

Disclosure of Fair Value Measurement Techniques of Financial Instruments – Study applied to the Portuguese Banking Sector according to IFRS 13

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ABSTRACT: IASB has defined in IFRS 7 “Financial Instruments: Disclosures” and in IFRS 13 “Fair Value Measurement”, the set of disclosures that a company must make regarding the fair value measurement techniques used. The fair value hierarchy concept, introduced in IFRS 7 in 2009, classifies the data used in the measurement according to three levels, of which two levels introduce some subjectivity in the measurement. IFRS 7 has been amended several times with the clear intention to improve the disclosure requirements about financial instruments. IFRS 13 defines fair value, sets out a single framework for measuring fair value and requires disclosures about fair value measurements. Hence, this research aims to study the disclosure of fair value measurement techniques of the financial instruments, required by IFRS 13, of companies operating in the banking sector in Portugal from 2013 to 2015. Its purpose is to understand whether those financial instruments duly applied the accounting standards that define the required disclosures and analyse the fair value measurement techniques used for financial instruments. The results of the study allow us to conclude that companies operating in the banking sector in Portugal have not generally disclosed information on fair value measurement techniques of the financial instruments required by IFRS 13. It was also concluded that most financial instruments measured at fair value are classified at level 2 of the fair value hierarchy, which limits the degree of certainty about their values.

KEYWORDS: banking industry, fair value hierarchy, IFRS 13 Disclosures, financial instruments.

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I. INTRODUCTION

IFRS 7 has been amended several times over the years with the clear intention to improve the disclosure requirements about financial instruments. The latest two amendments relate to transfers of financial assets (applicable for financial years beginning on or after 1 July 2011) and offsetting financial assets and financial liabilities (applicable for financial years beginning on or after 1 January 2013). Furthermore, some disclosure requirements previously included in IFRS 7 have been transferred to IFRS 13. However, there are some new requirements as well as clarifications on previously existing requirements, included in IFRS 13.

As part of the disclosure requirements for fair value measurements, an entity shall classify fair value measurements using a “fair value hierarchy” that categorises the inputs to valuation techniques used to measure fair value. The fair value hierarchy has three different levels and gives the highest priority to quoted (unadjusted) prices in active markets and the lowest priority to unobservable inputs (IFRS 13 para 72):

- **Level 1:** inputs are quoted prices (unadjusted) in active markets for identical assets and liabilities the entity can access at the measurement date (IFRS 13 paras 76 to 80).
- **Level 2:** inputs are inputs other than quoted prices included within Level 1 that are observable for the asset and liability, either directly or indirectly (IFRS 13 paras 81 to 85).
- **Level 3:** inputs are unobservable inputs for the asset or liability (IFRS 13 paras 86 to 90).

Several authors as Dantas and Moura (2015) and Pozen (2009), criticize the use of data classified in levels 2 and 3 of the hierarchy, since they introduce some subjectivity and may include assumptions of the company itself in determining the fair value.

The fair value hierarchy aims to increase the coherence and comparability of fair value measurements and related disclosures by maximising the use of relevant observable data and minimising the use of non-observable data.

In this context, IFRS 13 defines a mandatory set of quantitative and qualitative fair value disclosures. Qualitative information describes risk management objectives, policies and processes. Quantitative disclosures,

in turn, provide information about the degree to which the company is exposed to risk, based on the information provided by its management bodies.

In this perspective, the aim is to assess the extent to which banks operating in Portugal have complied with the disclosures required under IFRS 13, and what are the trends in the classification of financial instruments.

II. FAIR VALUE MEASUREMENT AND DISCLOSURES

IFRS 13 “Fair Value Measurement”, published in May 2011 and applicable from 1 January 2013 with early adoption permitted, has a framework to be applied to all fair value measurements and disclosures (which are required or permitted by other IFRSs). The scope of IFRS 13 is wider than that of IFRS 7 as it includes non-financial assets and liabilities measured at fair value. The definition of fair value is “the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date”.

The disclosure requirements are intended to provide users of financial statements with information about the valuation techniques and inputs used to develop fair value measurements and how fair value measurements using significant unobservable inputs impacted performance for the period. IFRS 13 requires extensive disclosures about fair value measurements. New items of significance include:

- Qualitative disclosure requirements for recurring and non-recurring fair value measurements categorized within Level 2 and Level 3 of the fair value hierarchy that include a description of the valuation technique(s) and the inputs used in the fair value measurement.
- Quantitative and qualitative disclosures based on the three-level fair value hierarchy are extended to cover non-financial assets when they are measured at fair value.

The new fair value disclosure requirements of IFRS 13, presented in Table 1, are largely qualitative in nature when compared with those that were previously included in IFRS 7.

