Disclosure of Intangible Assets: an Empirical Study of Financial Corporations in the Iberian Peninsula

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ABSTRACT

The purpose of this paper is to analyse, firstly, to what extent intangible assets in the consolidated accounts of seven Portuguese banks and seven Spanish banks between 2006 and 2009 are disclosed and, secondly, to analyse what the most influential factors are in the above mentioned disclosure.

In order to do this, before reviewing the existing literature and on the basis of other studies on this topic, a disclosure index has been created based on the requirements related to the intangible assets as stated in IAS 38. Then, two statistical analyses have been made: a univariate one for each of the explanatory variables and a multivariate one, in which all variables have been analysed. Both analyses led to the conclusion that the disclosure index of intangible assets is 0.96, where the bank dimension and the internationalization degree are the variables that are considered explanatory of the variation of the disclosure index in the regression analysis.

Keywords: Intangible assets, disclosure index, financial institutions.

1. INTRODUCTION

Market globalisation, the evolution of information and communication technologies and the changes in regulations have resulted in dramatic changes in the banking sector in the last decade with structural and technological advances that make top management rethink their business strategies (Cabrita e Bontis, 2008).

This paper deals with the analysis of the consolidated financial statements of Spanish and Portuguese banks to verify the compliance with the requirements of disclosure demanded by accounting rules on intangible assets held by these institutions. In order to do this, a disclosure index was created based on disclosure requirements as stated in IAS 38 – Intangible assets and by means of the content analysis technique, information was collected and the financial statements of seven Portuguese banks and seven Spanish banks in the period from 2006 to 2009 (56 tests) were analysed.

For the preparation of this paper, we have defined two main objectives. The first aim is to ascertain the extent of disclosure of intangible assets by banks in the Iberian Peninsula. For the second, we try to determine the most influential factors in this disclosure.

This paper starts by identifying the main theories associated with this problem, followed by the definition of the dependent and independent variables selected. In the analysis of results, we present the descriptive statistics of the variables under study, followed by a univariate analysis for each of the explanatory variables. This is complemented by a multivariate analysis, where all variables are analysed together with the intent to conclude the existence or not of a linear association between the disclosure index created and the explanatory variables considered in our study.

We end by presenting our main conclusions.

2. REVIEW OF THE THEORIES APPLIED IN THE DISCLOSURE OF ACCOUNTING

The disclosure of accounting information is based on social and politic theories. The Positive Accounting Theory comes from several empirical studies of the economic reality and accounting regulations. Business costs arise from relations with the market, from internal business connections (contractual costs) and also those associated with political decisions (political costs). These costs are specifically transaction costs, agency costs, information costs, renegotiation costs, and bankruptcy costs (Watts and Zimmerman, 1990).

The legitimacy theory, which emerged from the political process, argues that companies operate within certain rules and standards in relation to society, with an implicit social contract. The regulatory bodies have the legitimacy to act, conditioning the business behaviours to regulations issued by the various economic agents. The failure to comply with these regulations makes those companies incur in political costs (or adjustment costs) and costs of asymmetry of information. Thus the company may have the incentive to disclose information to minimize these costs. One of the determinants analysed in our study related to the legitimacy theory is visibility, which is a measure of the organisation size, profitability and internationalisation.

The stakeholders' theory argues that there is an organisational responsibility in the disclosure of corporate information for stakeholders concerning the most important activities, being the main source of disclosure through financial statements. In this respect, Rodrigues (2006) considers that, due to the complexity of the economic reality and to the increasing ownership of intangible assets by groups, these statements continually detour from the purpose of providing the external users with the picture of the business reality. The content analysis of corporate reports by several stakeholders justifies the importance of this theory in our study (Guthrie et al., 2006).

In the context of economic theories, we wish to highlight the agency theory. According to Quevedo (2003:12) 'the agency theory proposes conceptual tools necessary to analyse each of the relationships that take place within the corporate contractual patchwork.' According to the author, the agency theory is the essence of banking in general, because the information is essential in order to choose between the different alternatives offered by market. This theory is based on the relationship between the management bodies and the capital holders. In this context, we believe that there could be larger problems of agency when the capital of an organisation is held mainly by private shareholders, because they will have greater incentives to not disclose the information than in those organisations whose capital belongs essentially to public institutions.

