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**The Measurement and Financial Reporting of
Intellectual Capital by Portuguese Listed Companies**

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ABSTRACT

Conventional financial statements fail to recognise many intangible assets (such as human resources and customer relationships). As a consequence, they are at risk of losing their relevance as a helpful investment decision instruments.

Although the Financial Accounting Standards Board (FASB) has recommended voluntary disclosure of unrecognised intangibles and the International Accounting Standards Board (IASB) has considered it essential that narrative reporting of intangibles should supplement financial statements, ways of addressing the issue are underdeveloped in Portugal. This paper seeks to redress that state by analysing the issue in the context of Portuguese Accounting Standards. We explore whether the Portuguese security market values intellectual capital and use our results to assess whether Portuguese financial statements are losing their relevance.

We find that Portuguese accounting standards, based on accounting conservatism, give little attention to intangibles. Despite this, unrecognised intangibles seem to be increasing. Between 1995 and 1999, the market to book value ratio (MV/BV) of listed Portuguese companies increased, particularly in high technology and services companies. Whereas Intellectual Capital seems to be an important component of the market value of listed Portuguese companies, reporting practices are random and are based mainly on narrative.

Keywords: Financial Reporting, Intangibles, Intellectual Capital, Portugal, Standards, Accounting.

INTRODUCTION

Several authors (Wallman, 1995; Cañibano *et al.*, 1999; Lev and Zarowin, 1999; Hedlin and Adolphson, 2000) are concerned with the failure of accounting to recognize the fuller range of intangible assets (such as human resources, customer relationships, and the like). Such unrecognised intangibles are important to a company's value and their non-recognition has led to claims that traditional financial statements are losing relevance as helpful instruments in decision-making. The International Accounting Standards Board (IASB, 2000) and the Financial Accounting Standards Board (FASB, 2001) are aware of the problem and have urged the voluntary disclosure of information about a broader array of intangible assets.

This paper is motivated by the importance of intangible assets in accounting and by the paucity of research in Portugal concerning the measurement and financial reporting of these increasingly important assets. Specifically, we explore the requirements of Portuguese accounting standards that deal with intangibles. But more importantly, we seek to determine whether Portuguese financial statements are losing their relevance. We do so by providing empirical evidence about the size of the gap between market values of listed Portuguese companies and their accounting (or book) values. This helps us to assess how well the Portuguese security market values intellectual capital¹. We also discuss ways of developing better reporting of intangible assets.

After a review of literature in the following section, we analyse the accounting treatment of intangibles under current Portuguese Accounting Standards and draw comparisons with the International Accounting Standard (IAS 38). We then calculate the market-to-book value (MV/BV) ratio for a sample of Portuguese companies listed on the *Bolsa de Valores de Lisboa e Porto* (PSE - Portuguese Stock Exchange), from 1995 to 1999. Using this same sample, we then analyse the explanatory power of selected

accounting variables by means of linear regressions. We express a firm's market value as a function of its book value and earnings, based on panel data. We then evaluate the financial reporting of intangibles, as reflected in annual reports of all companies listed in the main market of the PSE in 1999.

LITERATURE REVIEW

Under present accounting systems, many intangibles are not recognised as an asset (Cañibano *et al.*, 1999) and incurred costs related to intangibles are not included explicitly in the Income Statement. As a consequence, financial statements are losing explanatory power for those they are intended to inform.

The MV/BV ratio has been used in prior research as a proxy for the intangible elements not recognized as assets in balance sheets (Francis and Schipper, 1999). According to Brennan and Connel (2000), any substantial difference between the book value or accounting value of a firm and its market capitalisation value indicates the presence of unrecognised and unmeasured assets in the balance sheets of those firms. Intellectual capital assets are claimed to represent a substantial proportion of this discrepancy.

In a highly regarded study, Lev (1996, in Cañibano and Sánchez, 1997) reported an increase in the MV/BV ratio from 0.811 in 1973, to 1.692 in 1992, for a sample of 300 North American listed companies. This result clearly indicates a growing gap between book values and market values: on average, in 1992, 40% of the market value of sampled firms had disappeared from balance sheets. This change in the process of value creation and, simultaneously, the loss in relevance of traditional financial measures was accentuated in high technology companies. About 50% of their value was wiped from balance sheets. Cañibano and Sánchez (1997), Rojo *et al.* (1999) and Cañibano *et al.*

(2000) have corroborated this conclusion -- especially for medium and high technological companies.

The simplest measure of a company's Intellectual Capital is the difference between market value and book value (Sveiby, 1997; Brooking, 1997, among others). However, FMAC (1998) questioned the advantages of this indicator, arguing that its simplicity does not capture the complexities of the real world; and that it tends to ignore exogenous factors influencing market value (such as deregulation, supply conditions, general market nervousness etc). This indicator can also be inaccurate because book values can be affected if a firm adopts tax depreciation rates for accounting purposes that do not approximate the diminution in value of an asset (FMAC, 1998). In spite of these inadequacies, FMAC (1998) considered market-to-book values to be one of the first Intellectual Capital indicators the accounting community should pay attention to.