Table 1 - The new fair value disclosure requirements of IFRS 13

Fair value disclosure requirements of IFRS 13	
IFRS 13 applies when another IFRS requires or permits fair value measurements or disclosures about fair value measurements.	Therefore the new disclosure requirements apply also to situations where an asset or liability is measured in the statement of financial position at cost/amortised cost, but there is a requirement to disclose fair value information.
For fair value measurements categorised within Level 3 of the fair value hierarchy, an entity is required to disclose a description of the valuation processes used by the entity (including, for example, how an entity decides its valuation policies and procedures and analyses changes in fair value measurements from period to period) [IFRS 13 para 93(g)].	To satisfy this new requirement, an entity might disclose information, such as the group within the entity that decides the entity’s valuation policies and procedures, to whom that group reports, the frequency and methods for calibration, back testing and other testing procedures of pricing models, etc. [IFRS 13 para IE65].
For fair value measurements categorised within Level 3 of the fair value hierarchy, quantitative information about the significant unobservable inputs used in the fair value measurement. An entity is not required to create quantitative information to comply with this disclosure requirement if quantitative unobservable inputs are not developed by the entity when measuring fair value (for example, when an entity uses prices from prior transactions or third-party pricing information without adjustment). However, when providing this disclosure, an entity cannot ignore quantitative unobservable inputs that are significant to the fair value measurement and are reasonably available to the entity (IFRS 13 para 93(d)).	Paragraph BC191 of IFRS 13 considers this to be a clarification to the pre-existing requirements. While IFRS 7 required a quantitative sensitivity analysis, there was previously no specific language that stated that quantitative data on unobservable inputs was needed (IFRS 7 para 27B(e)).
Paragraph 93(h)(i) of IFRS 13 requires a narrative description of the sensitivity of the fair value measurement to changes in unobservable inputs if a change in those inputs to a different amount might result in a significantly higher or lower fair value measurement.	
Paragraph 93 (h)(i) of IFRS 13 also requires that if there are interrelationships between those inputs and other unobservable inputs used in the fair value measurement, a description of those interrelationships and of how they might magnify or mitigate the effect of changes in the unobservable inputs on the fair value measurement.	
A requirement to disclose transfers between levels existed in IFRS 7; however, IFRS 13 includes the following additional requirements: an entity should disclose the amounts of any transfers between levels of the fair value hierarchy, the reasons for those transfers and the entity’s policy for determining when transfers between levels are deemed to have occurred. Transfers into each level should be disclosed and discussed separately from transfers out of each level. [IFRS13 paragraphs 93(c), (e), (iv), 95].	The requirement for the disclosure of transfers between levels in IFRS 7 was applied only to ‘significant’ transfers. IFRS 13 removes the ‘significant’ threshold and adds a new requirement to disclose the entities policy for determining when transfers between levels are deemed to have occurred.

Source: PwC (2014)

The level of disclosures required by IFRS 13 depends on whether the fair value measurement is recurring or non-recurring subsequent to initial recognition. According to Deloitte (2013, p. 4), “recurring fair value measurements relate to those where measurement is required at the end of each reporting period-end in comparison to non-recurring measurements which are driven by a particular event or transaction”. It emphasizes that “while many of the disclosure requirements are the same, the recurring disclosures include additional requirements applicable to the continuous nature of the fair value measurement requirement”. Table 2 summarize the fair value disclosure requirements for recurring, non-recurring and disclosure only items.

Table 2 - The fair value disclosure requirements for recurring, non-recurring and disclosure only items.

Disclosure requirement	Recurring measurements	Non-recurring measurements	Areas not measured at fair value but for which another IFRS requires fair value disclosure
FV measurement at end of reporting period	√	√	
Reasons for the FV measurement		√	
Level within FV hierarchy (1,2,3)	√	√	√
Transfers between L1 and L2 with reasons	√		
Description of valuation technique (L2, L3)	√	√	√
Quantified unobservable inputs (L3)	√	√	
Reconciliation of opening and closing balance (L3)	√		
Description of valuation processes used (L3)	√	√	
Description of sensitivity to changes in unobservable inputs (L3)	√		
Quantification of sensitivity to changes in unobservable inputs (L3)	√		

Source: Deloitte (2013, p.4)

III. STUDIES ON FAIR VALUE HIERARCHY

According to Fornaro and Barbera (2007), the fair value hierarchy prioritises the quality and reliability of the information used to define the measurements and to expand the disclosure of specific fair value information per hierarchy level. The new requirements should help users of financial statements to better assess the reliability of fair value information, determine the consistency of their application and improve comparability with other companies. Thus, financial information is considered useful when it improves the ability to make decisions. This information is considered "best" when it has more relevance and reliability. Fornaro and Barbera (2007) assesses the Statement of Financial Accounting Standards (SFAS) 157: Fair Value Measurements (a FASB accounting standard), which introduces the concept of a fair value hierarchy, and concludes that it contributes to a more relevant and useful information as follows:

- Companies have a better orientation in the considerations they make, when making assumptions for level 2 or level 3 fair value calculations when there are no data in the active market for similar assets and liabilities;
- Users of financial statements are aware of the extent of fair value measurements: if they are based on observable or non-observable data;
- The disclosure of the fair value hierarchy contributes to greater transparency and perception of the degree of subjectivity and judgment present in fair value measurement techniques;
- In the standard, guidelines are presented for cases where significant data comes from more than one hierarchy level.

