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The preparedness of companies to adopt International Financial Reporting Standards: Portuguese evidence

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Abstract

This paper uses ordinal regression, structural equation modelling, and multivariate analysis techniques to investigate the preparedness to adopt IFRS that was exhibited by listed Portuguese companies in August 2003. We find the level of preparedness was significantly associated with company size, commercial internationalization, audit by a 'Big 4' accounting firm, and profitability. Our findings will help to indicate the pre-conditions that are likely to spur lagging companies (and countries) to prepare to implement IFRS.

Keywords: International Financial Reporting Standards; Harmonization; Compliance; Adoption; Portugal

1. Introduction

Many companies throughout the world have not adopted, or have not been required to adopt, International Financial Reporting Standards (IFRS). On 4 January 2007[1] there were about 31 countries, e.g. Argentina, Bangladesh, Bhutan, Ivory Coast, Fiji, Ghana, Mali, Moldova, Niger, Syria, Thailand, Togo, Tunisia, and United States of America where *direct use* of IFRS is not permitted by domestic listed companies (Deloitte, 2007). In some cases this is explained by countries electing to retain local Generally Accepted Accounting Principles which are said to be based on, or similar to, or converged with, IFRS. In 21 of the 28 European Union and European Economic Area countries, e.g. Portugal, Spain, and France, it is mandatory for *listed* companies to use IFRS, but *unlisted* companies have the option to use or not to use IFRS (Deloitte, 2005, p. 14).

The situation in some other countries is not clear. The International Accounting Standards Board (IASB), on 4 January 2007, was seeking information about whether IFRS had been mandated or permitted for use in 52 other countries, e.g. Afghanistan, Algeria, Belarus, Cuba, Ethiopia, Iran, Iraq, Liberia, Paraguay, Rwanda, Zaire (Deloitte, 2007). Although there has been widespread *voluntary* adoption of IFRS by multinational corporations (MNCs), a feature of international accounting practice over the past decade has been that the level of preparedness to adopt IFRS has varied widely between companies and countries.

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The forces compelling international integration and globalization in all realms of human endeavour are intensifying (Volcker, 2000, p. 210) and many smaller countries are finding these forces hard to combat. In the discipline of accounting, globalisation poses many challenges, as Gallhofer and Haslam (2006) have noted. Support for a regime of global accounting standards is advocated commonly because such standards are consistent with the broad thrust of globalization initiatives endorsed by politically influential bodies such as the World Trade Organization (WTO), Organization for Economic Co-operation and Development (OECD), International Monetary Fund (IMF) and the World Bank (Graham & Neu, 2003; Volcker, 2000). However, some dissonant voices express the view that accounting harmonization processes repress important differences and idiosyncracies in national systems of accounting (Gallhofer and Haslam, 2006, p. 917). It seems sensible to acknowledge that financial reports, drawn up in accord with IFRS issued by the IASB, are a power discourse—especially so when the large accounting firms, the EU and other coordinating agencies (World Bank and OECD) are disposed to accept, as taken-for-granted, that accounting will be better if IFRS are adopted (Hopwood, 1994; Neu, Gomez, Léon, & Zepeda, 2002; Rodrigues & Craig, 2007).

The major aim of this paper is to determine the characteristics of the listed companies in Portugal that were better prepared than others to adopt IFRS. We use the term 'prepared' in its sense of readiness. Thus, 'preparedness' is evidenced by such factors as training of staff, and accommodative changes to accounting and financial reporting systems. We do not regard 'preparedness' merely to be a fuzzy expression indicating latent intent or inclination to adopt IFRS. Our findings should assist domestic and international standard setting agencies, regulatory authorities, and the accounting profession, to understand the company characteristics that have been associated with the adoption of IFRS, especially in small countries. One significant characteristic that will be of interest to many readers of this journal, is the strong influence of a company having a Big 4 accounting firm as its auditor.

2. Literature review

Compliance studies have determined the characteristics of companies which have adopted international accounting standards voluntarily (García & Zorio, 2002; Murphy, 1999; and the other studies cited in Table 1). Our study has a similar purpose: it seeks to understand the characteristics of companies which explain their level of preparedness to adopt IFRS. We acknowledge that some companies are likely to be reluctant to use new sets of accounting standards, and that applying a single set of standards to all reporting entities, irrespective of size or internationalization, might be inappropriate (Rodrigues & Craig, 2007). Nonetheless, knowing the characteristics of the companies which are prepared to adopt IFRS will assist standard setters, regulators, governments and accounting scholars to better understand the factors that affect the diffusion of IFRS; and, as well, it will help them to understand how accounting can be used to shape, normalize and instrumentalize the conduct, thought, decisions and aspirations of companies (Neu, 2001, quoting Miller & Rose, 1990).

Many studies of the voluntary adoption of IFRS or International Accounting Standards (IAS) (see recent examples in Table 1), use univariate and multivariate analysis techniques in which voluntary adoption of IFRS is defined as a dummy dependent variable (1 = adopt IFRS; 0 = not adopt IFRS).[2] The characteristics of companies adopting IFRS are the independent variables. We reviewed the range of characteristics included in these studies and selected three independent variables that had been significant in more than one such study: size (SIZE), commercial internationalization (COMINT), and auditor type (AUD). Although financial internationalization was also a significant characteristic in four of the studies summarised in Table 1, we did not include this variable because 93.5% of the companies in our sample are listed only in Portugal. However, we also included two additional independent variables: rate of profitability (ROE), and leverage (DEBT). Although these characteristics were significant in only one of the studies cited in Table 1, they were thought important enough to be included as independent variables in several of the studies. We were prompted also to add a sixth variable, level of investment in foreign company equity (INVFR). We did so on the grounds of competitive isomorphism: that is, whenever there is one best, cheapest or most efficient way to do something, then competitive forces will impose that best way upon organizations (Carruthers, 1995, p. 317; DiMaggio & Powell, 1983). In this specific case, multinational corporations achieve cost savings if foreign subsidiaries use IFRS since consolidating group accounts will become cheaper and easier.