The gap between MV and BV has led to a profusion of empirical papers (Lev and Zarowin, 1999; Amir and Lev, 1996; Collins *et al.*, 1997; Francis and Schipper, 1999; etc) that have studied the temporal association between capital markets variables and financial data. These studies document a decrease of accounting value-relevance over the last decade -- especially in terms of usefulness to investors. Brown *et al.* (1999) reported a decreasing association between price and earning plus book value, accounting for scale differences. Lev and Zarowin (1999) also found a weakening association between market values and accounting information between 1978 and 1996. In contrast, Collins *et al.* (1997) and Francis and Schipper (1999) reported a stable association between 1951 and 1993.

Concerns about the recent deterioration of accounting information do not exist only among academics. Accounting institutions (such as the IASB, 2000) are aware of the need to respond to the challenges posed, especially because of the effects of the globalisation of

economic activity and the dependence of the *New Economy* on intellectual capital. The development of standard measures and reporting forms, focusing on the key elements of *New Economy* enterprises, will greatly contribute to improving financial accounting and reporting. In its Statement of December 2000, the IASB considered it essential that narrative reporting should supplement financial statements in order to provide useful information to users of financial reports. Narrative reporting was thought likely to provide additional information about assets recognised in the financial statements, and to provide explanations of unrecognised intangibles assets and business risk.

The FASB's Statement 142, *Goodwill and Other Intangible Assets* and its report *Improving Business Reporting: Insights into Enhancing Voluntary Disclosure* (both issued in 2001) aim to encourage companies to improve their business reporting through emulating the extensive voluntary disclosures of many leading companies. One recommendation relates to information about unrecognised intangibles assets. The underlying premise is that accounting recognition prohibitions neither obviate the existence of intangible assets nor sufficiently allow for the fact that intangibles are critical to the success of some businesses. Information about unrecognised intangibles (such as research and development, and human resources) are critical to the success of many businesses and their disclosure would be especially helpful in investment decision-making.

In some countries, such as Sweden and Denmark, the management, measurement and reporting of Intellectual Capital has progressed beyond the experimental stage. This has prompted companies and accounting professionals to begin developing an Intellectual Capital Statement (DTIDC, 1997). Nonetheless, there are no rules for the external reporting of Intellectual Capital -- it is still seen as an attempt to manage external perceptions of a company. Other countries (like Portugal) are at a less mature stage of development in their attempts to measure and disclose intellectual capital. Typically, what

tends to emerge initially in the development process in such countries is that the Notes to the Accounts and the Management Report, (a mechanism by which firms seek to establish an image in the public sphere) are used as alternative ways of disclosing information about Intellectual Capital.

Guthrie *et al.* (2000) have assessed the extent of intellectual reporting in the annual reports of the top 19 Australian listed companies. They coded the information contained in the annual report of each company in accordance with a selected framework of 24 intellectual capital indicators, based on Sveiby's (1997) classification. This drew attention to the reporting of three major intellectual capital indicators -- 'Entrepreneurial spirit', 'Customers' and 'Management Processes'. Brennan (1999) replicated the study in Ireland, based on 11 listed companies, but obtained different results because of the characteristics of the sample and cultural differences. Irish companies reported on 'Customers' and 'Business Collaborations' more frequently. Nonetheless, the two studies share the same conclusion: that a consistent and systematic approach for external Intellectual Capital reporting was not evident.

PORTUGUESE ACCOUNTING STANDARDS AND THE INTERNATIONAL ACCOUNTING STANDARD ON INTANGIBLE ASSETS (IAS 38)

The *Plano Oficial de Contabilidade* (POC - Official Accounting Plan) came into effect for the years beginning on or after January 1, 1990. It defines "intangible asset" in a way that has the characteristics of a list, or a kind of inventory classification (Stolowy and Jeny, 1999). The POC defines the account '43 Imobilizações incorpóreas' (Intangible Assets) to include 'fixed intangible assets, such as, rights and start-up and expansion costs'. This account is divided into:

- '431 Despesas de instalação' (Start-up Costs),

- ‘432 Despesas de investigação e de desenvolvimento’ (Research and Development Expenditures),
- ‘433 Propriedade industrial e outros direitos’ (Industrial Property and Other Rights) and
- ‘434 Trespases’ (Goodwill)².

It also describes the contents of the accounts and sub-accounts under Sections 5 and 12, but the details are sketchy.

This kind of approach to definition has been criticised on the grounds that lists of intangibles have their limits -- they cannot adequately reflect the synergies between intangibles (Hoarau and Ternisien, 1997, *in* Stolowy and Jeny, 1999). In contrast, the IASB presents a *real definition* that shows a genuine conceptual effort to determine what an intangible asset is (Stolowy and Jeny, 1999).

Recognition and measurement

Under IAS 38, expenditures on starting up a business, training, advertising and promotion, and reorganising, are recognised as expenses when incurred. IAS 38 also specifically prohibits the recognition, as an asset, of internally generated goodwill, brands, mastheads, publishing titles, customer lists and similar items.

An important difference between the POC and IAS 38 occurs with the treatment of start-up costs, which are capitalized according to the POC. Although the POC seems to recognize all research and development expenditures, one of the *Directrizes Contabilísticas* (DC - Portuguese Accounting Standards) issued by *Comissão de Normalização Contabilística* (CNC - Portuguese Accounting Standards Board), DC 7 ‘*Contabilização das despesas de investigação e desenvolvimento*’ (Accounting for Research and Development Expenditures³) requires that:

[...] 2. ...research and development expenditures should be expensed in the accounting period in which they are incurred.