Relevance is the ability of information to make a difference in the decision-making process (Fornaro & Barbera, 2007). Hence, relevance increases when information provided by the fair value hierarchy helps in evaluating the future results of the company, confirms previous expectations and is available in a timely manner. Conversely, information reliability improves when users have fair value measurements that are more reliable and unbiased.

Table 3 shows the degree of relevance for each of the fair value hierarchy levels. Financial information is more relevant to level 1 of that hierarchy.

Table 3 - Degree of relevance by fair value hierarchy level

Degree of Relevance	Level	Information origin	Example
Higher	1	Unadjusted quoted prices in active markets for identical assets and liabilities;	Investment in common shares of a listed company in the National Association of Securities Dealers Automated Quotations (NASDAQ).
Medium	2	Unadjusted quoted prices of assets or liabilities that 1) are similar and traded in active markets; 2) are traded in more liquid markets and other observable inputs.	Investment in debt securities of companies that are not traded in an active market. Fair value is determined based on the equivalent bonds traded on the New York Stock Exchange (NYSE).
Lower	3	Market data are not sufficient. Fair value is determined on the basis of non-observable inputs that reflect the assumptions made by market participants and one or more valuation techniques.	Specialised machinery where there is little market data. Fair value is measured using the present values of projected future cash flows.

Source: Adapted from Fornaro and Barbera (2007).

Conversely, the fair value hierarchy raises some questions regarding the reliability of fair value presented, especially for level 3 data that is used to estimate fair value. In paragraph C87 of SFAS157, FASB recognises that some level 3 data of a hypothetical nature may appear to be of questionable relevance for the users of financial statements. However, in general, FASB believes that the hierarchy improves, for the most part, the reliability of the measurements and relevance in the decision-making process (Fornaro & Barbera, 2007). The advantages of the fair value hierarchy can also be assessed through improvements in the comparability and consistency of fair value information.

Comparability increases when the fair value hierarchy allows different companies to measure and disclose the fair values of their assets and liabilities in a similar way. Consistency, in turn, improves when a company can measure its fair values from one period to another in a similar way.

The fair value hierarchy improves the comparability and consistency of financial information due to the following factors:

- All companies should follow the same guideline to identify, classify and use the best data for their measurement techniques;
- Data for certain assets and liabilities must be obtained and classified in a similar way using the new hierarchical structure;
- Price inconsistencies of some level 1 data are eliminated. For example, in cases where the company holds a significant weight of a particular asset (the prohibition of blockage discounts) and adjustments to the values of restricted securities;
- The newly required disclosures ensure a minimum level of clarity and similarity in having the measurement techniques presented in a structured manner;
- The disclosures of interim reports of fair value measurements provide users with the most current and timely information.

On the other hand, despite the advantages presented for some situations, the fair value hierarchy does not always contribute to improved comparability. As an example, to measure the fair value of intangible assets, it is necessary to use present value techniques that incorporate level 2 and 3 data. In these cases, management bodies must determine a set of data that depend of the degree of subjectivity, such as the main or the most advantageous market for the asset, the underlying assumptions and inputs that market participants would use to value the asset, the measurement techniques appropriate to the circumstances, the significance of each input in the determination of fair value and the classification of the measurement itself within the hierarchy for disclosure. Therefore, for identical assets, a different degree of subjective judgment may result in different fair value measurements and disclosures.

Marra (2016) studied the advantages and disadvantages of fair value measurement based on the studies carried out to date and presents the conclusions shown in Table 4.

Table 4 - Advantages and disadvantages of fair value measurement

Fair value measurement advantages	Fair value measurement disadvantages
Despite the criticisms raised about deficiencies associated with fair value accounting, it is difficult to identify better alternative methods to meet the requirements in accounting standards regarding the relevance, reliability, comparability and comprehensibility of financial information (Véron, 2008; Petroni & Wahlen, 1995; Barth et al., 1995; Eccher, Ramesh & Thiagarajan, 1996; Nelson, 1996).	The implementation of fair value accounting fails and the valuation process is unreliable when the ratio of output values to fair values for shareholders is not sustained (Penman, 2007).
Several authors recognise the relevance of the disclosure of fair values of financial instruments such as securities and derivatives held by financial institutions (Venkatachalam, 1996; Park, Park & Ro, 1999).	The use of fair values and market-based valuations in periods when markets are not liquid, such as during financial crises, is a cause for concern of researchers (Hughes & Tett, 2008; McCreevy, 2008).
Level 3 measurements, based on models, provide investors with useful information (Kolev, 2008).	The use of fair value measurements reduces the quality of earnings information since changes in fair value are unpredictable making it more difficult to identify the recurring part of the gain (Dichev & Tang, 2008).
Fair value measurements provide a forecast of future possible accounting profits (Evans, Hodder & Hopkins, 2014).	Management decisions in the valuation models can be used for private gains (Shalev, Zhang & Zhang, 2013).