[2] We use IFRS as a default acronym to also include, where appropriate, IAS.

Table 1
Studies of the voluntary adoption of IFRS

Author	Sample	Data	Time	Characteristics tested
Al-Basteki (1995)	26 listed companies in Bahrain	Annual reports	1986–1991	-Auditor* -Industry type* -Size -Commercial internationalization -Leverage
Dumontier and Raffournier (1998)	82 companies listed on the Swiss Stock Exchange that apply national standards and 51 that apply IFRS	Consolidated financial statements	1994	-Financial internationalization -Commercial internationalization * -Size* -Ownership diffusion* -Leverage -Capital intensity -Profitability -Auditor*
El-Gazzar, Finn, and Jacob (1999)	87 world companies that apply IFRS and 87 world companies that do not apply IFRS	*Worldscope* database+		-Financial internationalization * -Commercial internationalization* -Leverage* -EU member*
Murphy (1999)	22 companies listed on the Swiss Stock Exchange that apply national standards and 22 listed companies in Swiss Stock Exchange that do not apply IFRS	*Worldscope* and *Moody's International Manuals*	1995	-Financial internationalization * -Commercial internationalization* -Leverage -Market value -Auditor
García and Zorio (2002)	56 companies listed on EU Stock Exchanges that apply IFRS and 56 companies from the same countries that do not apply IFRS	*IASB list of 'Companies using IAS'*	1997	-Financial internationalization * -Commercial internationalization* -Size* -Leverage -Capital intensity -Profitability* -Auditor*
Tagesson, Dahlgren, Gamlén, and Häkansson, (2003)	101 companies listed on the Swiss Stock Exchange	Questionnaire	2002	-Share of foreign ownership* -Financial Internationalization* -No of foreign subsidiary companies -Share of international sales

* Significant.
\+ Worldscope is a database of information on over 10,000 international corporations (El-Gazzar et al., 1999).

3. Company characteristics and research hypotheses

3.1. Size

Company size is an influential factor in determining preparedness to adopt IFRS. Watts and Zimmerman (1986) argue that political costs are higher for larger companies. The proprietary costs related to competitive disadvantages of additional disclosure become smaller as firm size increases (Verrecchia, 1993). To reduce political costs, larger companies will be anxious to ensure that the accounting values disclosed in their financial statements are credible. One way of engendering such credibility is by preparing financial statements in accord with IFRS.

H_1. The degree of preparedness of companies to implement IFRS increases with company size.

3.2. Commercial internationalization

Companies whose revenues are earned largely in international markets should find the adoption of IFRS will help them to enhance the accuracy with which their financial statements are interpreted internationally. As a consequence, their relationship with foreign trade partners, investors, customers, suppliers and governments will be improved.

H_2. The degree of preparedness of companies to implement IFRS increases with their degree of commercial internationalization.

3.3. Auditor type

The international Big 4 accounting firms have been keen proponents of accounting harmonization and the adoption of IFRS. They have argued that identical accounting methods across countries will help IFRS enhance the quality of financial information and promote economies of scale. The Big 4 accounting firms might be accused of being self-serving in providing such advice. The advisory fees they charge for helping clients manage the transition to IFRS helps them to boost revenues – and to avoid the reputation costs that would arise if a client was known to not comply with a widely accepted international system of accounting standards, such as IFRS. A further argument is that companies bearing high agency costs reduce those costs by contracting with the Big 4 accounting and auditing firms (Jensen & Meckling, 1976; Watts & Zimmerman, 1983).

H_3. The degree of preparedness to implement IFRS of companies audited by a Big 4 accounting firm is greater than the degree of preparedness of companies audited by a non Big 4 accounting firm.

3.4. Rate of profitability

Political cost arguments support contention that companies with a high rate of profitability adopt IFRS to signal to capital markets that profits are determined reliably. Companies which are more profitable have stronger interest in conferring credibility on disclosed financial values. They can achieve this by complying with IFRS.

H_4. The degree of preparedness of companies to implement IFRS increases with the rate of profitability.

3.5. Leverage

There are several contradictory views regarding the relationship between levels of company leverage (usually measured by the debt/equity ratio) and adoption of IFRS. One view is that companies exhibiting *lower* debt-to-equity ratios, and greater reliance on share issues for their external finance, have a greater tendency to apply IFRS (e.g. El-Gazzar et al., 1999; Murphy, 1999). Because such companies depend more on equity financing, this induces public disclosure of financial information.

In contrast, companies with *higher* debt-to-equity ratios tend to have well developed relationships with banks (who are granted direct access to company information) and are less reliant on public disclosure of financial information.

Nonetheless, a competing argument, supported by agency theory (Jensen & Meckling, 1976), is that companies with higher debt-to-equity ratios need to ensure an efficient monitoring of agency relationships between shareholders and creditors (Dumontier & Raffournier, 1998). Since financial statements can be used to monitor these agency relationships, companies with higher debt-to-equity ratios will be disposed positively to adopt IFRS.

We have reflected on these competing views, and have decided to adopt a neutral position. Accordingly, the following hypothesis does not indicate the *direction* of the relationship expected between the level of the debt-to-equity ratio and the preparedness of companies to implement IFRS.

H_5. The degree of preparedness of companies to implement IFRS is related to leverage.

3.6. Investment in foreign company equity

The level of a company's investment in the equity of foreign companies seems likely to be a further factor that will encourage the adoption of IFRS. Reliance on IFRS will help to reduce the cost of preparing consolidated financial statements. It will also lead annual reports to contain information about the performance of investment in foreign companies that is more relevant and comparable.