3. Research expenditures will only be capitalized in exceptional cases when it can be assured, unequivocally, that they will produce economic benefits.

Just as in IAS 38, development expenditures in Portugal can be recognised as an asset when certain specified requirements are satisfied.

Revaluation

IAS 38 allows an intangible asset to be revalued if there is an active market for the asset. However, Portuguese standards are based on the cost of acquisition principle. They do not allow the fair value revaluation unless it is authorised by law. Accounting entries must be done at historical acquisition cost or historical production cost, measured in nominal currency or in indexed currency (POC, Section 4). So, only revaluations using monetary correction coefficients are allowed.

Amortisation

The POC directs that an intangible asset should be amortised over its useful economic life. Any start-up costs, and research and development expenditures that are recognised as intangible assets, should be amortised over 5 years (POC, subsection 5.4.7). The Notes to the Accounts (POC, section 9, note 9) require that when the depreciation period exceeds 5 years, the reasons for that must be disclosed. Goodwill must be amortised over a maximum period of 5 years, unless a more extensive useful life (not exceeding 20 years⁴) can be justified (POC, subsection 5.4.8; DC 12 and DC 1). The requirements of IAS 38 are very similar. An intangible asset should be amortised over its useful economic life -- presumed not to exceed 20 years. However, there may be grounds for rebutting that presumption and amortising over a period greater than 20 years.

Impairment

Both IAS 38 and Portuguese accounting standards (POC, subsection 5.4.4 and DC 7, subsection 5) require that an impairment test be conducted at the end of each year following the acquisition or production of an intangible asset. If an asset's useful life is to be reduced, the respective accounting effect should have repercussions during the new period. If the carrying amount of an intangible is higher than its recoverable amount, the difference should immediately be recognized as an extraordinary loss.

Implications of the adaptation of IAS 38 to Portuguese accounting standards

Harmonizing the Portuguese system of accounting to IAS 38 will result in some changes to the way intangibles are accounted for. Some existing intangible assets, like start-up costs, would not be recognised and it would be more difficult to recognize development expenditures as an asset. Research expenditures would be precluded from recognition as assets as well. The economic life of intangible assets would be increased.

In spite of the recency of IAS 38, it adopts a very conservative approach to the recognition of intangible assets and their inclusion in the Statement of Financial Position.

ANALYSIS OF THE MARKET-TO-BOOK VALUE RATIO OF LISTED PORTUGUESE COMPANIES

Sample and Research Question

We selected a sample of companies listed on the main market of the Portuguese Stock Exchange (PSE). This helped to guarantee a high trading frequency. Our sample comprised companies that were important in the Portuguese economy and that were required to comply with the requirements of the *Comissão do Mercado de Valores Mobiliários* (CMVM - Securities Market Commission) and PSE concerning financial disclosures and the quality of information provided to shareholders. Although financial institutions and

insurance companies have different accounting standards from the companies embraced by the POC, they were included in the sample because they usually are considered as companies with a high degree of intangible investments⁵. The stock price of each company was obtained from the PSE and book values were extracted from financial reports of each firm. Our analysis period was 1995 to 1999. (Until 1994, securities were not traded on a continuous basis on the PSE.)

Our principal research question was: Has the gap between PSE market values and accounting “book values” increased, thereby indicating a loss of relevance of the financial statements of Portuguese listed companies?

Method and Results

We calculated the market to book value ratio for each of the companies quoted on the PSE in the period 1995-1999: 78 companies in 1995, 73 companies in 1996, 75 companies in 1997, 76 companies in 1998 and 72 companies in 1999. We then aggregated the companies by sector, according to the classification used by the PSE. Like Cañibano and Sánchez (1997) and Rojo *et al.* (1999), we obtained the MV/BV ratio for each company and then summed the data by sector.

$$\frac{\sum_{i=1}^n \frac{MV_{ijk}}{BV_{ijk}}}{n}, \text{ where:}$$

$i = 1, \dots, n$ is the company;

j is the activity sector ;

k is the year.

Figure 1 shows the evolution of the average MV/BV ratio for the manufacturing industry, for services and in total⁶.

[Insert Figure 1]

Other than for 1996, the ratio is larger in the services sector than in the manufacturing sector. Over the analysis period, the ratio grew and was always greater than one. This result reinforces our hypothesis that the gap between book values and market values is increasing. Consequently, it seems reasonable to infer that in Portugal, just as internationally, investors value intangibles not recognized in the financial statements.

Cañibano *et al.* (1999) tested the hypothesis that the MV/BV ratio is larger for companies that give more attention to intangibles. We conducted a similar test, drawing support from the Second Community Survey on Innovation Activities in Portugal by the *Observatório das Ciências e das Tecnologias* (OCT, 2000 - Observatory of Science and Technology in the Ministry of the Science and Technology (OCT, 2000)). We divided the listed companies in the manufacturing industry according to the 1997 OECD classification as follows:

- High and Medium-High Technological Intensity⁷,
- Medium-Low⁸ Technological Intensity and
- Low⁹ Technological Intensity.

As the OCT Report found a similar rate of innovative firms in Medium-Low and Low technology sectors, we also found a similar MB/BV ratio in these two sectors. So, we aggregated these two sectors and then calculated the average ratio. The results are presented in Figure 2.

