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156
Volumen XLI

ASOCIACIÓN ESPAÑOLA DE CONTABILIDAD Y ADMINISTRACIÓN DE EMPRESAS

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revista española de FINANCIACION Y CONTABILIDAD

spanish journal of finance and accounting

This publication is indexed and abstracted in the Social Sciences Citation Index (SSCI), Social Scisearch (SS) and The Journal Citation Reports (JCR), Social Sciences Edition, since Vol. 37 (137) 2008.

Since 2010 is included in SCOPUS (Elsevier).

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Asociación Española de Contabilidad y Administración de Empresas

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y Administración de Empresas

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Tels.: 91 547 37 56 - 91 547 44 65
Fax: 91 541 34 84

ISSN: 0210-2412

Depósito legal: M. 18735-1972

Imprime:

Gráficas ORMAG
Avda. de la Industria, 8. Nave 28 • Tel.: 91 661 78 58
E-mail: ormag@graficasormag.com
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Estadísticas 2012

Originales recibidos	2012 (*)	2011	2010	2009	2008	2007
	106	74	63	59	60	64

Artículos publicados en 2012: 153 (5) 154 (5) 155 (5) 156 (__) *Total* ___

Resultados del proceso de evaluación en 2012 (hasta 6-12-2012).

	De años anteriores	***2012***	***TOTAL***
Manuscritos	58	98	156
En proceso			
En 1.ª evaluación	11	29	40
En 2.ª y 3.ª evaluación	6	4	10
Con decisiones			
Rechazados	19	55	74
Aceptados	19	3	22
Retirados	3	7	10
Total procesados			

Tasa de aceptación 2012		**14 %**
Tasa de aceptación 2008-2012		21,60%
Plazo medio de respuesta		
1.ª evaluación	66 días	
2.ª evaluación	54 días	
3.ª evaluación	28 días	

(*) Recibidos desde el 23-11-2011 (ref. 2011-70) hasta 6-12-2012 (ref. 2012-98). Son ocho de 2011 (recibidos desde el 23/11/12 ref. 2011-70 hasta el 23/12/11 ref. 2011-77) más noventa y ocho de 2012 (recibidos hasta el 6/12/12). Total = 106.

Firms' capital structure under Akerlof's separating equilibrium *

La estructura de capital de las empresas y el teorema de separación de Akerlof

Paolo Saona. Saint Louis University – Madrid Campus
Eleuterio Vallelado **. Universidad de Valladolid

ABSTRACT We use a sample of seven countries, for the period 2001-2006 to test the hypotheses related to the separating theorem proposed by Akerlof (1970) applied to firms' capital structure. We develop an empirical integrated model of capital structure that takes into account the trade-off, the pecking order and the market timing theories. We conclude that: 1. Being part of the market index is a guarantee of the quality of the firm which reduces the need for debt; 2. Indexed companies with growth opportunities use less debt to finance their investments to avoid debt overhang; 3. Non-indexed firms with a deficit of funds for financing their investments face higher financial constraints than indexed firms with a deficit of funds in particular in bearish markets, and 4. The capital structure of non-indexed firms is more influenced by market timing than the capital structure of indexed firms.

KEYWORDS Capital structure; Signaling theory; Indexed firms; Ownership structure; Panel data.

RESUMEN Utilizamos una muestra de empresas de siete países para el período 2001-2006 para probar un conjunto de hipótesis relacionadas con el teorema de separación propuesto por Akerlof (1970) aplicado a la estructura de capital. Desarrollamos un modelo empírico integrado de estructura de capital que considera las teorías del *trade-off*, *pecking order* y del *maket timing*. Concluimos que: 1. Pertenecer al índice de mercado es garantía de la calidad de la empresa que reduce las necesidades de recurrir al endeudamiento; 2. Las empresas indexadas con oportunidades de crecimiento usan menos deuda para financiar sus inversiones y así evitar el control de la deuda; 3. Las empresas no indexadas con déficit de fondos para financiar sus inversiones enfrentan mayores restricciones financieras que las indexadas, en particular en los mercados bajistas, y 4. El *maket timing* influye en mayor medida en la estructura de capital de las empresas no indexadas que en la de las indexadas.

PALABRAS CLAVE Estructura de capital; Teoría de señalización; Empresas indexadas; Estructura de propiedad; Datos de panel.

* **Acknowledgments:** The authors are grateful to two anonymous referees for their detailed comments and suggestions, to the seminar participants at the XVII Finance Forum Conference. The authors also thank Juan Antonio Rodríguez Sanz for his comments in previous versions of this work. Financial support from the Spanish Ministry of Education and from the Castilla y León Ministry of Education is also acknowledged. They also thank Catherine Ramberg for her editorial assistance. Any errors are the responsibility of the authors.
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Recibido 10-03-10 · Aceptado 07-05-12 · · ISSN: 0210-2412

1. INTRODUCTION

The theories on firm capital structure assume that managers hold better information about the future stream of cash flows than investors (Azofra, 1986; Harris and Raviv, 1991). Therefore, the relationship between borrowers and creditors takes place in an arena of «incomplete knowledge» about the intentions of the borrowers in the use of cash flows.