H_6. The degree of preparedness of companies to implement IFRS increases with their level of financial investment in foreign company equity.

4. Data and method

The preceding six hypotheses were analysed using data drawn from companies listed on the Euronext Lisbon Stock Exchange. To put these data into context, we begin by briefly outlining some pertinent features of the Portuguese accounting system, and then explain our data collection and analysis methods.

The Portuguese accounting system has a continental European influence. The formative basis for its structure is the Roman Code in which justice and moral ideals are used to establish detailed regulations (Mueller, Gernon, & Meek, 1997; Nobes & Parker, 2004; Salter & Doupnik, 1992).[3] Portuguese accounting has a strong code-law tradition, featuring an official plan of accounts (*Plano Oficial de Contabilidade*). Tax law has a pronounced influence. The accounting profession does not influence the standards setting process strongly. The preparation of financial statements is oriented to the needs of banks and the State, rather than those of shareholders and creditors.

Portuguese accounting standards have evolved through two main phases. The first phase was from 1977 (when the first Official Accounting Plan came into force) until 1989. This national Accounting Plan was influenced strongly by the French accounting system. The second phase was from 1989 onwards. The EU's Directives were introduced into the Portuguese accounting system and accounting standards named *Directrizes Contabilísticas* (DCs) were issued. The DCs regulate, in an autonomous way, certain accounting areas considered relevant in the national context. DCs were issued to keep the Portuguese accounting system in line with international accounting trends.

Portuguese accounting rules and practices have converged gradually over the past two decades to conform with IASB accounting standards (Fontes, Rodrigues, & Craig, 2005; Jarne Jarne, 1997). However, these studies point out that this approximation did not result from direct application of IFRS by companies. Rather, the convergence arose from the inclusion in the Portuguese accounting system of the DC's, which had their genesis in the IASB standards. Despite this evolution, there are numerous differences and disparities between Portuguese accounting standards and IASB standards in the depth and complexity with which several accounting subjects are handled.[4] As a consequence, considerable preparation was required by Portuguese companies to ready themselves to comply with IFRS in 2005. Understanding the actions of Portuguese companies in dealing with IFRS allows us to make some inferences about the likely behaviour of firms in other code-law countries which are faced with pressures to adopt IFRS.

[3] This code law basis is unlike countries that have a strong *common law* influence (e.g., Anglo-Saxon countries) where the legal system is based on a smaller set of written laws that are complemented by jurisprudence.

[4] For more information about the main differences between Portuguese Accounting Standards and IASB Standards, see the International Forum for Accountancy Development's Report "GAAP 2001"on Deloitte's website (Deloitte, 2007), and Fontes et al. (2005).

Empirical data were collected by means of a questionnaire survey that was posted on 15 September 2003 to the population of 56 Portuguese companies listed on the Euronext Lisbon Stock Exchange on 31 August 2003. Thirty-one questionnaires (55%) were returned and processed. The core of standards used by the 31 respondent companies in their consolidated financial statements for 2002 were as follows:

• Portuguese GAAP	27
• Portuguese GAAP *and* US GAAP	2
• Portuguese GAAP *and* IFRS	2

We found the sample to be representative and concluded that statistical inference could be made.[5]

Our empirical analysis proceeded in two stages. In stage 1, sample companies were assigned to one of six groups on the basis of their level of preparedness as ascertained from questionnaire responses to three specific questions (outlined later). Their preparedness by group (PREP G) was analysed according to the company characteristics outlined in H_1 H_2, H_3, H_4, H_5 and H_6, using ordinal regression techniques. In stage 2, we improved the dependent variable by analysing two more questions, and developed a continuous variable using the second-generation multivariate analysis technique known as structural equation modelling (SEM). We then analysed the effect of specific characteristics for sample companies, using multiple regressions.

5. Empirical analysis: ordinal regression

In the absence of prior research into the preparedness of companies to adopt IFRS, we were guided by the International Forum for Accountancy Development (2002) concerning the role each entity involved in the convergence process should play; and by the view of PricewaterhouseCooper (PWC, 2000, 2002) regarding the factors deemed to be indicative of a company's preparedness to adopt IFRS.

Dependent variable: Level of preparedness to adopt IFRS.

We classified companies into one of six groups according to specified characteristics, and defined the dependent variable, PREP G (where G stands for group), as the level of preparedness of companies in each group to adopt IFRS. In our questionnaire responses, we assessed the level of preparedness of each group of companies by analysing responses to the following three questions:

Core of standards: Which core of standards is used currently by the company?

- National standards
- National standards and US GAAP
- National standards and IFRS

Impact assessment: Has the company assessed the impact of IFRS?

- No
- In progress
- Yes

Conversion initiation: Has the company initiated the process to convert to IFRS?

- No
- In progress
- Yes

[5] We used the Komolgorov-Smirnov z test to evaluate whether three variables (number of employees in 2002, turnover in Euros in 2002, and total assets in Euros in 2002) were distributed normally. None of these variables had a Bell-shaped distribution ($p = 0.000$). The Wilcoxon non-parametric test revealed no evidence that the sample companies were significantly different from population companies in terms of number of employees ($p = 0.281$), turnover ($p = 0.636$), and total assets ($p = 0.189$).

Based on their answers, sample companies were assigned to one of six different groups. Each group represented distinct levels of preparation to implement IFRS.

(a) *Groups 0 to 3*: Companies using national standards.
- *Group 0:* had not initiated the conversion process, and had not assessed the impact of IFRS;
- *Group 1*: had not initiated the conversion process, but had an assessment process in progress;
- *Group 2*: had initiated the conversion process, and had an assessment process in progress; and
- *Group 3*: had initiated the conversion process, and had completed an assessment of the impact of IFRS.