Source: Adapted from Marra (2016).

Fair value is often relevant in the decision-making process, but the inputs used to measure fair values cannot always be objectively measured (Landsman, 2007 apud Clor-Proell, Proell, & Warfield, 2014)¹.

Tabara and Rusu (2011) argue that abandoning fair value accounting is not a viable solution. Historical cost measurement provides less information, is less comparable and much less relevant as it leads to a systematic undervaluation of the assets by not considering the effects of rising market prices.

Kothari and Lester (2012) highlight that irresponsible lending and a lack of regulatory oversight have triggered the financial crisis, but the poor implementation of fair value accounting standards was one of the factors that caused and prolonged the last financial crisis.

As a solution to the weaknesses in financial reporting that were observed during the financial crisis, the IASB amended IFRS 7 in 2009 and, in the year 2013, it issued IFRS 13 with the aim of improving fair value measurement disclosures. With the changes in accounting regulations, some studies were carried out in this topic.

According to Chung, Lee and Mitra (2016), most fair value accounting studies are focused on the financial sector (banks, insurance companies and other financial institutions), because fair value assets have a greater weight in this sector. According to the Standard & Poor's Compustat database, the proportion of assets measured at fair value over total assets in US listed companies increased from 18.8% in 2008 to 20.3% in 2013, while in the financial sector it went from 25.8% in 2008 to 29.3% in 2013. Assets measured using level 2 and 3 techniques represent, in the financial sector, 18.6% and 2.9% respectively, while in the non-financial sector, the ratio is 4.8% and 2.9%.

Pozen (2009) reports that in the first quarter of 2009, level 3 assets of the nineteen largest US banks increased 14.3% compared to the first quarter of 2008. The author explains this increase by the fact that when banks can make reasonable assumptions based on their own estimates, they create a more optimistic view of their financial condition.

Kaya (2013) also criticizes the subjective nature of level 2 data and especially level 3, which contradict the very nature of accounting with the involvement of hypothetical estimates. The data used cannot be underestimated because of the importance they have and because they are susceptible to manipulation. Observable data used in levels 1 and 2 of the fair value hierarchy include data sources and market prices that are available and visible outside the company and recognised through independent sources. Observable data are external to the company and more objective than level 3 non-observable data. Level 3 data consists of the data and analysis developed within the company itself to assess the fair value.

Investors argue that the preferred fair value measurement models are mark-to-market and not mark-to-model accounting (Gassen & Schwedler, 2008 apud Kunz, 2015)².

¹ Landsman, W. (2007). Is fair value accounting information relevant and reliable? Evidence from capital market research. *Accounting and Business Research* (Special Issue): 19–30.

²Gassen, J. & Schwedler K. (2008), *SURVEY: The View of European Professional Investors and their Advisors. Attitudes towards Fair Value and Other Measurement*, Humboldt-Universität zu Berlin.

Dantas and Moura (2015) studied the degree of reliability regarding the fair value of financial instruments of Brazilian banks, based on the composition of the fair value hierarchy disclosed by these companies in their financial statements for the period from 2010 to 2012. The empirical results regarding the financial assets showed that, during the period under review, there was an increase in level 1 (67% in 2012) and a proportional reduction in level 2 and 3 measurements. In relation to financial liabilities, the majority is classified in level 2 of the hierarchy "which represents less reliability combined with a reduction of the ratio classified in level 1" (Dantas & Moura, 2015: 187).

Song, Thomas and Yi (2010) studied the financial statements of 431 banks for the year 2008 and analysed how investors assign prices to level 1, 2 and 3 data assets and concluded that the stock market appreciates every dollar for \$0.98 for level 1 assets, \$0.97 for level 2 assets and \$0.68 for level 3 assets. This decline in level 3 asset valuation shows that investors are concerned about the reliability of estimates made by managers for fair values. The results suggest that investors tend to decrease the weight of level 3 fair value measurements in their equity-pricing decisions due to information risk and potential inherent estimation errors. They also concluded that the increase in asset valuations for each level is consistent with strong governance that reduces information asymmetries and mitigates estimation errors, especially for level 3 assets of the fair value hierarchy. In level 3 data defined by the company, higher information asymmetry is expected. The most comprehensive disclosure of level 3 fair value estimation procedures can lessen the concerns of researchers, mitigate the discount rate associated with level 3 estimates and help the capital market to more accurately assess the economic value of the estimates. Further disclosure of level 2 measurement techniques will help to present financial statements with more information. Although, at level 2, the estimation process is more objective than at level 3, it does, however, depend on managers' criteria. For example, in level 2 estimates, companies can use market information, such as the yield curve or empirical correlation, but the fair value depends on the model the company selects.