In the light of these theoretical evidences, we try to verify to what extent intangible assets are disclosed by banks in the Iberian Peninsula and to determine the most influential factors in this disclosure.

For this purpose, we have decided to carry out the following empirical study.

3. VARIABLES USED

As for the variables used, firstly we will describe the dependent variable in this paper and then we will look at the independent variables considered appropriate for the development of this study.

3.1 DEPENDENT VARIABLE

In this paper we have tried to produce a disclosure index of intangible assets in the financial statements of some banking institutions in the Iberian Peninsula, taking as a reference the disclosure requirements stated in IAS 38. The dichotomic procedure was used, where the value 1 was given if the bank discloses the issue in question and value 0, if it does not. The score given to each item that composes the disclosure index is additive.

We share Cooke's idea (1989) in which those companies that disclose the most important items also disclose the least important ones. According to this author, the disclosure index of those companies that do not disclose non-relevant items should not be penalised, arguing that if their report does not mention the disclosure of an item, it is concluded that this item was not relevant to the company in that period. In the same way, if an item considered relevant was not disclosed (for example reporting owning a specific item but not disclosing its amount), it is clearly considered that there was no disclosure.

In the same way, in our study we consider that the items are not-relevant or not applicable if the bank refers clearly that it does not own that element or, by the information collected, it is presumed that the element does not exist. In case the possession (or application) of a certain element is reported in the financial statements and the disclosure requirements about this element are not satisfied, the item is considered not to be disclosed or applicable. As an example, we mentioned the fact that a bank does not have intangible assets developed internally, which correspond to 16 items (out of 45) in our disclosure index. Since it is considered that those intangible assets were not disclosed the disclosure index of that bank would be penalised (since those items are not applied to that bank). If those items are excluded from the calculation of the index, because they are not applicable in this particular situation, the disclosure index is higher and the disclosure only the bank intangible assets disclosed are considered.

Thus, the disclosure index is calculated for the application of the above mentioned by calculating the score of those elements disclosed or of those elements applicable (or relevant, according to Cook, 1989), and the disclosure indexes obtained by these scores are as follows:

- Score of intangible assets disclosed:

$$\mathbf{D} = \sum_{i=1}^{m} \mathbf{ei}$$

Where:

D	Score of disclosure of intangible assets according to IAS 38
ei	Disclosed element concerning the intangible asset *i* being analysed Dichotomic variable that takes the value 0, if element *i* is not disclosed, and the value 1, if the element *i* is disclosed
m	Maximum number of elements disclosed (m ≤ n)

- Score of intangible assets applicable (or relevant)

$$\mathbf{A} = \sum_{i=1}^{n} \mathbf{ei}$$

Where:

A	Disclosure score of applicable (or relevant) intangible assets
ei	Disclosed element concerning the intangible asset *i* in analysis Dichotomic variable that takes the value 0, if element *i* is not disclosed, and the value 1, if the element *i* is disclosed
m	Maximum number of applicable (or relevant) elements n ≤ 45

- Disclosure index according to IAS 38 (DIV 38)

$$\mathbf{DIV38 = D \ / \ A}$$

This index indicates only the presence/disclosure of information on a specific item in the Annual Report and Accounts, but does not analyse the disclosure extension/quality of a specific item. The relationship between the dependent variable (DIV 38) and the independent variables (SIZE, PROF, PIBA, CLA, INT, PRIV) has been analysed.

Table 1 – Independent variables in this study

Independent variables	Description	Measurement
SIZE	Size	Bank size measured by that year´s total assets logarithm
PROF	Profitability	Measured by return on equity
PIBA	Percentage of intangibles in the balance sheet	Measured by percentage of intangibles over total assets
CLA	Intagible classes	Number of intangible classes recognised according to IAS 38: §119
INT	Internationalization level	Number of countries included in the consolidated companies
PRIV	Property control	1 if private, 0 if public

Source: personal compilation

As previously mentioned, we must emphasize that this index was based on the disclosure requirements that are stated as compulsory in IAS 38 from the IASB

3.2 INDEPENDENT VARIABLES AND HYPOTHESES TESTS

We will describe the independent variables used in this study, together with the formulation of the hypotheses associated with them.