(b) *Group 4*: Companies using national standards and US GAAP.

This core of standards is much more complex and detailed than Portuguese accounting standards and has the same Anglo-Saxon framework as IFRS. Several studies point to the similarity of the financial information produced by compliance with IFRS and by compliance with US GAAP (e.g. Leuz, 2003; Street & Gray, 1999). Companies using US GAAP exhibit a higher degree of preparedness to adopt IFRS than companies which follow only Portuguese standards. Nonethless, the companies using US GAAP are less prepared than companies which are already using IFRS.

(c) *Group 5*: Companies using national standards and IFRS.

These companies are fully prepared.

The higher the assigned group number, the higher the degree of preparedness of that group (PREP G) to adopt IFRS. Thus, the dependent variable, PREP G, is an ordinal variable that can range between 0 and 5.

5.1. Independent variables

5.1.1. Company size

There is a significant Pearson correlation between sample data for number of employees, turnover, and fixed asset values ($r > 0.8$, $p = 0.000$). As a result, we used Principal Components Analysis (PCA) to compose a measure that reflects several dimensions of company size. The Kaiser–Meyer–Olkin (KMO) measure of sampling adequacy (0.738) and Bartlett's test values ($p = 0.000$) indicate that PCA can be conducted legitimately. The three variables were joined in a single component that explains 92% of their cumulative variance. The PCA estimated scores were used as the size variable (SIZE).

5.1.2. Commercial internationalization

Several studies have measured commercial internationalization by the ratio of foreign sales to total sales (Dumontier & Raffournier, 1998; García & Zorio, 2002; Murphy, 1999; Tagesson et al., 2003). However, Duru and Reeb (2002) argue that this proxy mixes export sales with foreign subsidiary sales and ignores some of the complexity of international activity. Mindful of this criticism, we constructed an index to capture several aspects of commercial internationalization. The steps to develop this measure were similar to those underlying the size index.

Pearson correlation coefficients for foreign turnover, number of foreign subsidiary companies, and number of foreign geographic reporting segments were significant ($r > 0.65$, $p = 0.000$). Thus, we again performed PCA. The emerging component explains 82% of the cumulative variance of the three original variables. The scores estimated by PCA were used as the commercial internationalization variable (COMINT).

The remaining independent variables were measured by proxies that were used in most of the studies included in Table 1:

Leverage:	DEBT = Total debt/Total assets
Rate of profitability:	ROE = Net income/Total equity
Auditor type:	AUD = 1 if the auditor is a Big 4 firm
	AUD = 0 if the auditor is not a Big 4 firm

Share of financial investments held in the equity of foreign companies:

INVFR = percentage of financial investment in foreign company equity.

We screened all variables for outliers using the Mahalanobis distance technique. This revealed one outlier for SIZE and another for COMINT. Both outliers were discarded, leaving a final sample of 29 companies (52% of the population).

Table 2
Test statistics

	Kruskal–Wallis					ANOVA
	SIZE	COMINT	ROE	AUD	INVFR	DEBT
Chi-square	15.50	10.05	5.93	11.29	1.27	*F*: 0.978
Asymp. Sig.	0.008	0.074	0.313	0.046	0.938	Asymp. Sig 0.452

5.2. Assessing differences among groups of companies

The six groups of companies (Groups 0, 1, 2, 3, 4, 5) were found to have different characteristics. ANOVA and Kruskal–Wallis tests revealed significant differences among the groups of companies in terms of SIZE ($p = 0.008$, two-tailed) and AUD ($p = 0.046$, two-tailed), thereby representing distinct levels of preparedness to adopt IFRS. COMINT was also a distinctive characteristic given that the underlying hypothesis (H_2) states the direction of the relationship ($p = 0.037$, one-tailed). The other variables (ROE, DEBT, INVFR) were not significantly different between the groups for values of $p < 0.05$ (Table 2).

To isolate the characteristics of companies that exert a positive influence on preparedness to adopt IFRS, we developed an ordinal regression model with PREP G as the dependent variable and with the three distinctive company characteristics revealed above as the independent variables. The initial model we specified (Model A) posits that for companies in any group *i*:

$$\text{Model A}: \quad \text{PREP}\,G_i = \beta_0 + \beta_1\,\text{SIZE}_i + \beta_2\,\text{INT}_i + \beta_3\,\text{AUD}_i + \varepsilon_i$$

We inspected the correlations among the independent variables to detect any collinearity. There was a significant correlation between SIZE and COMINT ($r = 0.587$, $p = 0.001$), but no significant correlation between SIZE and AUD ($r = 0.211$, $p = 0.272$) or between AUD and COMINT ($r = 0.321$, $p = 0.090$). Since the collinearity problem is overcome if the correlated variables do not belong to the same regression model, the specified model was divided into Model B and Model C, as follows:

$$\text{Model B}: \quad \text{PREP}\,G_i = \beta_0 + \beta_1\,\text{SIZE}_i + \beta_2\,\text{AUD}_i + \varepsilon_i$$

$$\text{Model C}: \quad \text{PREP}\,G_i = \beta_0 + \beta_1\,\text{INT}_i + \beta_2\,\text{AUD}_i + \varepsilon_i$$

The results of ordinal regressions for Models B and C are displayed in Table 3.