Goh, Li, Ng and Ow Yong (2015) studied how researchers evaluate the fair value estimates according to SFAS 157 in the period from 2008 to 2011. Researchers continued the analysis by Song et al. (2010) with the aim of studying investors' perceptions on fair value estimates when market conditions change. The results show that level 3 fair value estimates are evaluated with lower values than levels 1 and 2 estimates. However, the differences between levels have been decreasing in the period under analysis. In 2011, the stock market appreciated every dollar for \$1.00 for level 1 assets, \$0.95 for level 2 assets and \$0.88 for level 3 assets, thus suggesting that with more favourable market conditions, the concerns of investors in relation to level 3 estimates decrease.

Song (2015) studied the impact that market volatility has on the value investors assign to fair values, using data from 295 US financial institutions in the period between 2008 and 2013. The author concluded that market volatility impacts fair value prices based on market values, that is, levels 1 and 2, but investor prices for level 3 fair values are not affected by market volatility.

Kunz (2015) studied fair value disclosures of financial instruments in the consolidated financial statements of banks listed on the Warsaw Stock Exchange from 2009 to 2013. With the amendments to IFRS 7, there were no significant changes in the level of information about the valuation techniques and the banks applied the fair value hierarchy in their financial assets and liabilities. This information facilitates the assessment of the impact of fair value estimation risk on the bank's financial position, as represented in the financial statements (Kunz, 2015). The level of qualitative disclosures increased after the implementation of IFRS 13. However, the author concluded that despite the evolution in disclosure, information about measurement methods and assumptions applied to valuation techniques are not sufficient considering the analysed financial statements. In relation to financial assets in the years 2008 and 2009, the greater weight is of level 1, and level 3 data represent a weight of 14% and 8%, respectively. As for financial liabilities, in 2009, 93% were classified at level 2 of the fair value hierarchy. In the literature, no research was found on the impact of IFRS 13 on the level of fair value disclosures in the financial statements (Kunz, 2015).

Therefore, in analysing the results obtained by the studies conducted (Dantas & Moura, 2015; Kunz, 2015; Chung et al., 2016), it shows most financial assets measured at fair value are classified at level 1 of the fair value hierarchy.

Regarding financial liabilities, the studies (Dantas & Moura, 2015; Kunz, 2015) show that most liabilities measured at fair value are classified at level 2 of the hierarchy. The results are consistent with the research of Leggett, Wilkins and Clark (2015) who studied liabilities measured according to the fair value hierarchy of all US companies in the Compustat database. The authors concluded that in the periods between 2008 and 2012, level 2 and 3 data are the most used in the measurement of financial liabilities and registered increases in the analysed period.

Table 5 presents the main studies in the field of fair value measurement techniques.

Table 5 - Studies of fair value measurement techniques

Scope of the study	Study	Authors	Main findings
Fair Value Hierarchy Measurements	Fair value hierarchy of the financial instruments of Brazilian banks.	Dantas and Moura (2015)	In the period from 2010 to 2012, approximately 67% of financial assets classified as level 1 and more than 50% of financial liabilities are classified at level 2.
	Fair Value Hierarchy of the financial liabilities of US companies.	Leggett et al. (2015)	Between 2008 and 2012, level 2 and 3 data are the most used in the measurement of financial liabilities and have a positive evolution in the analysed period.
	Fair Value Hierarchy of the financial assets of US companies.	Chung et al. (2016)	Assets measured using level 2 and 3 techniques represent, in the financial sector, 18.6% and 2.9% respectively.
Fair Value Measurements: level 2 and 3	Theoretical approach to the subjective aspects of level 2 and 3 fair value measurements.	Pozen (2009) Kaya (2013)	Level 3 data are subjective.
Risk perception of investors according to the fair value hierarchy	The prices that investors assign to each of the fair value hierarchy levels over the years and the impact of market volatility.	Song et al. (2010)	Investors value prices lower than level 3 assets.
		Goh et al. (2015)	The differences in investor prices have been declining among hierarchy levels.
		Song (2015)	Market volatility has an impact on level 1 and 2 fair value prices.
Disclosures of measurement techniques	Disclosures of measurement techniques in accordance with IFRS 7 and IFRS 13.	Kunz (2015)	Most of the financial assets are classified at level 1 of the hierarchy and 14% in level 3 in 2008. In 2009, 8% of the assets is classified in level 3. For financial liabilities, the weight is 91% and 93% in 2008 and 2009 respectively.

