financial Crisis: Messenger or Contributor? *Accounting Perspectives*, *8*(3), 189-213. https://doi.org/10.1506/ap.8.3.1

Majercakova, D., & Skoda, M. (2015). Fair value in financial statements after financial crisis. *Journal of Applied Accounting Research*, *16*(3), 312-332. https://doi.org/10.1108/JAAR-07-2014-0069

Mäki, J., Somoza-Lopez, A., & Sundgren, S. (2016). Ownership Structure and Accounting Method Choice: A Study of European Real Estate Companies. *Accounting in Europe*, *13*(1), 1-19. https://doi.org/10.1108/14635780910972288

Marra, A. (2016). The Pros and Cons of Fair Value Accounting in a Globalized Economy: A Never Ending Debate. *Journal of Accounting, Auditing & Finance*, *31*(4), 582-591. https://doi.org/10.1177/0148558X16667316

McInnis, J., Yu, Y., & Yust, C. G. (2018). Does Fair Value Accounting Provide More Useful Financial Statements than Current GAAP for Banks? *The Accounting Review*, *93*(6), 257-279. https://doi.org/10.2308/accr-52007

Milburn, J. A. (2008). The Relationship between Fair Value, Market Value, and Efficient Markets. *Accounting Perspectives*, *7*(4), 293-316. https://doi.org/10.1506/ap.7.4.2

Müller, M. A., Riedl, E. J., & Sellhorn, T. (2015). Recognition versus Disclosure of Fair Values. *The Accounting Review*, *90*(6), 2411-2447. https://doi.org/10.2308/accr-51044

Navarro-Galera, A., del Carmen Pérez-López, M., & Rodríguez-Ariza, L. (2010). Fair Value of Real Estate and Utility of Financial Statements of Construction Companies. *International Real Estate Review*, *13*(3), 323-350. https://EconPapers.repec.org/RePEc:ire:issued:v:13:n:03:2010:p:323-350

Nellessen, T., & Zuelch, H. (2011). The reliability of investment property fair values under IFRS. *Journal of Property Investment & Finance*, *29*(1), 59-73. https://doi.org/10.1108/14635781111100209

Nelson, K. K. (1996). Fair value accounting for commercial banks: an empirical analysis of SFAS No. 107. *The Accounting Review*, *71*, 161-182. https://www.jstor.org/stable/248444

Ohlson, J. A. (2001). Earnings, book values, and dividends in equity valuation: An empirical perspective. *Contemporary Accounting Research*, *18*(1), 107-120. https://doi.org/10.1506/7TPJ-RXQN-TQC7-FFAE

Ortega, E., & Peñalosa, J. (2012). *Claves de la crisis económica española y restos para crecer en la UEM*. Banco de España. Available at https://www.bde.es/f/webbde/SES/Secciones/Publicaciones/PublicacionesSeriadas/DocumentosOcasionales/12/Fich/do1201.pdf

Palavecinos, B. S., & Álvarez, D. A. (2006). Alcances sobre el concepto de valor razonable. *Capic Review*, *4*, 61-74.

Palea, V. (2014). Fair value accounting and its usefulness to financial statement users. *Journal of Financial Reporting and Accounting*. https://doi.org/10.1108/JFRA-04-2013-0021

Pérez, G. R., & Tey, M. S. (2007). Implicacions en les magnituds comptables de la valoració a cost històric vs. valor raonable. *Revista de Comptabilitat i Direcció*, *4*, 91-100.

Pinto, I., & Pais, M. C. (2015). Fair value accounting choice: Empirical evidence from Portuguese real estate investment funds. *Journal of European Real Estate Research*, *8*(2), 130-152. https://doi.org/10.1108/JERER-09-2014-0032

Pulido Álvarez, A. (2000). *El fair value y el Marco Conceptual: El Marco Conceptual para la información financiera. Análisis y Comentarios*. Madrid: AECA.