The independent variables in Model B and Model C are significant explanators of the dependent variable: SIZE ($p = 0.005$, two-tailed), AUD ($p = 0.018$ and $p = 0.022$, two-tailed) and COMINT ($p = 0.025$, two-tailed). Thus, the companies that are better prepared to adopt IFRS are those that are larger, have higher levels of international commerce, and are audited by a Big 4 audit firm. The probability thresholds reveal (for $p < 0.05$, two-tailed) that there are significant differences among companies belonging to groups 2, 3, 4, and 5 in terms of size, degree of commercial internationalization, and auditor type: that is, better prepared groups of companies exhibit distinctive characteristics. Companies that have not yet initiated the conversion process (Groups 0 and 1) do not have distinctive characteristics. The Log-likelihood test of significance ($p = 0.000$) indicates that the models are well fitting.

6. Empirical analysis: multiple regression

The previous section analyzed the extent of company preparedness (PREP G) to adopt IFRS on the basis of a grouping of companies according to the core of standards used, whether impacts of IFRS had been assessed, and whether the conversion process had been started. However, we believe the degree of preparedeness to adopt IFRS is also associated with several procedures companies develop to acquire expertise with IFRS. A company that has already assessed the impact of IFRS on its financial accounting information processing system and on the training needs of staff, is better prepared to adopt IFRS than a company that has only assessed the changes likely to ensue in its financial statements. Likewise, a company that has initiated moves to convert to IFRS by providing training for employees, and by making necessary changes to its financial accounting information processing system, is better prepared to adopt IFRS than a company that is only training staff. With this in mind, we asked the following two additional questions:

Table 3
Ordinal regressions: Models B and C

Model	Variable	Estimate	S.E.	Prob.
B	SIZE	3.682	1.317	0.005
	AUD	3.304	1.402	0.018
	Threshold			
	PREP G: Group 0 to 1	−0.316	1.300	0.808
	PREP G; Group 1 to 2	1.647	1.452	0.257
	PREP G: Group 2 to 3	4.277	1.505	0.004
	PREP G: Group 3 to 4	5.217	1.571	0.001
	PREP G: Group 4 to 5	6.902	1.854	0.000
	Log-likelihood test: $p = 0.000$			
C	Variable			
	COMINT	1.610	0.720	0.025
	AUD	3.206	1.397	0.022
	Threshold			
	PREP G: Group 0 to 1	0.221	1.246	0.859
	PREP G; Group 1 to 2	2.162	1.401	0.123
	PREP G: Group 2 to 3	4.509	1.445	0.002
	PREP G: Group 3 to 4	5.102	1.476	0.001
	PREP G; Group 4 to 5	5.949	1.561	0.000
	Log-likelihood test: $p = 0.000$			

Mode of assessment question: Did the assessment process evaluate:

- Accounting policy changes and consequent changes to the financial statement values?
- Financial reporting system changes?
- The scope of new training to be provided to management and staff?
- Costs involved?
- Reactions of analysts and investors?

Process of conversion question: Did the conversion process comprise:

- Preparing the financial reporting system?
- Training accounting and finance department staff?
- Preparing additional accounting information?
- Other procedures? (No company chose this option.)

The three questions outlined in the previous section (concerning core of standards, impact assessment, and conversion initiation), coupled with these two additional questions (mode of assessment, process of conversion), yield substantial information on the preparedness of companies to implement IFRS. Accordingly, we constructed a measure (designated simply as PREP) to fully embrace the preparation process. This constructed measure (PREP) draws upon the answers to all five of these questions (summarized in Table 4).

We used covariance structural equation modelling (SEM) techniques in the LISREL software package (version 8.54). SEM is a set of statistical techniques used to define, fit and test structural relationships between several indicators or observed variables (variables *A*, *B*, *C*, *D*, and *E*) and one or more latent variables – here, the degree of preparedness (PREP) for a particular company.[6] Using LISREL software we developed PREP as a continuous variable which captures the latent behavior beyond the responses to the five questions (see Table 5).

[6] Jöreskog and Sörbom (1993, 2002) and Tabachnick and Fidell (2001) provide further information on SEM, including its advantages over first generation multivariate analysis techniques.

Table 4
Variables included in the composed measure

Variable	Options	Score
A (Which core of standards is currently used by the company?)	IFRS and national standards	2
	US GAAP and national standards	1
	National standards	0
B (Has the company assessed the impact of IFRS?)	Yes	2
	In progress	1
	No	0
C (Has the company initiated the conversion process to IFRS?)	Yes	2
	In progress	1
	No	0
D (What did the assessment process comprise?)	Each company was assigned a score corresponding to the sum of the number of options selected. More items indicate greater preparation	0–5
E (What did the conversion process comprise?)	Each company was assigned a score corresponding to the sum of the number of options selected. More items indicate greater preparation	0–3

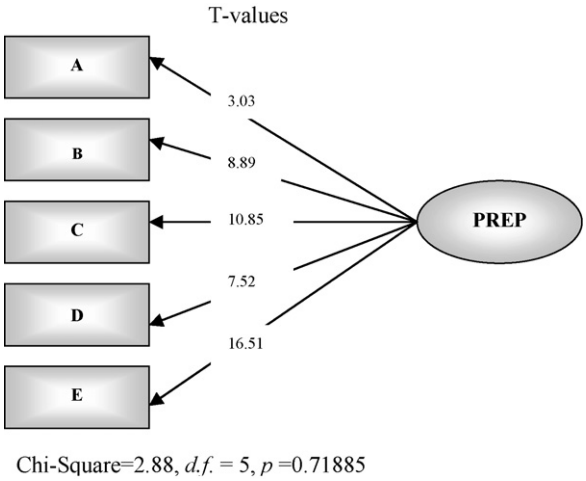

Fig. 1. Model of the PREP variable.