IASB had the initiative to revisit and rethink some of the disclosure requirements. In their comment letter, KPMG (2017, p. 1) believes that “the application of IFRS 13 requires significant use of judgment, especially where there is limited market data and valuation experts have different views as to how to address emerging issues. Accordingly, different applications may arise in practice”. However, they believe “that the disclosures required for Level 3 fair value measurements provide useful information to the users of financial statements. However, we recognise that if disclosure requirements require excessive volume or detail, this creates a risk of useful information being obscured and the burdens on preparers being unduly onerous” (KPMG, 2017, p. 2).

Therefore, if the IASB decides to enhance the required disclosures (for example, disclosures related to the valuation approaches and inputs used in Level 3 fair value measurements), KPMG (2017) highlight that they hear from preparers of financial statements that they find the current disclosure requirements excessive and in some cases unduly onerous, especially for preparers in the financial sector. So, they suggest not increasing the volume of disclosures but instead focusing on improving the usefulness of the current disclosures.

IV. EMPIRICAL STUDY

Objectives

The objectives of this study were, on the one hand (i) to study the application of accounting standards by banks operating in Portugal, in terms of quantitative and qualitative disclosures of fair value measurement techniques of financial instruments established in IFRS 13 and, (ii) to analyse the composition of the levels of the fair value hierarchy for financial assets and liabilities and to evaluate their evolution in the period under analysis.

Methodology

In order to carry out the study, all the financial statements of banks operating in Portugal from 2013 to 2015 were analysed. Taking as a starting point the banks operating in Portugal registered in the Portuguese Banking Association (Associação Portuguesa dos Bancos - APB), whose members represent more than 90% of

the assets of the Portuguese banking system, the sample was defined according to the existence of the individual financial statements for the period in question.

Based on the disclosures required by IFRS 13, the items that should be used in assessing the application of accounting standards were identified. Table 6 shows a correspondence between the items that are part of the disclosure index and the disclosures required by IFRS 13 regarding techniques for measuring the fair value of financial instruments.

Table 6 - Disclosures required by IFRS 13 for each item in the disclosure index

Disclosure index items	Disclosures required by IFRS 13
Disclosure of the level of the fair value hierarchy and disclosure of valuation techniques for financial assets and liabilities not measured at fair value but for which fair value is disclosed.	Disclosure requirements apply also to situations where an asset or liability is measured in the statement of financial position at cost/amortised cost, but there is a requirement to disclose fair value information.
Qualitative disclosures relating to valuation techniques and to the fair value hierarchy, introduced by IFRS 13.	For fair value measurements categorised within Level 3 of the fair value hierarchy, quantitative information about the significant unobservable inputs used in the fair value measurement; A narrative description of the sensitivity of the fair value measurement to changes in unobservable inputs if a change in those inputs to a different amount might result in a significantly higher or lower fair value measurement; If there are interrelationships between those inputs and other unobservable inputs used in the fair value measurement, a description of those interrelationships and of how they might magnify or mitigate the effect of changes in the unobservable inputs on the fair value measurement; For fair value measurements categorised within Level 3 of the fair value hierarchy, an entity is required to disclose a description of the valuation processes used by the entity (including, for example, how an entity decides its valuation policies and procedures and analyses changes in fair value measurements from period to period).
Disclosure of the amounts of any transfers between levels of the fair value hierarchy, the reasons for those transfers and the entity's policy for determining when transfers between levels are deemed to have occurred.	An entity is required to disclose the transfers between levels and to disclose the entities policy for determining when transfers between levels are deemed to have occurred. Transfers into each level should be disclosed and discussed separately from transfers out of each level.

Source: Adapted from Kunz (2015).

The disclosure of the abovementioned items became mandatory in 2013. The valuation scale that was used is 0 to 2, where 0 corresponds to lack of disclosure, 1 insufficient information and 2 information disclosed in accordance with accounting regulations.

In order to determine if all the items are adequately disclosed by banking institutions in Portugal, a descriptive analysis of the data was carried out using Friedman's non-parametric test, since there is no evidence about the normality of the distributions observed for each one of the disclosure items, with the purpose of concluding if any of the five disclosures behave significantly different from the others.

Sample

The banks registered in the APB and the existence of individual financial statements available for the periods under analysis were considered in the sample definition.

The sample was composed in 2013 by seventeen banks, in a total of twenty-two APB associated banks representing (77% of the banks operating in Portugal). In 2014, of the total of twenty-one associated banks, we considered sixteen banks in our sample, representing (76% of the banks). In 2015, seventeen banks were studied in a total of twenty-three banks, accounting for 74% of the researched banks. Hence, it is considered that the sample studied in the several years is representative, allowing to draw conclusions applicable to the banks under study.

Table 7 presents, for each of the analysed periods, the banks operating in Portugal for which it was possible to obtain the respective individual financial statements and which make up the sample under study.