SIZE (SIZE)

The size of the reported institution is the most used variable in the studies about disclosure determinants and in most the studies, it explains the variability of the disclosures. Disclosure costs and benefits vary according to the influence of a series of key factors (Gallery et. al., 2008):

Size as a measure of political and public visibility

Size is the proxy variable in political attention (Watts and Zimmerman, 1990). Larger societies are subject to greater regulation, therefore suffering greater political pressure, and thus, increasing disclosure in order to reduce political costs (Gómez n/a; White et. al., 2007).

Large companies attract greater interest or public visibility (Gerpott et. al., 2008; Branco and Rodrigues, 2008) for users of financial statements, mainly investors and government entities (Oliveira et. al., 2006; Aljifri and Hussainey, 2007). For this reason, larger companies will also have a greater concern with the implicit and explicit costs resulting from disputes that may arise from lower-quality information disclosure (Gallery et. al., 2008). Size also influences the external perception of the societies reputation, since stakeholders' attention is attracted by larger companies, their disclosed information will be, in principle, more reliable and will have a more adequate recovery (Gómez, n/a; Quevedo, 2003; Branco and Rodrigues, 2008).

Size associated with the production of information

Large companies usually incur in lower costs of production of information than small ones, because they use more sophisticated information systems, which allows to disclose more

information and more transparent information (Gandía, 2003; Oliveira et. al., 2006; Aljifri and Hussainey, 2007; Gerpott et. al., 2008; Gallery et. al., 2008; Liu and Sun, 2010).

Size associated with competitive advantages

As a rule, larger companies will have greater competitive advantages. The disclosure of their intangible assets can be a source of obtaining additional advantages because these elements may differentiate a company from its competitors (Branco and Rodrigues, 2008).

This variable has been measured in different ways in studies on intangible assets disclosure:

- Market capitalisation (Gandía, 2003; García-Meca and Martínez, 2005; Guthrie et. al., 2006; White et. al., 2007);
- Value of sales (Li et. al., 2008)
- Number of employees (Boesso e Kumar, 2007; Serenko et. al., 2007)
- Total assets (Gómez, n/a)
- Logarithm of the asset value (Cormier et. al., 2009: Brüggen et. al., 2009)[1].
- Market share (Deephouse, 1997)

Some authors combine measures to define size:

- Total assets, turnover, number of employees and market value (Oliveira et. al., 2006);
- Turnover and number of employees (Gerpott et. al., 2008)

In most of the above mentioned studies, the hypothesis of a statistically significant, positive association between the company size and the information disclosure of intangibles assets is confirmed. Thus we formulate the first hypothesis in this study:

H1 – There is a positive relationship between the bank size and the disclosure of intangible assets in its financial statements.

PROFITABILITY (PROF)

The argument that the most profitable companies comparatively disclose more information, leads to the economic performance usually be one of the factors most commonly used in the studies on disclosure determinants.

Profitability is usually measured in the studies on the disclosure of intangible assets by the following aspects:

- Return on assets (ROA) (Oliveira et. al., 2006; Li et. al., 2008; Cormier et. al., 2009);
- Return on equity (ROE) (García-Meca and Martínez, 2005)

Some authors have analysed profitability by combining several metrics in order to analyse the association of the variable in the disclosure of the intangible assets: Gerpott et. al. (2008) based themselves on four criteria (Price to Earnings ratio (P/E); Market-to-book ratio; Tobin's

[1] The asset value was also applied in our study as a measure for the organisation size, although subject to a prior logarithmic transformation in order to normalise the distribution of the variables.

q, EBITDA). There is no consensus in the results of the association of this variable with the disclosure of intangible assets. Although some studies have confirmed a positive association (García-Meca and Martínez, 2005; Li et. al., 2008), this was not proved to be so in others (Oliveira et. al., 2006). Thus, we form our second hypothesis by associating the bank profitability with its disclosure index. Due to the diversity of results in the studies on this topic, we will not start from the premise of orientation of the variation.