We began by defining the model that was thought to best represent PREP. Parameter estimates, based initially on guesses, were changed incrementally until the difference between the sample correlation matrix and the correlation matrix estimated from those parameters, had been minimised. The resultant model is represented in Fig. 1. The indicator variables *A*, *B*, *C*, *D*, and *E* (shown as rectangles) are valid indicators of the latent variable PREP (shown as an ellipse), since every *t* value is significant ($N = 29$, $t > 2.045$, $p < 0.05$, two-tailed).[7] The non-significant Chi-square ($p = 0.71885$) indicates the model fits the data well. The null hypothesis of the Chi-square test is that the sample correlation matrix arose because of the relationships specified in the LISREL Model (Ullman, 2001).

Table 5 provides frequency counts of the responses of each company to each of the five questions, together with descriptive statistics of the estimated values of PREP.

A maximum value of 2.60 was specified by the model defined by the LISREL as the highest value possible for the latent variable PREP. Companies 17 and 23 attained this maximum on the basis of their aggregate maximum raw

[7] The correlation matrix produced by the model is based on the estimated parameters, such as "$A = 3.03 \times$ PREP, Error variance = 0.96, $R^2 = 0.53$".

Table 5
Degree of preparedness of companies to adopt IFRS

Company		*A* Core of standards	*B* Impact assessment	*C* Conversion initiation	*D* Mode of assessment	*E* Process of conversion	PREP
1		0	1	1	1	1	1
2		0	1	1	3	2	1.37
3		1	1	1	4	2	1.53
4		1	1	0	1	0	0.65
5		0	1	1	3	2	1.37
6		0	1	0	4	0	0.84
7		0	1	0	4	0	0.84
8		0	1	0	2	0	0.66
9		0	1	1	3	1	1.18
10		0	0	0	0	0	0
11		0	0	0	0	0	0
12		0	1	1	5	1	1.35
13		0	0	0	0	0	0
14		0	1	1	3	1	1.18
15		0	0	0	0	0	0
16		0	1	0	2	0	0.66
17		2	2	2	5	3	2.6
18		0	0	0	0	0	0
19		0	1	0	3	0	0.75
20		0	2	1	2	1	1.58
21		0	1	1	3	2	1.37
22		0	1	0	3	0	0.75
23		2	2	2	5	3	2.6
24		0	1	1	3	3	1.56
25		0	1	1	3	2	1.37
26		0	1	0	2	0	0.66
27		0	1	2	3	1	1.41
28		0	2	1	4	2	1.94
29		0	1	0	2	0	0.66
Reg. coefficients Lisrel		0.77	0.96	0.92	0.8	0.9	
Standard deviation		0.25	0.11	0.085	0.11	0.055	
T-Values		3.03	8.89	10.85	7.52	16.51	
Average							1.0305
Median							1.0015
Standard error							0.6967
Minimum							0.0000
Maximum							2.6000
Percentiles	25						0.6618
	50						1.0015
	75						1.3914

score of 14 from the five specified questions. Both of these companies were currently employing IASB, had begun the conversion process to IFRS in 2000 or 2001, and had already assessed the impact of IFRS over all surveyed subjects. A further investigation of the profiles of companies 17 and 23 revealed these companies are audited by Big 4 accounting firms, that their accountants have a profound knowledge of IFRS, and that they believe benefits of implementation fully compensate for the inherent costs. In general, companies with the minimum PREP value of zero (companies 10, 11, 13, 15, 18) were using Portuguese accounting standards, had not started the conversion process, and had no intention to assess the impact of IFRS. The most common characteristic of these companies is their small size.

The average PREP of sample companies was 1.03, well less than half of the maximum value possible. Companies 10, 11, 13, 15 and 18 had a strong negative influence on the sample's overall indication of PREP. Analysis of the questionnaires confirmed that companies with PREP close to the median usually had already assessed the impact of IFRS on one or two subjects (accounting policy changes and consequent changes to the financial statement values;

Table 6
Multiple regression results for Models E and F

Model	Variable	Coefficient	S.E	Prob.
E	SIZE	0.671	0.109	0.000
	DEBT	−0.009	0.406	0.982
	INV	−0.002	0.004	0.590
	AUD	0.838	0.198	0.000
	Constant	0.455	0.284	0.122
	R^2 51.55%			
	K–S test for normality of residuals		$Z = 0.099$	0.200
F	INT	0.178	0.193	0.366
	DEBT	0.126	0.370	0.736
	ROE	−0.275	0.065	0.000
	INV	−0.002	0.004	0.618
	AUD	0.928	0.258	0.002
	Constant	0.179	0.258	0.461
	R^2: 44.12%			
	K–S test for normality of residuals		$Z = 0.108$	0.200

and the scope of new training to be provided to management and staff) and had either begun the conversion process in 2003, or intended to begin in 2004.

Further analysis of the questionnaires revealed that accountants of companies with the minimum PREP value of zero (companies 10, 11, 13, 15, and 18) tended to be familiar with just a few of the individual IFRS. Moreover, these accountants believed the benefits of implementation were dubious, prompting the question: Does international accounting harmonization fulfil the needs of all types of companies, including listed companies? A case can be made that they do not: that the dominant model for harmonizing international accounting does not serve all companies equally well (Lehman, 2006); and that it stems from decision-usefulness assumptions which cater primarily to a business world characterized by large scale enterprises, deregulation, and privatisation.