Table 7 – Sample Composition

2013	2014	2015
Banco BIC Português	Banco BIC Português	Banco BIC Português
Banco Bilbao Vizcaya Argentaria (Portugal)	Banco Bilbao Vizcaya Argentaria (Portugal)	Banco Bilbao Vizcaya Argentaria (Portugal)
Banco BPI	Banco BPI	Banco BPI

Banco Carregosa	Banco Carregosa	Banco Carregosa
Banco Comercial Português	Banco Comercial Português	Banco Comercial Português
Banco Credibom, SA	Banco Credibom, SA	Banco Credibom, SA
Banco Finantia	Banco Finantia	Banco Finantia
BANIF	BANIF	
Banco Invest	Banco Invest	Banco Invest
Banco de Investimento Global	Banco de Investimento Global	Banco de Investimento Global
Banco Popular Portugal	Banco Popular Portugal	Banco Popular Portugal
Banco Santander Totta S.A	Banco Santander Totta S.A	Banco Santander Totta S.A
Caixa Central de Crédito Agrícola Mútuo	Caixa Central de Crédito Agrícola Mútuo	Caixa Central de Crédito Agrícola Mútuo
Caixa Económica Montepio Geral	Caixa Económica Montepio Geral	Caixa Económica Montepio Geral
Caixa Geral de Depósitos	Caixa Geral de Depósitos	Caixa Geral de Depósitos
Banco Espírito Santo de Investimento	Banco Espírito Santo de Investimento	Haitong Bank
Banco Espírito Santo		Novo Banco
		Banco CTT SA

IV. RESULTS

(i) Regarding the application of the accounting standards by banks operating in Portugal, concerning the quantitative and qualitative disclosures of fair value measurement techniques of the financial instruments established in IFRS 13.

Table 8 shows the results obtained for the disclosures required by IFRS 13 resulting from the analysis of the notes to the individual financial statements of the sampled banks for the period under review.

Table 8 - Average valuation of the disclosures from banks operating in Portugal

Analysed items	2013	2014	2015
Disclosure of the level of the fair value hierarchy and disclosure of valuation techniques for financial assets and liabilities not measured at fair value but for which fair value is disclosed.	0.353	0.500	0.556
Qualitative disclosures relating to valuation techniques and to the fair value hierarchy, introduced by IFRS 13.	0.294	0.438	0.444
Disclosure of the amounts of any transfers between levels of the fair value hierarchy, the reasons for those transfers and the entity's policy for determining when transfers between levels are deemed to have occurred.	0.118	0.250	0.222

The mean ranks resulting from the Friedman test are reproduced in Table 9, below:

Table 9 – Mean Ranks of Friedman Test

Disclosure	2013	2014	2015
Dis 1	2,06	2,06	2,11
Dis 2	2,06	2,06	2,06
Dis 3	1,88	1,88	1,83

The statistics resulting from the test performed for each of the years are reproduced in table 10, as follows:

Table 10 – Friedman Test Statistics

	2013	2014	2015
N	17	16	18
Chi Square	2.667	1.6	4.308
Degress of freedom	2	2	2
Asymp. Sig.	0.264	0.449	0.116

At a significance level of 5%, the results obtained for the years under analysis lead to an acceptance of the null hypothesis, that is, all the disclosures under analysis under IFRS 13 have a similar behavior for the three years analyzed. Also it is observable that the levels of disclosure are very low for all the banks analyzed in this

paper. It may be found that disclosure 3 has a slightly lower disclosure level, but this is not statistically relevant according to the adopted tests.

(ii) At the composition level of the fair value hierarchy levels for financial assets and liabilities: The results described in table 11 and 12 below present the percentage of financial institutions that used each of the levels for each class of assets and liabilities reported at the level of their financial statements.

Table 11 - Fair value hierarchy of financial assets

Class of financial assets	2013	2014	2015
Financial assets held for trading			
Level 1	35.63%	33.35%	35.94%
Level 2	54.19%	48.79%	51.44%
Level 3	10.18%	17.86%	12.62%
Available-for-sale financial assets			
Level 1	35.47%	60.12%	55.23%
Level 2	45.24%	20.04%	22.67%
Level 3	19.29%	19.84%	22.10%
Hedge derivatives			
Level 1	0.00%	0.00%	0.00%
Level 2	78.65%	74.38%	77.25%
Level 3	21.34%	25.62%	22.75%
Held-to-maturity financial assets			
Level 1	58.92%	61.77%	28.34%
Level 2	21.97%	38.23%	71.66%
Level 3	19.12%	0.00%	0.00%
Derivative Financial Instruments			
Level 1	0.00%	0.00%	0.00%
Level 2	100.00%	100.00%	100.00%
Level 3	0.00%	0.00%	0.00%
Financial assets at fair value through profit or loss			
Level 1	74.04%	33.39%	67.79%
Level 2	1.88%	33.48%	0.00%
Level 3	24.07%	33.13%	32.31%
Customer credit			
Level 1	0.00%	0.00%	0.00%
Level 2	50.00%	50.00%	60.07%
Level 3	50.00%	50.00%	39.93%
Risk management derivatives			
Level 1	0.00%	0.00%	0.00%
Level 2	100.00%	100.00%	100.00%
Level 3	0.00%	0.00%	0.00%
Trading Derivatives			
Level 1	0.00%	0.02%	0.02%
Level 2	20.63%	10.52%	10.97%
Level 3	79.37%	89.46%	89.01%