H2 – The disclosure index of the intangible assets varies with the bank profitability, although the direction of this variation cannot be predicted

PERCENTAGE OF INTANGIBLE ASSETS (PIBA)

With this variable we try to study if a greater percentage in investments in intangible assets reported in the financial statements over total assets of an institution encourages greater disclosure. Boesso and Kumar (2007) defend the strengthening of partnerships with various stakeholder groups through greater transparency about the performance and the presence of intangible assets. The association of the investment intensity in intangible assets with profitability is described by Gandía's study (2003), in which this investment was used as a proxy for the profitability and where a significant association was confirmed. Ollier et. al. (2010) also used the intensity ratio as an explanatory variable of the disclosure of intangible assets. This metric was the result of the percentage of intangible assets over non-current assets. In our study we try to analyse whether the investment intensity in intangible assets is a variable that determines information disclosure:

H3 – Those banks with the largest value of intangible assets accounted in their balance sheets show a higher disclosure index.

CLASSES OF INTANGIBLE ASSETS (CLA)

IAS 38 paragraph 118 establishes that companies must disclose their intangible assets grouped by classes, defining a class of intangible assets as a group of assets of a similar nature and use in the operations of an institution (paragraph 119). We try to complement the investment intensity level in intangible assets with the level of diversity. Therefore, in order to study the disclosure of intangible assets in the banks analysed, we believe that a greater diversity of intangible assets can lead to a greater disclosure since a greater number of classes of intangible assets could promote and provide wider and more varied information about them. On the basis of this evidence our fourth hypothesis is formulated as follows:

H4 – The larger the number of intangible assets a bank presents, the greater is the disclosure of intangible assets.

INTERNATIONALISATION LEVEL (INT)

As Quevedo (2003), we believe that the extent of the geographical area where the institution develops its activity is linked to its competitive position and that internationalisation causes a greater interest and attention on the actions of these institutions since they are observed/controlled by a greater number of interested parties. Oliveira et. al. (2006) and Branco and Rodrigues (2008) also confirmed that there was a significant association (although

for voluntary disclosure) with the value of exports as a proxy for their internationalisation level.

In our study, the variable internationalisation level was measured in terms of the number of countries where companies included in the consolidated accounting requirements for each bank analysed are located. Thus, taking into account the studies carried out, the largest disclosure index of intangible assets is expected in those banks that are more internationalised.

H5- The disclosure of intangible assets is greater in banks with a higher internationalisation level.

NATURE OF THE CONTROL: PRIVATE (PRIV) VS. PUBLIC

We intend to analyse whether the type of control (private vs. public) affects the degree of disclosure of extent of intangible assets. The paper by Liu and Sun (2010) about the quality of disclosure according to the nature of the control holders concluded that it is greater in institutions controlled by public bodies than by private institutions. We have formulated the following hypothesis based on this observation.

H6 – There is a negative relationship between the private property control and the disclosure of intangible assets.

Several authors have analysed the disclosure on the basis of geographical location, especially when it is very diverse, not only in terms of geography, but also in cultural, social and regulatory terms[2].

The aim of our study is to analyse the disclosure of intangible assets in the consolidated accounts of Spanish and Portuguese banks. Besides not finding no substantial differences in the above-mentioned factors, many of the banks examined are installed in both countries, and some of them are even the largest institutions in the market (e.g. the impact of Spanish banks such as Santander, Popular and BBVA on the Portuguese market). Therefore although we do not consider the geographical area as a determining factor for the disclosure of intangible assets, we will analyse these variables separately for Portugal and Spain in this paper.

4. STATISTICAL MODELS AND ANALYSIS OF RESULTS

This study analyses a sample of Portuguese and Spanish banks that present consolidated accounts according to International Accounting Standards in the following four years: 2006-2009. This sample is composed of seven banks in each country (which represents about 64% of the banks in Spain and about 54% in Portugal) the selected banks represent those having the Report and the consolidated accounts of the period examined in their web site. Some banks were rejected so that we could study the same number of banks in each country. As a result, a total of seven banks in each country were considered.