[Insert Figure 2]

This empirical evidence reveals that for Portuguese listed companies, other than for 1998¹⁰, the MV/BV ratio is higher in innovative companies; that is, in firms whose intangibles are likely to be more important. This is consistent with international

experience. Thus, it seems that investors are valuing intangibles, suggesting some loss of relevance of financial statements.

DOES THE PORTUGUESE SECURITY MARKET VALUE INTELLECTUAL CAPITAL?

We found that there was a growing gap between the market values and the book values of Portuguese companies. This seems to be consistent with stock market investors valuing intangible elements that otherwise are not recognized as assets in financial statements. Were capital markets valuing something specific, distinctive and critical for each company -- its Intellectual Capital?

Sample and Variables

We used the same sample as in our previous study of the MV/BV ratio. This yielded 364 company-year observations.

Consistent with the literature review (Lev and Zarowin, 1999; Francis and Schipper, 1999; Cañibano *et al.*, 2000), the variables used were:

P_{it} = the stock price of company i , three months after the end of the exercise t , to assure the effects of the earnings distribution

BV_{it} = the book value per share of company i at the end of year t

E_{it} = the net earning per share of the company i in the year t .

Table 1 presents descriptive statistics for the analysed variables. For each year the number of companies in the panel sample is not constant.

[Insert Table 1]

We expected that increases either in book value per share or in net earnings per share would be reflected positively in stock price.

Econometric models and results

The structure used by Lev and Zarowin (1999), Francis and Schipper (1999), Cañibano *et al.* (2000), reflects estimated regressions based on cross-sectional data for several periods of time (usually years). Consequently, they infer the value-relevance of accounting information by applying a time series to the adjusted determination coefficients obtained¹¹. These authors also assume that the coefficient of the constant term and the coefficients of the independent variables, vary by year.

Based on such an approach, the above-mentioned authors affirm that traditional accounting variables have lost relevance over the time. Thus, the regression estimated by them is not the most appropriate one to explain the variation of P. Hence, new variables need to be introduced into the model and tested. But, we prefer to use panel data as it has the advantage of allowing us to construct and test more complicated behavioural models than purely cross-sectional or time-series data. Furthermore, the use of panel data also provides a means of resolving or reducing the magnitude of key econometric problems that often arise in empirical studies, namely the often-heard assertions that the real reason one finds (or does not find) certain effects is because of omitted (mis-measured or not observed) variables that are correlated with explanatory variables. By utilizing information on both the inter-temporal dynamics and individuality of the entities being investigated, one is better able to control, in a more natural way, for the effects of missing or unobserved variables (Hsiao, 1988).

To take account of the heterogeneity across individuals and/or through time we used the variable-intercept model. We estimated our model by heeding the group effects:

$$\begin{aligned} P_{it} &= \mu_1 D_{1it} + \mu_2 D_{2it} + \dots + \beta_1 BV_{it} + \beta_2 E_{it} + \varepsilon_{it} \\ &= \mu_1 + \beta_1 BV_{it} + \beta_2 E_{it} + \varepsilon_{it} \quad \text{Regression Model [1]} \end{aligned}$$

[Insert Table 2]

The results of the estimation of the model [1] suggest that each of the explanatory variables is statistically significant at the 1% level and the model is globally significant (P value close to zero). There is not autocorrelation.

Introduction of dummy variables to take account of group effects improved the explanatory power of the regression model, as presented in Table 2- Panel B. Panel C of Table 2 presents the results of the Lagrange multiplier test and the Hausman test. The high value of the Lagrange multiplier (P value close to zero) suggests that the effects need to be controlled in the model. According to the Hausman test, the effects should be fixed ones. There are two fixed effects. First, the effects of those omitted variables that are specific to individual cross-sectional units but remain more or less constant over time. Second, the effects that are specific to each time period but are the same for all cross-sectional units.

We revised the model to take into account the fixed effects (of group as well as of time) and obtained the following regression:

$$P_{it} = \mu_0 + \mu_i + \gamma_t + \beta_1 BV_{it} + \beta_2 E_{it} + \varepsilon_{it} \text{Regression Model [2].}$$

[Insert Table 3]

From Table 3- Panel A, we can see that coefficients of the explanatory variables BV and E are individually significant (at 1% and 5% levels respectively), as also is the intercept coefficient.

Overall, the regression the model is statistically significant (P value close to zero) and there is no autocorrelation. The value presented by the adjusted R^2 (0.65898) is superior to that obtained in regression 1, suggesting an improvement brought about by the adjustment.

Through the analysis of Table 3- Panel B, we conclude that there is an improvement of the explanatory power of the model compared to regression [1], which only considers group effects, according to F test and P value close to zero. This is the best specification that we have found. Once again it is confirmed by the Lagrange multiplier

test that we should introduce effects in the model. The results of Hausman test suggest that the random effects should be ignored in detriment of the fixed ones (Table 3-Panel C).

Discussion

Our study suggests that the traditional accounting variables - book value and net earnings - have reduced value-relevance in explaining stock prices. Although we were not trying to investigate the loss of relevance of the financial statements directly (but rather if companies' particular characteristics are important in the formation of their market value) the tests we have done suggest the need to control fixed effects in the model. This is especially the case for company-specific factors that are important in the determination of a stock's market price.