Our goal is to analyse how firm capital structure is affected when the firm is a member of the market index of the most-traded stocks. Being part of the market index could be considered by investors and creditors as a warranty of the quality of the firm's securities that firms which are not part of the market index cannot offer. Thus, the market index creates the conditions for a signaling (separating) equilibrium between indexed and non-indexed firms. It is also referred to as a market with differentiation.

The present research contributes to the literature in that this is the first study which bases its analysis on the differences in the capital structure decisions of indexed and non-indexed firms. This work sheds light on the extent to which indexation itself represents a signaling mechanism about the quality of the firm; it confirms previous findings about the relation between transparency and capital structure decisions (Aggarwal and Aung, 2009). In our investigation, we develop an empirical integrated model of capital structure which considers three theories about capital structure: trade-off, pecking order and market timing. We use a suitable econometric technique to deal with the problems of individual heterogeneity and endogeneity between the dependent.

We find, first, that the extent to which firms are a permanent part of the market index is a guarantee of the quality of the firm due to an increase in the visibility of the company. Second, we observe that indexed companies with growth opportunities use less debt to finance their investments to avoid debt overhang. Third, we find that non-indexed firms with a deficit of funds face higher financial constraints than indexed firms with a deficit of funds, which is particularly relevant in bearish markets; and finally, the market timing postulates have more influence on the capital structure decisions of non-indexed firms than on indexed firms.

This article is organised as follows: following the introduction, section two introduces the literature review and the hypotheses; the third section discusses the sample, the variables and the methodology of the study; section four includes the main results; and finally, in section five we present the main conclusions.

2. THEORETICAL FRAMEWORK

Since the work of Modigliani and Miller (1958) many studies have focused on how much leverage a firm should take on, and how this debt should be composed. Our focus in this paper is on changes in leverage associated with the asymmetries of information that occur when companies' financial assets are traded in secondary markets. There are several theories that explain the capital structure choice by companies. Three of these theories are: trade-off, pecking order, and market timing. However, none of them explicitly acknowledges the influence of secondary markets on information asymmetry. These theories are the departure point in our analysis which is augmented by additional

variables: the investors' perception of firm quality, the influence of ownership structure, and the legal and institutional conditions under which the firms operate.

2.1. The trade-off theory

The trade-off and pecking order theories are considered the two main competing theories about capital structure decisions. Therefore, intuition suggests testing the implicit hypotheses behind these theories separately; however there are some empirical works which have tested these theories and demonstrated that they are complimentary pieces of the same puzzle (Tong and Green, 2005; Cotei and Farhat, 2009; Serrasqueiro and Nunes, 2010).

The trade-off theory postulates that in a fixed period, under conditions of perfect capital markets, the debt ratio ($TD_{i,t}$) of a firm *i*, during the current period *t*, should be equal to the target debt ratio in the same period ($TD^*_{i,t}$). However, in the absence of perfect capital markets, due to asymmetric information, the following process of adjustment should exist:

$$TD_{i,t} - TD_{i,t-1} = \lambda\,(TD^*_{i,t} - TD_{i,t-1}) \quad (1)$$

In this equation λ corresponds to the speed of adjustment to the target. According to the trade-off theory, this coefficient of adjustment is close to 1, thus, $\lambda \approx 1$.

A firm's target debt ratio can be obtained from the regression-based proxy (Farhat, *et al.*, 2009), in which the debt ratio is regressed over several firm factors suggested by the trade-off theory and previous empirical studies (Fama and French, 2002; Flannery and Rangan, 2006; Hovakimian, *et al.*, 2001; Korajczyk and Levy, 2003; Rajan and Zingales, 1995). The regression model is:

$$TD^*_{i,t} = \beta_0 + \sum_{j=1}^{n} \beta_j X_{j,i,t} + \varepsilon_{i,t} \quad (2)$$

where X_j are the firm factors that explain the optimal capital structure. Following the trade-off postulates, we can substitute (2) into (1) and, reordering the terms in function of $TD_{i,t}$, we have the dynamic trade-off model:

$$TD_{i,t} = \lambda \cdot \beta_0 + (1 - \lambda) \cdot TD_{i,t-1} + \lambda \cdot \left(\sum_{j=1}^{n} \beta_j X_{j,i,t}\right) + v_{i,t} \quad (3)$$