4.1 DESCRIPTIVE ANALYSIS OF THE DATA

[2] See Gómez (a/d); Gandía (2003); Gerpott et. al. (2008); Brännström and Giuliani (2009); Crawford and Williams (2010); Saleh et. al. (2010)

Below we will describe the descriptive statistics of the quantitative variables that distinguish the sample in question and, on the basis of the Probability theory, we will try to analyse, interpret and carry out the possible statistic inference on the population (Santos, 2007).

Table 2 – Descriptive statistics of the quantitative variables

	N	Mean	Std. Deviation	Minimum	Maximum
IAS 38 disclosure index (DIV38)	56	0.9601	0.0591	0.7895	1
Bank size	56	7.7547	0.5963	6.492	9.046
Profitability	56	12.0705	5.2726	3.05	22.96
Percentage of intangibles in the balance sheet	56	0.497	0.5888	0.01	2.31
Classes of intangible assets that the bank showed	56	3.18	1.416	1	7
Internationalisation level	56	8.41	8.197	0	28

As for the dummy variable included in this study, we found that the average private property control is 85.71% and that the public property control is 14.29%, which represents within the banks analysed and the data collected from them for both Portuguese banks and Spanish banks, only one public bank versus six private banks.

Table 3 – Descriptive statistics of the quantitative variables by countries

	N	Mean	Std. Deviation	Minimum	Maximum
IAS 38 disclosure index – Portugal (DIV38P)	28	0.9388	0.0725	0.7895	1
IAS 38 disclosure index – Spain (DIV38E)	28	0.9814	0.0303	0.9	1
Bank size - Portugal	28	7.4811	0.494	6.492	8.083
Bank size - Spain	28	8.0282	0.5702	7.353	9.046
Profitability - Portugal	28	9.61	4.8671	3.05	18.64
Profitability - Spain	28	14.5311	4.5149	6.37	22.96
Percentage of intangibles in the balance sheet - Portugal	28	0.2536	0.2529	0.01	0.93
Percentage of intangibles in the balance sheet - Spain	28	0.7404	0.7207	0.01	2.31
Classes of intangible assets shown by the bank - Portugal	28	3.5	1.072	1	5
Classes of intangible assets shown by the bank - Spain	28	2.86	1.649	1	7
Internationalisation level - Portugal	28	7.14	4.453	1	14
Internationalisation level - Spain	28	9.68	10.663	0	28

The following conclusions can be obtained from the previous tables:

- The average compliance with the disclosure of the items required by IAS 38 (DIV38) in the consolidated accounts of the Spanish and Portuguese banks in the period 2006 to 2009 was 0.9601. The index is slightly different comparing Portugal and Spain, since Spanish banks disclosed more information about the intangible assets (Table 3).
- The variable Bank size has an average value in the sample of 7.7547 (Table 2). There is superiority in the size of Spanish banks as opposed to Portuguese banks.
- The profitability index reaches an average of 12.0705 (Table 2). With regard to the analysis by countries, it is clear that the Spanish banks have on average a higher profitability index than the Portuguese banks.
- The variable that measures the percentage of the intangible assets in the balance sheet structure represents the fraction of the net value of intangible assets over total assets. In Table 2 we can see that the average value is 0.497. Although it is true that the percentage of intangible assets in Spanish banks is higher than that in Portuguese banks, the figures presented reflect the low investment in intangible assets presenting conditions able to be accounted for in the Balance Sheet in accordance with the requirements set out in IAS 38, in both countries (Table 3).
- The number of classes of intangible assets considered by the bank is meant to represent the diversity of intangible assets, i.e. the grouping of assets of similar nature and use (IAS 38: §119). The average number of disclosed classes in both countries is 3.18 (Table 2), although the Portuguese banks show the highest average of number of classes used (Table 3).
- The internationalisation extent is 8.41. Meaning that, on average, each bank has companies included in the consolidation in 8 different countries (Table 2). Comparing Portugal and Spain, the Spanish banks have a higher internationalisation degree (Table 3).