But what can those specific and distinctive characteristics of each company be? Considering the various definitions of Intellectual Capital (enunciated by Sveiby 1997, Edvinsson and Malone, 1999, and Stewart, 1999) and the changes in business context over the past few decades, it seems plausible to infer that what has been designated as 'Intellectual Capital' is being valued by our security market. It is a source of value that is generated by a combination of knowledge, competencies, organizational structures and relationships – each interacting with tangible and other intangible assets. Although this is not being captured effectively by current accounting statements and financial reporting, it distinguishes the company and contributes to the construction of future expectations.

ANALYSIS OF ANNUAL REPORTS OF PORTUGUESE COMPANIES LISTED ON THE PSE

If, as we conclude above, Intellectual Capital is an important component of the market value of the Portuguese companies, how is it reported in Portugal? Have investors on the

PSE access to sufficient information that is provided in a reliable, timely and systematic way?

Sample and method

The annual reports of the 72 companies quoted on the Portuguese continuous market at the end of 1999 were analysed, at three levels:

- 1st level: Balance Sheet and Income Statement, with eventual support of the Notes. Our intent was to distinguish capitalized intangibles from the non-capitalized ones;
- 2nd level: Notes, to analyse the intangibles elements that can be disclosed but are not considered in Balance Sheet or Income Statement;
- 3rd level: Management Report and Chairman's Letter.

In the first and second levels we sought answers to following questions:

- Does the company distinguish capitalized intangibles (intangible assets in the Balance Sheet) from those that are non-capitalized (as a cost in the Income Statement)?
- Are all the disclosures about intangible assets included in the Notes?
- Is additional information given about intangibles not considered in the Balance Sheet and in the Income Statement?

On the 3rd level, we followed the Guthrie *et al.* (2000) methodology: a content analysis approach involving the coding of qualitative and quantitative information into pre-defined categories. We used classifications based on Stewart (1999) and Sveiby (1997) and the intellectual capital attributes presented by Brooking (1997).

We conducted a pilot analysis of three randomly chosen annual reports using an interrogation protocol that had been developed based on prior studies reported in the literature review. However, we modified and extended this protocol to achieve better convergence with the type of items reported by Portuguese companies. Specifically, in the

'Intellectual property' category we eliminated 'Design rights', 'Trade secrets' and 'Know-how'; and in the 'Human Capital' category we eliminated 'Occupational assessment' and 'Psychometric assessment' variables. We added 'Suppliers', 'Competitors' and 'Society' in the 'Relational Capital' category; and 'Initiative/motivation/dedication' and 'Occupational health and safety' in the 'Human Capital' category”.

The selected items are shown in Table 4.

[Insert Table 4]

In their studies, Guthrie *et al.* (2000) and Brennan (1999) attributed a numeric scale to each variable (0-1-2-3):

0 = the element does not appear in the annual report;

1 = the element appears in the annual report in a narrative way;

2 = a numeric value is attributed to the element in the annual report;

3 = a monetary value is attributed to the element in the annual report.

We applied the same scale to our data.

The results represent one matrix of information that identifies the incidence of intellectual capital reporting across 30 intellectual capital attributes, and is divided into three categories, for 72 companies.

Given the limitations of our study (arising from the application of judgement in content analysis and differences in the amount and quality of the disclosed information about a variable) and not having scientific support to overcome them, the analysis and conclusions should be interpreted as a starting point for more exhaustive and complex research in the future.

Analysis and discussion

On the 1st and 2nd analysis levels we reached the following conclusions:

- Analysis of the annual reports of listed companies in 1999 confirmed that the Intangible Assets/Total Assets ratio was very low. This was despite 'Start-up Expenditures', which cannot be recognised as asset by IAS 38, contributing in a significant way to that ratio. Consequently, the statistical correlation of that ratio to the MV/BV ratio is negligible. Such a finding is consistent with suggestions in the literature that the Balance Sheet does not capture intangible investments.
- The Income Statement and the Notes do not explicitly show expenditure on intangibles, which is expensed as incurred.

Concerning the 3rd analysis level, the reporting practices of the companies in the sample should be viewed after consideration of the descriptive statistics presented in Table 5.

[Insert Table 5]

We confirmed that the average, median and modal Intellectual Capital attributes (12 attributes in 30) reported show that companies attribute some importance to Intellectual Capital. However, the standard deviation of the report is quite large, since the minimum number of reported attributes was three, while the maximum was 21.

The first column of Table 6 illustrates the frequency of reporting Intellectual Capital attributes.

[Insert Table 6]

All companies report 'Management process' attributes, despite of the differences in information quantity and quality among companies. It is widely agreed that the Management Report is a presentation vehicle for a company's politics, processes and strategies. The second most frequently reported attribute was 'Customers'. In a competitive business context, companies are aware that those who best get to satisfy and to exceed their

customers' expectations are more likely to survive in the long run. Companies also consider the relations with investors, since they all are quoted on the PSE.

Disclosure of information about 'Patents', 'Copyrights' and 'Trademarks' did not appear in any Management Report, although, information about 'Brands' is disclosed several times. Given the importance attributed by the literature to the intellectual property, we decided to maintain the three variables in our analysis.