To verify whether the individual characteristics of companies jointly explain PREP, we conducted multiple linear regression analysis of Model D:

$$\text{Model D}: \quad \text{PREP}_i = \beta_0 + \beta_1 \,\text{SIZE}_i + \beta_2 \,\text{INT}_i + \beta_3 \,\text{DEBT}_i + \beta_4 \,\text{ROE}_i + \beta_5 \,\text{INV}_i + \beta_6 \,\text{AUD}_i + \varepsilon_i$$

Because of the significant correlation between SIZE and COMINT ($r = 0.587$, $p = 0.001$), and between SIZE and ROE ($r = -0.747$, $p = 0.000$), we divided Model D into Models E and F, as follows:

$$\text{Model E}: \quad \text{PREP}_i = \beta_0 + \beta_1 \,\text{SIZE}_i + \beta_2 \,\text{DEBT}_i + \beta_3 \,\text{INV}_i + \beta_4 \,\text{AUD}_i + \varepsilon_i$$

$$\text{Model F}: \quad \text{PREP}_i = \beta_0 + \beta_1 \,\text{INT}_i + \beta_2 \,\text{DEBT}_i + \beta_3 \,\text{ROE}_i + \beta_4 \,\text{INV}_1 + \beta_5 \,\text{AUD}_i + \varepsilon_i$$

Multiple regressions for Model E and Model F are presented in Table 6.

The regression models explain a large part of the behaviour of the dependent variable, PREP. For Model E, the independent variables explain 52% of the variation in PREP. Two characteristics are significant explanators of the dependent variable: SIZE ($p = 0.000$, two-tailed), and AUD ($p = 0.000$, two-tailed). Both regression coefficients have a positive sign, indicating that large companies and companies audited by a 'Big-Four' firm exhibit a greater level of preparedness to implement IFRS. These results are consistent with H_1 and H_3.

For Model F, the independent variables explain 44% of the variation in PREP. Again, two characteristics are significant explanators of PREP: ROE ($p = 0.000$, two-tailed) and AUD ($p = 0.002$, two-tailed). The regression coefficients indicate that less profitable companies and companies audited by a Big 4 accounting firm, are better prepared to adopt IFRS. The latter result is consistent with H_3. However, the finding that less profitable Portuguese companies are better prepared to adopt IFRS is contrary to H_4. A possible explanation is that such companies are more eager to adopt a core of standards considered less conservative, and likely to boost their reported rate of profitability. Thus, because there is a negative correlation between size and rate of profitability ($r = -0.747$, $p = 0.000$), and because both variables are correlated with PREP, it is plausible that larger, less profitable companies, are the ones better prepared to implement IFRS.

7. Conclusions and implications

Approximately a year and a half before the adoption of IFRS on 1 January 2005, the level of preparedness of Portuguese listed companies to implement IFRS was relatively low, with an average level (1.03) well below half of the maximum possible value of 2.60 calculated using SEM analysis. However, 14 of the 29 companies (48%) indicated they were evaluating the impact of IFRS and were developing conversion processes. Ordinal regression analysis yielded evidence consistent with hypotheses H_1, H_2 and H_3: that is, larger companies with higher levels of commercial internationalization, and audited by Big 4 international accounting firms, displayed higher levels of preparedness to implement IFRS. Subsequently, these results were corroborated, in part, by multiple regression analysis, which confirmed the hypotheses relating to company size (H_1) and having a Big 4 international accounting firm as auditor (H_3). However, they produced a confounding result in respect of the rate of profitability (H_4). None of the analyses adduced evidence of a significant relationship between PREP and leverage (H_5); or between PREP and the level of financial investment in foreign company equity (H_6).

Smaller companies appear to be less inclined to abandon national accounting standards in favour of IFRS. This disinclination, together with that of companies with lower degrees of commercial internationalization, suggests they believe that convergence is unlikely to be advantageous for them. Smaller companies possibly regard IFRS as more of an internationally imposed obligation of little relevance to them.[8] Although strong support for IFRS has been accorded by MNCs (Rodrigues & Craig, 2007), our findings suggest that IFRS should not be adopted by all listed companies: IFRS seem to be too complicated and expensive for SMEs (whether listed or not).

Our study points to the important influence of Big 4 accounting firms in the accounting convergence process. These firms are represented prominently in the IASB structure and have supported IASB activities strongly. They are well-placed to influence their clients' accounting policy choices and procedures. This is consistent with the argument of Lehman (2006, p. 978) that the Big 4 accounting firms 'have the power to control agendas and create technologies of control.' The finding is consistent too with the view that the 'international financial and investment community seemingly has taken much less interest in supranational accounting standardization than has the international audit industry' (Hopwood, 1994, p. 249).

Our results allow us to develop a picture of the characteristics of companies that are likely to have a reduced propensity to implement IFRS voluntarily and to lag in the preparation process: small companies, operating in one country, and audited by non-Big 4 accounting firms. Such companies are likely to feel more comfortable using familiar national standards—ones which will often match their national economic, social and legal backgrounds more closely.

The generalisability of our findings is limited by the Portuguese setting. However, we believe that, at a minimum, similar findings would be found in national settings like that in which accounting operates in Portugal: EU/EAA member, code-law background, national plan of accounts, and a strong influence of tax laws. This would capture countries such as Spain, France, Luxembourg, Belgium, or Italy. Future research might be directed to investigating whether the factors identified in Portugal as having a positive influence on the degree of preparedeness to adopt IFRS are influential in other countries as well, especially the 52 countries (see Deloitte, 2007) for which the IASB is seeking information about whether or not IFRS had been mandated for use.

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References

Al-Basteki, H. (1995). The voluntary adoption of International Accounting Standards by Bahraini corporations. *Advances in International Accounting*, *8*, 47–64.

Carruthers, B. G. (1995). Accounting, ambiguity and the new institutionalism. *Accounting, Organizations and Society*, *20*(4), 313–328.

[8] The IASB Project "Accounting Standards for Small and Medium-sized Entities" (for more information see www.iasb.org.) evidences the IASB's concern with the adequacy of IFRS to companies of different sizes.