ANALYSIS OF THE RESULTS OF THE STATISTICAL TESTS

In order to verify whether the variable (private/public) property control is statistically significant with the index DIV38, we proceeded with the Mann-Whitney test, which allowed us to verify that the average disclosure in those banks whose control is public is 41.00, and it was only found in 8 cases (2 banks in 4 years). The average disclosure of index DIV38 for those banks whose control is private is 26.42, achieving the same result in the other 48 tests. The test is statistically significant (p=0.018) for a level of error of 0.05, which allows us to state that public control institutions disclose more than private ones, and confirms the Liu and Sun's conclusions (2010) and the association of this difference with the agency theory previously described.

Table 4 – Mann-Whitney test for the variable Property control

DIV38	Values	N	Mean	Mann-Whitney	Z	Sig.
Control of private property	0 - No 1 - Yes	8 48	41.00 26.42	92.000	-2.572	.018

Table 5 – Mann-Whitney test for the variable Property control by country

	Values	N	Mean	Mann-Whitney	Z	Sig.
Control of private property - Portugal	0 - No	4	22.50	16.000	-2.199	.028
	1 - Yes	24	13.77			
Control of private property - Spain	0 - No	4	19.00	30.000	-1.429	.153
	1 - Yes	24	13.75			

By analysing the disclosure index for each country on the basis of the variable Property control (private/public) we have gained significance in the data for Portugal, which allows us to say that the Portuguese banks whose property control is public discloses significantly more than those Portuguese banks whose control is private. In the case of Spain, the bank whose property control is public also shows a higher average disclosure than those banks whose control is private, although the test is not statistically significant.

In order to determine the degree of intensify of association between variables, the dependent variable (DIV38) was analysed in relation to the quantitative explanatory variables (SIZE, PROF, PIBA, CLA and INT). Since the sample size is higher than 30 tests for each variable in question, we applied the Correlation Coefficient or Pearson's r[3].

Table 6 – Pearson Correlation (Pearson's r)

		DIV38	INT	PIBA	CLA	SIZE	PROF
DIV38	Pearson Correlation	1					
	Sig. (2-tailed)						
INT	Pearson Correlation	.067	1				
	Sig. (2-tailed)	.624					
PIBA	Pearson Correlation	.190	.859**	1			
	Sig. (2-tailed)	.161	.000				
CLA	Pearson Correlation	.153	.116	.001	1		
	Sig. (2-tailed)	.261	.395	.992			
SIZE	Pearson Correlation	.423**	.787**	.805**	.005	1	
	Sig. (2-tailed)	.001	.000	.000	.971		
PROF	Pearson Correlation	.204	.357**	.394**	.082	.465**	1
	Sig. (2-tailed)	.131	.007	.003	.550	.000	

** Correlation is significant at the 0.01 level (2-tailed)
N=56

[3] This coefficient measures the contribution that an independent variable has on the variation of the dependent variable controlling (cancelling) the effects of other variables that have an influence on the relationship (Pestana and Gageiro, 2003). This coefficient ranges from -100% to 100% and the greater the proximity to these extremes, the greater the linear association between variables, i.e., the intensity of one of them is accompanied by the intensity of the other. The proximity to zero means the absence of correlation, i.e., a causal relationship between the variables does not exist or cannot be determined.

We can make the following conclusions from data in Table 6:

- The correlation between the disclosure index (DIV38) and the bank internationalisation degree (INT), the percentage of intangible assets in the balance sheet structure (PIBA), the number of classes of intangible assets that the bank has disclosed (CLA) and the bank profitability (PROF) show a very weak and positive linear association between the variables, which are not statistically significant for a margin of error of 0.05 ($p>\alpha$) and it could not be concluded that the DIV38 is influenced by the variables INT, PIBA, CLA and PROF.
- The correlation between the disclosure index (DIV38) and the bank size (SIZE) shows a weak (42.3%) and positive linear association between them (Pearson's $r = 0.423$; $p = 0.001$) with $p<\alpha$, i.e., the hypothesis that the association between these variables is significant is accepted. The coefficient of determination is 17.89%, this figure indicates the proportion of influence of the variable size on the disclosure index, and it is to be expected that the larger the bank is, the greater the disclosure index of its intangible assets will be.