The reporting form used by the companies in our sample is essentially narrative and descriptive. The 'Management philosophy' and 'Corporate culture' attributes are totally reported in a narrative/descriptive way. This reporting form prevails in all the remaining variables. However in 'financial relations' the three reporting hypotheses are more equitable, since the use of indicators of monetary values is common in stock market company performance information.

When we analysed the variables that comprise 'Relational Capital' we found a relatively frequent use of numeric values in comparison to 'Organizational Capital'. The reporting of monetary information is greater in the 'Customers', 'Portfolio orders' and 'Distribution Channels' attributes.

With the 'Human Capital' level, and in spite of the prevalence of narrative/descriptive disclosures, the reporting of numeric values was evident. Numeric indicators were used by several companies for productivity and the number of training days, trainees, hours of training, and professional categories and education levels.

The last column of Table 6 illustrates the contribution of each variable in the 'Intellectual Capital' category.

"Financial relations" is the most common organizational capital attribute reported (48.39%). In the Relational Capital, "Customer's" attribute is the most reported – 20.04%. Finally, 'Training' attribute represents 35.77% of the Human Capital.

From the analysis of our sample we infer that Portuguese companies quoted on the PSE attribute a larger importance to Organizational Capital (38.63%) in their Management Report. Then, in order of decreasing importance comes Human Capital (34.09%) and, lastly, Relational Capital (27.27%).

Several noteworthy factors appear to have contributed to these results. First, our sample companies are listed on the main market. This can explain the extreme importance of the “Financial relations” because of the incentives for listed companies to provide voluntary disclosures to investors. They also are required to report about corporate governance, and, consequently, on Organizational Capital. Second, the fact that most companies are forced to prepare a Social Balance Sheet¹² can make them disclose more details of their Human Capital in the Management Report. Additionally, the voluntary reporting of Intellectual Capital was greater in service firms than manufacturing ones, like the MV/BV ratio behaviour.

But why should we encourage companies to measure and report their Intellectual Capital? There are some important realisable benefits in doing so. Investors and other stakeholders will have access to more and better information, for example, about the values and culture of the organization, its investments in intangibles and returns realised from them, development policies and human resources, skills and capabilities. Further benefits may be expected to companies because they will attract new and present investors, employees and customers and reinforce the company’s strategies.

The executives have an incentive to provide information to investors about the ‘true worth’ of their company (...). Upon disclosure of such information, investors will increase demand for the stocks and upgrade the prices of disclosing companies (if the information is credible), and downgrade - this is the key - the prices of those who keep silent. (Lev, 2000:126)

The asymmetry of information leads to seriously harmful private and social consequences like decreased social gains from trade, higher cost of capital, consequent

impediments to corporate growth, and abnormally large gains to insiders at the expense of outside investors (Lev, 2000).

Although provision of this type of information is important, it should be balanced in order to protect competitive advantage. The Danish Trade and Industry Development Council (DTIDC, 1997), for example, advised companies to avoid reporting anything with direct relevance to competitors. Some Intellectual Capital information is probably indirectly relevant to competitors of a firm, as it might reveal details of a company's resources and present or future management policies.

Finally, as financial reporting of Intellectual Capital is not consensual, managers may provide the information they want, and not the relevant one, which can induce to disclosure manipulation.

CONCLUSIONS

Portuguese accounting standards are influenced strongly by accounting conservatism and give little attention to intangibles. They do not lead to disclosure of detailed information about intangible investments. However, IAS 38 restricts the number of intangibles actually recognised as assets, compared to Portuguese Standards. From 1995 to 1999, the divergence between the market value and the book value of Portuguese companies quoted on the PSE increased, particularly in high technology and services companies. The adoption in Portugal of IAS 38 may accentuate this gap.

Our analysis of the Annual Reports of companies listed on the PSE in 1999 found that the Intangible Assets/Total Assets ratio is very low, despite the fact that start-up costs (which cannot be recognised as an asset by IAS 38), have contributed strongly to that ratio. Consequently, the statistical correlation of that ratio to the MV/BV ratio is almost non-existent -- a finding consistent with contention that the Balance Sheet does not capture

intangible investments. However, the Income Statement and the Notes to the Accounts do not show expenditures on intangibles -- they are expensed as they occur.

The Management Report will also contribute to improving the financial reporting of intangibles. However, the actual practices for reporting Intellectual Capital are random and have mainly a narrative/descriptive nature. The most frequently reported attributes are 'Management Processes', 'Customers' and 'Financial Relations'. Portuguese companies quoted on the PSE give larger importance to the reporting of Organizational Capital, followed by the Human Capital and, lastly Relational Capital, but the differences are not substantial. None of the companies made any reference to an Intellectual Capital Statement, despite some having already dedicated a report to environmental issues.

If Intellectual Capital is an important component of the market value of a company and its disclosure is random, not systematized and mainly voluntary, then investors' decisions will likely be based, in part at least, on unreliable and non-comparable information. The effect, consequently, might be to induce volatility in the Portuguese capital market. Improving the voluntary disclosure of Intellectual Capital would be a welcome first step towards a more useful financial reporting, but it should be followed by some changes in accounting standards.