With $v_{i,t} = \varepsilon_{i,t} - (1 - \lambda) \cdot \varepsilon_{i,t-1}$, the variables included in the vector X_j are [(1)]: *a)* the growth opportunities, GO (Andrés de, *et al.*, 2004; Bevan and Danbolt, 2002; Danbolt, *et al.*, 2002; Johnson, 1997a, b; Miguel and Pindado, 2001; Ozkan, 2002; Ozkan and Ozkan, 2004; Rajan and Zingales, 1995); *b)* the size of the company, SIZE (Johnson, 1997a; Ozkan and Ozkan, 2004); *c)* the probability of bankruptcy, BKCY (Altman, 1968; Andrés de, *et al.*, 2005), and *d)* the distance of the firm debt position from the industry average

(1) We use the independent variables included in vector X_j as contemporaneous variables according to the previous empirical literature (Dang, 2010; Drobetz and Wanzenried, 2006).

leverage, DIFD (Flannery and Rangan, 2006; Elsas and Florysiak, 2011)[2].Thus, the extended dynamic model is:

$$TD_{i,t} = \alpha_0 + \alpha_1 \cdot TD_{i,t-1} + \alpha_2 \cdot GO_{i,t} + \alpha_3 \cdot SIZE_{i,t} + \alpha_4 \cdot BKCY_{i,t} + \alpha_5 \cdot DIFD_{i,t} + v_{i,t} \quad (4)$$

With:

$\alpha_0 = \lambda\beta_0$

$\alpha_1 = (1 - \lambda)$

$\alpha_j = \lambda\beta_j$, *forj* > 1

$v_{i,t} = \varepsilon_{i,t} - (1 - \lambda) \cdot \varepsilon_{i,t-1}$

2.2. The pecking order theory

The second theory we integrate into our analysis is the pecking order theory. This theory argues that the existence of asymmetric information between managers and investors —shareholders and creditors—, leads to an undervaluation of the securities issued by firms. This increases the financing cost of external sources in comparison with internally generated funds and leads firms to follow a hierarchy, with a preference for internal over external finance, and for debt over equity (Myers, 1984a, b; Myers and Majluf,1984). This theory has been widely tested (Chirinko and Singha, 2000; Frank and Goyal, 2003; Hovakimian, *et al.*, 2002; Korajczyk and Levy, 2003; Lemmon, *et al.*, 2008; Shyam-Sunder and Myers, 1999). The pecking order theory predicts that debt grows when investment exceeds internal funds and falls when investment is less than internal funds. We follow a slightly modified version of the primary model used by Shyam-Sunder and Myers (1999) in levels for the total debt instead of in first differences as:

$$TD_{i,t} = \alpha_0 + \alpha_1 DEF_{i,t}\, \varepsilon_{i,t} \quad (5)$$

Where *DEF* is a variable that measures the financing deficit of firm *i* in year *t*. Shyam-Sunder and Myers (1999) define financing deficit (*DEF*) as:

$$DEF_{i,t} = DIV_{i,t} + I_{i,t} + \Delta WC_{i,t} + R_{i,t-1} - C_{i,t} = \Delta LTD_{i,t} + \Delta E_{i,t} \quad (6)$$

In this equation $DIV_{i,t}$ is the cash dividend of firm *i* at time *t*; $I_{i,t}$ is the net investment of firm *i* at time *t*; $\Delta WC_{i,t}$ is the change in working capital of firm *i* at time *t*; $R_{i,t-1}$ is the current portion of long term debt at the beginning of the period; $C_{i,t}$ is the cash flow after interest and taxes of firm *i* at time *t*; $\Delta LTD_{i,t}$ is the long-term debt issued for firm *i* at time *t*; and $\Delta E_{i,t}$ is the net equity issued for firm *i* at time *t*. Equation (6) suggests that firms finance their deficit of funds following this order: 1. Internal funds; 2. Debt, and 3. Equity, allowing for substitution between debt and equity.

(2) In order to test the robustness of our estimations, following Faulkender and Smith (2007) among others, we have used other variables: amortization and depreciation over total assets, and the fixed assets over total assets, but those variables were not statistically significant in any regression. Therefore, we decided not to include these variables in the empirical model.