Analysing the sample per group of countries, we have used the Spearman's rho Correlation Coefficient[4] in order to study the association between the dependent variable and the explanatory variables.

Table 7 – Spearman's rho Coefficient – Portugal

		CLA-P	SIZE-P	INT-P	PIBA-P	PROF-P
DIV38-P	Spearman´s rho Correlation Coefficient	.532**	.388*	-.158	.299	.073
	Sig. (2-tailed)	.004	.041	.423	.122	.712
	N	28	28	28	28	28

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed)

We may see from in the sample of Portuguese banks that only the variables CLA-P and SIZE-P are statistically significant ($p<\alpha$), with a moderate (53.2%) and positive association with the variable CLA-P and a weak (38.8%) and positive association with the variable SIZE-P, i.e., we may assume that there is an association between the disclosure index and the variables "number of classes of intangible assets" and bank size of the Portuguese banks. The dependent variable DIV38-P is explained about 28.3% by the variable CLA-P and 15% by the variable SIZE-P. The other variables are not statistically significant and it cannot be concluded that there is an association of these variables with the disclosure index of Portuguese banks.

[4] Since the data do not follow a normal distribution, we have used Spearman's rho Correlation Coefficient.

Table 8 – Spearman's rho Coefficient – Spain

		CLA-S	SIZE-S	INT-S	PIBA-S	PROF-S
DIV38-S	Spearman´s rho Correlation Coefficient Sig. (2-tailed) N	.325 .092 28	-.486** .009 28	-.225 .250 28	-.344 .073 28	-.063 .751 28

** Correlation is significant at the 0.01 level (2-tailed)

The variable Spanish bank size (SIZE-S) is statistically significant for a level of significance of 0.01, with a weak and negative variation. Thus, an increase in the dependent variable (DIV38-S) is associated with a decrease in the variable size, which explains about 23.6% of the variation in the disclosure index of Spanish banks, being this variation in the opposite direction of the variation in the bank size. The other variables are not statistically significant in order to be associated with a variation in the disclosure index.

The multiple linear regression is a statistical model used when a linear association is supposed to exist between a dependent variable and a set of independent variables. This statistical model seeks influences of the explanatory variables on the variable explained and not the causes that these variables produce (Pestana and Gageiro, 2005). Through the regression method, we complemented the analysis carried out in the correlations, trying to analyse a linear relationship, i.e., trying to explain the behaviour of the variable DIV38 according to the independent variables SIZE, PROF, PIBA, CLA, INT and PRIV.

Multiple linear regression model

$$DIV38 = \beta_0 + \beta_1\ SIZE + \beta_2\ PROF + \beta_3\ PIBA + \beta_4\ CLA + \beta_5\ INT + \beta_6\ PRIV + \xi i$$

When we introduced all the independent variables in the multiple linear regression model, the data obtained are those presented in the table below.

Table 9 – Multiple linear regression

Variables	B	t	sig
(Constant)	.284	1.939	.058
SIZE	.093	4.726	**.000**
PROF	3.378E-5	.025	.980
PIBA	.016	.696	.490
CLA	.008	1.721	.092
INT	-.006	-3.660	**.001**
PRIV	-.034	-1.826	.074

R = .678
R^2 = .459; R^2 Adjusted = .393
F = 6.930
P ≈ 0

SIZE:[6.492; 9.046]
INT: [0; 28]

The analysis of the previous table allow us to conclude that the variables obtained from the general model that are statistically significant are the variable SIZE and the variable INT, being

the others without significant relationship with the dependent variable, because the value evidence associated with them is higher than the significance level of 0.5 ($p>\alpha$).

In the regression model, the correlation coefficient (R) is 67.8%, which means a moderate association between the independent variables and the dependent variable. The coefficient of determination (R^2) is 0.459, i.e., the variation in the disclosure index is influenced by the variables Bank size and internationalisation in 45.9%.