The CNC should be more conscious and responsive to this subject and its implications. DC 18 adopts a facilitated framework, presenting a hierarchy of Portuguese generally accepted accounting principles: first those established in the POC; second, those established in DCs; and finally those established International Accounting Standards (to be applied in the absence of POC and DC). This solution leads to an incoherent accounting system without a real conceptual framework. What appears to be needed is a DC about disclosure of intangibles.

While CNC is inactive, further research should be undertaken. We propose to investigate the incentives that will impel Portuguese managers to be more accepting of the need to measure and report Intellectual Capital in a better and more effective fashion. We also propose to explore matters of definition, relevance and measurement of intangibles.

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Figures

Figure 1: Evolution of average MV/BV ratio

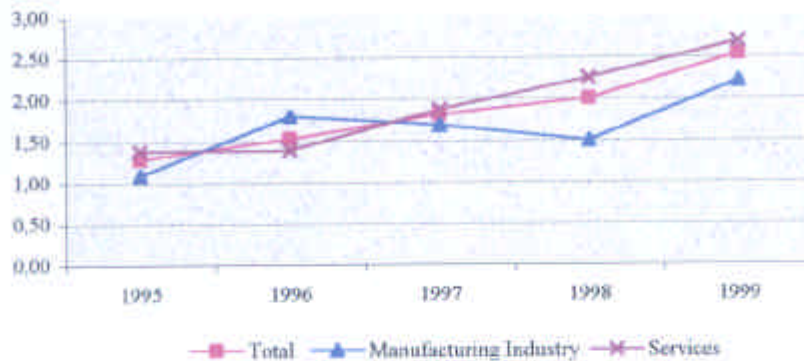
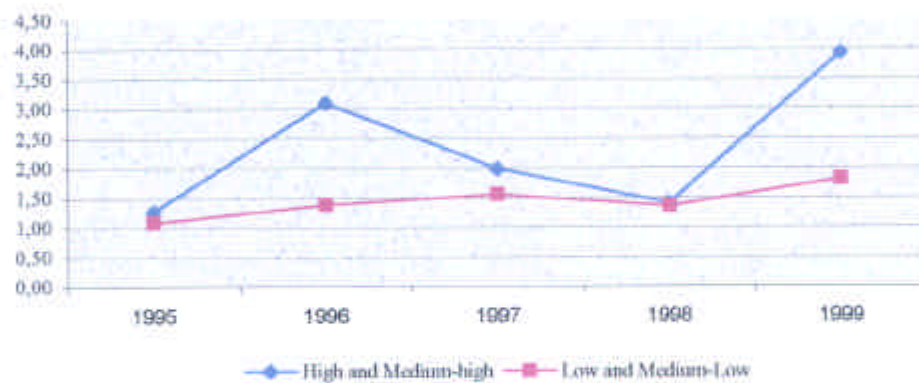


Figure 2: MV/BV by technological intensity in manufacturing industry



Tables

Table 1: Descriptive statistics

Variables	Mean	Standard error	Minimum	Maximum
P	3.2746	3.4324	0.245	29.5711
BV	1.8062	1.4626	-17.9649	7.0843
E	0.1135	0.5923	-9.9349	2.6072

Note: Values in thousands of escudos for sample with 364 observations. 1€ = 200.482 escudos.

Table 2: Results of Regression Model [1]

Panel A				
Variable	Coefficient	Standard error	T-ratio	P(T >1)
BV	1.29484	0.22335865	5.787	0.0000
E	1.93568	0.68888403	2.810	0.0052
Observation	364			

R ²	0.713841	Adjusted R ²	0.60353
F [101, 262]	6.47	P value	0.0000
Estd. Autocorrelation e (i,t)	-0.127878		

Panel B

Model	R ²
(1) Constant term only	0.0000000
(2) Group effects only	0.6533820
(3) Independents variables only	0.0320745
(4) Independents variables and group effects	0.7138411

F Tests

	F	Numerator	Denominator	P value
(2) vs. (1)	5.027	99	264	0.00000
(3) vs. (1)	5.981	2	361	0.00278
(4) vs. (1)	6.471	101	262	0.00000
(4) vs. (2)	27.677	2	262	0.00000
(4) vs. (3)	6.305	99	262	0.00000

Panel C

Lagrange Multiplier Test vs. Model (3) 99.28 (degree of freedom = 1. P value = 0.00000)

Hausman Test (Fixed vs. Random Effects) 36.39 (degree of freedom = 2. P value = 0.00000)

Table 3: Results of Regression Model [2]

Variable	Coefficient	Standard error	T-ratio	P[T >t]
Constante	0.66865	0.37572069	1.780	0.0760
BV	1.32445	0.20746908	6.384	0.0000
E	1.88385	0.63891770	2.948	0.0034
Observations	364			
R ²	0.758558	Adjusted R ²	0.65898	
F[106, 257]	7.62	P value	0.0000	
Estd. Autocorrelation e (i,t)	-0.125691			

Panel B

Model	R ²
(1) Constant term only	0.0000000
(2) Group effects only	0.6533820
(3) Independent variables only	0.0071925
(4) Independent variables and group effects	0.7138411
(5) Independent variables and group and time effects	0.7585585

F Tests

	F	Numerator	Denominator	P value
(2) vs. (1)	5.027	99	264	0.00000
(3) vs. (1)	5.981	2	361	0.00278
(4) vs. (1)	5.984	101	262	0.00000
(4) vs. (2)	43.978	2	262	0.00000
(4) vs. (3)	5.759	99	262	0.00000
(5) vs. (4)	11.946	4	258	0.00000
(5) vs. (3)	7.720	104	258	0.00000