Quagli, A., & Avallone, F. (2010). Fair Value or Cost Model? Drivers of Choice for IAS 40 in the Real Estate Industry. *European Accounting Review*, *19*(3), 461-493. https://doi.org/10.1080/09638180.2010.496547

Rashad Abdel-Khalik, A. (2010). Fair Value Accounting and Stewardship. *Accounting Perspectives*, *9*(4), 253-269. https://doi.org/10.1111/j.1911-3838.2010.00013.x

Requena Rodríguez, J. M. (1977). *La homogeneización de magnitudes en la ciencia de la Contabilidad*. Madrid: ICE.

Rodríguez Bolívar, M. P., & Navarro Galera, A. (2012). The

Role of Fair Value Accounting in Promoting Government Accountability. *Abacus*, *48*(3), 348-386. https://doi.org/10.1111/j.1467-6281.2011.00352.x

Ronen, J. (2008). To fair value or not to fair value: A broader perspective. *Abacus*, *44*(2), 181-208. https://doi.org/10.1111/j.1467-6281.2008.00257.x

Sanjurjo, M. (1999). Introducción a la guía. Conceptos generales de valor. In M. Sanjurjo (Ed.), *Guía de valoración de empresas. Cuadernos Cinco Días*. Price Waterhouse Coopers.

Sellhorn, T., & Stier, C. (2019). Fair Value Measurement for Long-Lived Operating Assets: Research Evidence. *European Accounting Review*, *28*(3), 573-603. https://doi.org/10.1080/09638180.2018.1511816

Siam, W., & Abdullatif, M. (2011). Fair value accounting usefulness and implementation obstacles: Views from bankers in Jordan. *Accounting in Asia: Research in Accounting in Emerging Economies*, 83-107. https://doi.org/10.1108/S1479-3563(2011)0000011009

Song, C. J., Thomas, W. B., & Yi, H. (2010). Value relevance of FAS No. 157 Fair Value hierarchy information and the impact of corporate governance mechanisms. *Accounting Review*, *85*(4), 1375-1410. https://www.jstor.org/stable/20744163

Song, X. (2015). Value Relevance of Fair Values-Empirical Evidence of the Impact of Market Volatility. *Accounting Perspectives*, *14*(2), 91-116. https://doi.org/10.1111/1911-3838.12045

Sundgren, S., Mäki, J., & Somoza-lopez, A. (2018). Analyst coverage, market liquidity and disclosure quality: a study of fair-value disclosures by European real estate companies under IAS 40 and IFRS 13. *International Journal of Accounting*, *53*(1), 54-75. https://doi.org/10.1016/j.intacc.2018.02.003

Sutton, D. B., Cordery, C. J., & Van Zijl, T. (2015). The Purpose of Financial Reporting: The Case for Coherence in the Conceptual Framework and Standards. *Abacus*, *51*(1), 116-141. https://doi.org/10.1111/abac.12042

Tahat, Y., Dunne, T., Fifield, S., & Power, D. (2016). The value relevance of financial instruments disclosure: evidence from Jordan. *Asian Review of Accounting*, 24(4), 445-473. https://doi.org/10.1108/ARA-11-2014-0115

Vergauwe, S., & Gaeremynck, A. (2019). Do measurement-related fair value disclosures affect information asymmetry? *Accounting and Business Research*, *49*(1), 68-94. https://doi.org/10.1080/00014788.2018.1434608

Wahyuni, E. T., Soepriyanto, G., Avianti, I., & Naulibassa, W. P. (2019). Why companies choose the cost modelo ver fair value for investment property? Exploratory study on Indonesian listed companies. *International Journal of Business and Society*, *20*(1), 161-176.

Zamora-Ramirez, C., & Morales-Díaz, J. (2018). The Use of Fair Value Measurement in Financial Reporting: A Literature Review. *Studies of Applied Economics*, *36*(2), 489-514. https://doi.org/10.25115/eea.v36i2.2540