From the results shown, we see that the disclosure index created increases as the internationalisation level decreases and the bank size increases. Therefore these results validate the hypothesis formulated that that the disclosure index is greater in larger banks (H1). This statement is verified by several studies on disclosure of intangible assets (Gómez, n/a; García-Meca and Martínez, 2005; Guthrie et. al., 2006; Oliveira et. al., 2006; White et. al., 2007; Boesso and Kumar, 2007; Li et. al., 2008; Gerpott et. al., 2008; Brüggen et. al., 2009). In the hypothesis formulated about the influence of the bank internationalisation level on the disclosure index (H5), although some conclusions were made about that influence, the direction of the variation is opposite, i.e. the disclosure index of intangible assets is lower in banks with great levels of internationalisation, which does not confirm the results of those studies about the positive association between both variables. This could mean that companies are more prone to disclose a greater amount of information when such information is limited to a smaller number of countries (corresponding to the companies included in the consolidation), that is, it may mean that, given the amount of information that the most internationalised companies will have to disclose, the information regarding intangible assets may be considered as being less relevant than the others.

5. CONCLUSION

In this paper we intended to analyse, through the content analysis technique, the consolidated accounts of 14 banks in the Iberian Peninsula, in order to verify if they reflect, in their disclosed accounts, the recognized importance of intangible assets in today's economy and in the accounting doctrine. To do so, we have developed a disclosure index of intangible assets according to the requirements of IAS 38, built upon a dichotomic procedure basis applied to two observations: disclosure and application/relevance. Thus, value 1 is given if the bank discloses the issue in question and value 0 if the bank does not disclose it. In the same way value 1 is given if this information is relevant or applicable to the issue in question and value 0 if the information is not relevant or applicable to the issue in question. The global index is obtained by the fraction of the items disclosed over the applicable items, resulting in a quantitative dependent variable whose values vary between 0 and 1.

The statistical analysis allows us to verify that the average disclosure index of the banks examined is 0.96. An analysis of the considered determinants of the disclosure of intangible assets, allow us to recognise bank size and the property control as statistically significant determinants, i.e. determinants that have a significant influence on the disclosure index.

The results obtained when the simple linear regression model was applied, confirm that the variable size is an explanatory variable, and that the variable internationalisation level is also considered significant. These two combined present an explanatory power of 45.9% of the

variation in the disclosure index. Thus, larger banks are associated with a greater disclosure of the items required by IAS 38, and a greater disclosure of intangible assets is associated with a lower degree of bank internationalisation.

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ANNEX

SAMPLE

N	Portuguese Banks	Years
1	BCP	2006
2	BCP	2007
3	BCP	2008
4	BCP	2009
5	Montepio geral	2006
6	Montepio geral	2007
7	Montepio geral	2008
8	Montepio geral	2009
9	Finantia	2006
10	Finantia	2007
11	Finantia	2008
12	Finantia	2009
13	Caixa Geral de Depósitos	2006
14	Caixa Geral de Depósitos	2007
15	Caixa Geral de Depósitos	2008
16	Caixa Geral de Depósitos	2009
17	BPI	2006
18	BPI	2007
19	BPI	2008
20	BPI	2009
21	BES	2006
22	BES	2007
23	BES	2008
24	BES	2009
25	BANIF	2006
26	BANIF	2007
27	BANIF	2008
28	BANIF	2009

N	Spanish Banks	Years
29	Sabadel	2006
30	Sabadel	2007
31	Sabadel	2008
32	Sabadel	2009
33	Santander	2006
34	Santander	2007
35	Santander	2008
36	Santander	2009
37	Popular	2006
38	Popular	2007
39	Popular	2008
40	Popular	2009
41	Caixanova	2006
42	Caixanova	2007
43	Caixanova	2008
44	Caixanova	2009
45	BBVA	2006
46	BBVA	2007
47	BBVA	2008
48	BBVA	2009
49	Bankinter	2006
50	Bankinter	2007
51	Bankinter	2008
52	Bankinter	2009
53	Banco Pastor	2006
54	Banco Pastor	2007
55	Banco Pastor	2008
56	Banco Pastor	2009