Panel C

Lagrange Multiplier Test vs. Model (3) 156.35 (degree of freedom = 2, P value = 0.00000)

Hausman Test (Fixed vs. Random Effects) 37.27 (degree of freedom = 2, P value = 0.00000)

Table 4: Selected items

Internal Structure or Organizational Capital	<ul style="list-style-type: none"> Intellectual Property - Patents - Copyrights - Trademarks Infrastructures Assets - Management philosophy - Corporate culture - Management processes - Information systems - Networking systems - Databases - Financial relations
External Structure or Customer/Relational Capital	<ul style="list-style-type: none"> Brands Customers Costumers loyalty Portfolio orders Company image Distribution Channels Business collaborations Licensing Agreements Favourable Contracts Franchising Agreements Suppliers Competitors Society
Employee Competence or Human Capital	<ul style="list-style-type: none"> Education Vocational qualification Work-related knowledge Work-related competencies Initiative/motivation/dedication Training/life long education Occupational health and safety

Table 5: Descriptive Statistics for the Sample

Number of sample companies	72
Number of industry groups	21
Number of intellectual capital attributes in model	30
Average number of attributes reported per company	12
Median number of attributes reported per company	12
Modal number of attributes reported per company	12
Minimum number of attributes reported for any one company	3
Maximum number of attributes reported for any one company	21

Table 6: Analysis of Intellectual Capital attributes

	Frequency of reporting	Contribution of each Variable on its category
Organizational Capital		100.00%

<u>Intellectual Property</u>		
- Patents	0	0.00%
- Copyrights	0	0.00%
- Trademarks	0	0.00%
<u>Infrastructures Assets</u>		
- Management philosophy	62	10.00%
- Corporate culture	26	4.19%
- Management processes	72	15.65%
- Information systems	54	12.10%
- Networking systems	37	6.61%
- Databases	16	3.06%
- Financial relations	66	48.39%
Relational Capital		100.00%
Brands	25	6.50%
Customers	67	20.04%
Customers loyalty	27	5.10%
Portfolio orders	8	4.22%
Image of the company	17	3.69%
Distribution Channels	50	18.45%
Business collaborations	43	7.56%
Licensing Agreements	5	1.58%
Favourable Contracts	27	5.10%
Franchising Agreements	1	0.18%
Suppliers	34	6.33%
Competitors	35	12.48%
Society	34	8.79%
Human Capital		100.00%
Education	24	15.67%
Vocational qualification	23	10.18%
Work-related knowledge	2	0.52%
Work-related competencies	35	21.93%
Initiative/motivation/dedication	33	10.97%
Training/life long education	47	35.77%
Occupational health and safety	13	4.96%

¹ The expressions “Intangibles” and “Intellectual Capital” are used with the same meaning. However “Intangible” is an accounting term, while “Intellectual Capital” arises from human resources literature. (Cañibano and Sánchez, 2001)

² Since the contents of general account coded 43 is respected, it is possible to create sub accounts under codes 435 to 439. However, in practice it is unusual to do so.

³ Detailed analysis about Research and Development Expenditure can be read in Ferreira, L.; Isidro, H. and Alves, P. (2001) ‘The role of research and development capitalisation – the case of Portuguese listed companies’, *paper presented to the EAA Congress, Athens.*

⁴ The limit of 20 years for depreciation applies only to mergers and acquisitions (see DC 1) and to goodwill when for fiscal purposes the depreciation is exceptionally authorised.

⁵ Rojo et al. (1999) also included them in their study.

⁶ The number of companies ranges from 23 to 26 in manufacturing industry and from 48 to 52 in Services.

⁷ Chemical Products (Fabricação de Produtos químicos); Electrical Machinery (Fabricação de Máquinas e Aparelhos eléctricos); Motor Vehicles (Fabricação de veículos automóveis e reboques); Other Transport Materials (Fabricação de outro material de transporte).

⁸ Other Non-Metallic Mineral Products (Fabricação outros produtos minerais não metálicos); Base Metals (Indústrias metalúrgicas de base); Metallic Products (Fabricação de produtos metálicos).

⁹ Food and Beverages (Indústrias alimentares e das bebidas); Tobacco (Indústria do Tabaco); Paper and Paper board (Fabricação de pasta, de papel e cartão).

¹⁰ In 1998, the MV/BV ratio is not so high in innovative companies, due to the decrease of BIICC Cel-Cat's MV/BV ratio, which, in 1998, was 28% of the 1997 ratio value. This company, in 1999, was not listed in the main market. Because the innovative companies group is comprised of only a few companies (from seven in 1995 to five in 1999), one company has an important impact.

¹¹ Brown *et al.* (1999) show that researchers must be cautious in this process because R^2 is an unreliable statistic in the presence of scale.

¹² Social Balance Sheet has been introduced in Portugal, by law number 141/85, November 14, that has been changed by the Decree-law number 9/92, January 22. Although it does not belong to financial statements, the companies with 100 employees or more are compulsory to send it until May 15 to the Ministry of Employment and Social Security (Ministério do Emprego e da Segurança Social).