Deloitte. (2005). *IFRS in your pocket 2005*. London: Deloitte.
Deloitte. (2007). Uses of IFRS by Jurisdiction. Retrieved February 9, 2007, IAS Plus, http://www.iasplus.com/country/useias.htm.
DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, *48*(2), 147–160.
Dumontier, P., & Raffournier, B. (1998). Why firms comply voluntary with IAS: An empirical analysis with Swiss data. *Journal of Accounting Financial Management and Accounting*, *9*(3), 216–245.
Duru, A., & Reeb, D. (2002). International diversification and analysts' forecast accuracy and bias. *Accounting Review*, *77*(2), 415–443.
El-Gazzar, S. M., Finn, P. M., & Jacob, R. (1999). An empirical investigation of multinational firms' compliance with International Accounting Standards. *The International Journal of Accounting*, *34*(2), 239–248.
Fontes, M. A., Rodrigues, L. L., & Craig, R. (2005). Measuring the convergence of national accounting standards with International Financial Reporting Standards. *Accounting Forum*, *29*(4), 415–436.
Gallhofer, S., & Haslam, J. (2006). The accounting–globalisation interrelation: An overview with some reflections on the neglected dimension of emancipatory potentiality. *Critical Perspectives on Accounting*, *17*(7), 903–934.
García, M. A., & Zorio, A. (2002). Características de las Empresas Europeas que Aplican las Normas del IASB: Evidencia empírica de Cara al debate regulador en la Nueva Fase de Armonización Contable. *Revista Española de Financiación y Contabilidad*, *XXXI*(111 (enero–marzo)), 75–110.
Graham, C., & Neu, D. (2003). Accounting for globalization. *Accounting Forum*, *27*(4), 449–471.
Hopwood, A. J. (1994). Some reflections on the harmonisation of accounting within the EU. *The European Accounting Review:*, *3*(2), 241–253.
IFAD. (2002). GAAP convergence 2002—highlights. International Forum for Accountancy Development. From http://www.ifad.net/content/ie/ie_f_gaap_frameset.htm.
Jarne Jarne, I. (1997). *Clasificación y Evolución de los Sistemas Contables*. Madrid: Monografías AECA.
Jensen, M., & Meckling, W. (1976). Theory of the firm: Managerial behaviour, agency costs and ownership structure. *Journal of Financial and Economics*, *3*, 305–361.
Jöreskog, K. G., & Sörbom, D. (1993). *LISREL 8: Structural equation modelling with the SIMPLIS command language* (5th ed). Chicago: Scientific Software International Inc.
Jöreskog, K. G., & Sörbom, D. (2002). *PRELIS 2: User's reference guide* (3rd ed.). Chicago: Scientific Software International Inc.
Lehman, G. (2006). A critical perspective on the harmonization of accounting in a globalization world. *Critical Perspectives on Accounting*, *16*(7), 975–992.
Leuz, C. (2003). IAS versus US GAAP: Information asymmetry-based evidence from Germany's new market. *Journal of Accounting Research*, *41*(3), 445–472.
Miller, P., & Rose, N. (1990). Governing Economic Life. *Economy and Society*, *19*(1), 1–31.
Mueller, G., Gernon, H., & Meek, G. (1997). *Accounting: An international perspective* (4th ed.). Boston: Richard D. Irwin Inc.
Murphy, A. B. (1999). Firm characteristics of Swiss companies that utilize international accounting standards. *The International Journal of Accounting*, *34*(1), 121–131.
Neu, D. (2001). Banal accounts: Subaltern voices. *Accounting Forum*, *25*(4), 319–333.
Neu, D., Gomez, E. O., Léon, O., & Zepeda, M. (2002). Facilitating globalization processes: Financial technologies and the World Bank. *Accounting Forum*, *26*(3–4), 271–291.
Nobes, C., & Parker, R. (2004). *Comparative international accounting* (8th ed.). New York: Prentice Hall.
PWC. (2000). *International accounting standards in Europe—2005 or now?* London: PricewaterhouseCoopers.
PWC. (2002). *International accounting standards in Europe—2005-ready or not*. London: PricewaterhouseCoopers.
Rodrigues, L. L., & Craig, R. (2007). Assessing international accounting harmonization using Hegelian dialectic, isomorphism and foucault. *Critical Perpectives on Accounting*, *18*(6), 739–757.
Salter, S. B., & Doupnik, T. S. (1992). The relationship between legal systems and accounting practices. *Advances in International Accounting*, *5*, 3–22.
Street, D. L., & Gray, S. J. (1999). How wide is the gap between IASC and U.S. GAAP? Impact of the IASC comparability project and recent international developments. *Journal of International Accounting, Auditing and Taxation*, *8*(1), 133–164.
Tabachnick, B. G., & Fidell, L. S. (2001). *Using multivariate statistics. International students' edition* (4th ed.). Northridge: Allyn & Bacon.
Tagesson, T., Dahlgren, M., Gamlén, M., & Häkansson, M. (2003). *The relationship between attitude towards harmonization and the internationalization of the corporation: A study of the attitudes towards the implementation of IASB standards among Swedish listed companies. EIASM Workshop on Implementing IFRS*. Brussels: EIASM.
Ullman, J. B. (2001). Structural equation modelling. In B. G. Tabachnick & L. S. Fidel (Eds.), *Using multivariate statistics. International students' edition* (4th ed., pp. 653–771). Northridge, USA: Allyn & Bacon.
Verrecchia, R. (1993). Discretionary disclosure. *Journal of Accounting and Economics*, *5*(3), 305–329.
Volcker, P. A. (2000). The implication of globalism is globalism. *Journal of International Financial Management & Accounting*, *11*(3), 207–214.
Watts, R., & Zimmerman, J. (1983). Agency problems, auditing and the theory of the firm: Some evidence. *Journal of Law and Economics*, *26*(3), 613–633.
Watts, R., & Zimmerman, J. (1986). *Positive accounting theory*. Englewood Cliffs: Prentice-Hall.