Table 12 - Fair value hierarchy of financial liabilities

Class of financial liabilities	2013	2014	2015
Financial liabilities held for trading			
Level 1	1.49%	11.08%	12.59%
Level 2	78.48%	68.82%	96.01%
Level 3	20.03%	20.11%	11.40%
Hedge derivatives			
Level 1	0.00%	0.01%	0.00%
Level 2	84.89%	85.02%	85.53%
Level 3	15.11%	14.97%	14.47%
Financial liabilities designated at fair value			
Level 1	0.00%	0.00%	na
Level 2	100.00%	100.00%	na
Level 3	0.00%	0.00%	na
Trading Derivatives			
Level 1	0.01%	0.02%	0.01%
Level 2	88.98%	93.03%	93.85%
Level 3	11.02%	6.95%	6.14%
Central bank resources			
Level 1	100.00%	100.00%	100.00%
Level 2	0.00%	0.00%	0.00%
Level 3	0.00%	0.00%	0.00%
Customer resources and other loans			
Level 1	0.00%	0.00%	0.00%
Level 2	66.67%	50.35%	66.82%
Level 3	33.33%	49.65%	33.18%
Liabilities represented by securities			
Level 1	0.00%	0.00%	0.00%
Level 2	75.00%	70.05%	68.26%
Level 3	25.00%	29.95%	31.74%
Risk management derivatives			
Level 1	0.00%	0.00%	0.00%
Level 2	100.00%	100.00%	100.00%
Level 3	0.00%	0.00%	0.00%
Subordinated liabilities			
Level 1	0.00%	0.00%	0.00%
Level 2	100.00%	100.00%	66.67%
Level 3	0.00%	0.00%	33.33%
Resources from other credit institutions			
Level 1	47.37%	94.55%	0.00%
Level 2	52.63%	5.45%	51.75%
Level 3	0.00%	0.00%	48.25%

Table 13 aims to compile the detailed information contained in Table 11 and 12 above, in order to better understand the intensity of data utilization at each level:

Table 13 - Fair value hierarchy of financial assets and liabilities

	2013	2014	2015
Financial assets			
Level 1 data	20.59%	20.96%	20.81%
Level 2 data	57.17%	52.83%	54.90%
Level 3 data	22.24%	26.21%	24.29%
Financial liabilities			
Level 1 data	14.89%	20.57%	12.51%
Level 2 data	74.66%	67.27%	67.66%
Level 3 data	10.45%	12.16%	19.83%

Most banks operating in Portugal (82%) have disclosed in the notes to the individual financial statements, the required information regarding the description of the classification principles of financial assets and liabilities, according to fair value hierarchy levels and the description of the valuation techniques used to determine fair value.

Most banks, 64%, that use level 3 data to measure the fair value did not disclose the reconciliation of changes in the fair value of financial instruments.

Most financial assets measured at fair value are determined based on level 2 data, and the fair value hierarchy has a regular behaviour in the three analysed periods.

In relation to financial liabilities, 70% of the banks disclosed quantitative information.

For financial liabilities, the behaviour is similar to that of financial assets, that is, a preponderant weight of level 2 data is noted. However, the weight of level 3 data increased significantly during the analysed period.

V. CONCLUSIONS

The present research studied the disclosure of fair value measurement techniques of financial instruments in the Portuguese banking sector in the period from 2013 to 2015, under IFRS 13.

In this study, disclosures made regarding the measurement techniques used in determining the fair value were analysed.

Based on the analysis, we conclude that, despite the positive evolution, banks operating in Portugal do not disclose the information regarding techniques for measuring the fair value of the financial instruments required by IFRS 13, being clear that no statistically significant differences were observed between the three disclosures under analysis.

As to the level obtained from the measurement techniques, the financial assets and liabilities of banks operating in Portugal are mostly measured on the basis of level 2 non-observable data of the fair value hierarchy, which limits the degree of certainty about their values.

This reality is similar with US companies and Brazilien and Poland's banks in what concerns to financial liabilities. However, their financial assets are mostly measured on the basis of level 1 data of the fair value hierarchy. Thus, in Portugal there is room for improvement of the measurement techniques used by these companies.

Future research on this subject will be able to deepen the methodologies used by banks within each data level. Similarly, the scope of the study may be extended to companies operating in the financial sector, meaning those other than banks.

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