By following the pecking order theory, firms will prefer to finance their projects with internally generated cash flows. Thus, the firms' financial decisions depend not only on their deficit of funds but also on firm profitability. Therefore, we complement the empirical pecking order model (5) with a variable that measures profitability (ROA). Thus,

$$TD_{i,t} = \alpha_0 + \alpha_1 DEF_{i,t} + \alpha_2 ROA_{i,t} + \varepsilon_{i,t} \quad (7)$$

In agreement with the arguments of Tong and Green (2005), Cotei and Farhat (2009), and Serrasqueiro and Nunes (2010) we integrate the two theories in our model by adding the financing deficit (DEF) and the profitability (ROA) variables to the partial adjustment model of equation (4) as:

$$TD_{i,t} = \alpha_0 + \alpha_1 \cdot TD_{i,t-1} + \alpha_2 \cdot GO_{i,t} + \alpha_3 \cdot SIZE_{i,t} + \alpha_4 \cdot BKCY_{i,t} + \alpha_5 \cdot DIFD_{i,t} + \alpha_6 \cdot DEF_{i,t} + \alpha_7 \cdot ROA_{i,t} + v_{i,t} \quad (8)$$

2.3. The market timing theory

The third theory we consider is market timing. The market timing theory posits that corporate executives issue securities depending on the time-varying relative costs of equity and debt; in the presence of asymmetries of information, managers will time the market if they have the right incentives. Following Farhat *et al.* (2009) the empirical model to test this theory is:

$$TD_{i,t} = \alpha_0 + \alpha_1 MT_{i,t}\, \varepsilon_{i,t} \quad (9)$$

We integrate the market timing postulates in our empirical model including an MT variable in the partial adjustment model developed in equation (8).

$$TD_{i,t} = \alpha_0 + \alpha_1 \cdot TD_{i,t-1} + \alpha_2 \cdot GO_{i,t} + \alpha_3 \cdot SIZE_{i,t} + \alpha_4 \cdot BKCY_{i,t} + \alpha_5 \cdot DIFD_{i,t} + \alpha_6 \cdot DEF_{i,t} + \alpha_7 \cdot ROA_{i,t} + \alpha_8 \cdot MT_{i,t} + v_{i,t} \quad (10)$$

All these theories take into account the relevance of information on operating decisions which conditions the role of debt. When the information conveyed by issuing debt does not determine the firm's operating decisions, the firm would prefer to issue zero debt or to hold excess cash reserves (Dang, 2010). Nevertheless, if the information provided by issuing debt is a key element of a firm's operating decisions, then a firm issues debt. Firms rely less upon debt financing if their information dissemination improves over time, either because they become more transparent or because they increase their visibility. Lesmond *et al.* (2008) document that increases in leverage are associated with increases in information asymmetry of the firm's remaining equity. Information disclosure occurs in the secondary markets for those securities that are traded continuously and the stock price tends to be more informative than the bond price. Therefore, the relevance of a company in the secondary markets will influence its capital structure.

2.4. The role of guarantees in the signaling equilibrium

To solve the adverse selection problem due to asymmetric information, Akerlof (1970) postulates that better quality firms should offer guarantees to their creditors and investors to create a signaling equilibrium instead of maintaining a joint equilibrium. These guarantees must satisfy two conditions for creating a signaling equilibrium, (which is also known as a separating equilibrium). The first of these conditions is the compatibility of incentives, which occurs when low quality borrowers do not have the same incentive to offer a warranty for the goods they sell (debt). The second condition is the individual rationality: high quality borrowers are in a better condition in the signaling equilibrium than in the joint equilibrium.

The main objective in a signaling equilibrium is that the buyers assign a higher value to an issuance and thus pay a higher price (low interest rates) on debt and/or equity for a higher quality firm; whereas in the joint equilibrium, buyers of debt and/or equity value all issuances in the market identically. The membership in a most-traded-shares index can be related to Heinkel's (1982) proposal of a costless signaling equilibrium, in which sellers incur no deadweight losses and are as well off as they would be in a world of symmetric information. This equilibrium is not subject to the instability problems which may exist in the costly signaling equilibrium.

From our point of view, market indexes of most-traded shares create the conditions for a separating equilibrium between indexed and non-indexed firms. The higher visibility, transparency and reputation of those firms which belong to the index of the most-traded shares in the national capital markets, lead to a lower information gap (reduced information asymmetry and increased transparency) between managers and outsiders (Faulkender and Petersen, 2006).

Transferring the ideas in the seminal work of Akerlof (1970) «The market for lemons», to the study of firms' capital structure, we consider national stock market indexes as the ingredient that signals quality and reduces uncertainty. A firm's insiders know better than outside investors whether the firm is of good or bad quality. Issuing debt (or any other security) in capital markets entails a cost. Initially, the market does not know whether the issuing firms are of good quality or bad quality because usually the information is revealed later. For projects of good quality to be financed, information transfer must occur. In that case, only good quality firms will be willing to incur information transfer costs in order to increase their value in the market (Ravid, 1996). In contrast, poor quality firms will not be willing to mimic this behaviour and outside investors will be able to differentiate between these kinds of firms.

Following this rationale, one should expect a higher price (lower cost) for the debt issued by firms which belong to the market index, and a less leveraged capital structure of indexed companies. These firms do not need to use debt (as a device to reduce information asymmetry) to signal the quality of their assets: being in the market index increases transparency as the number of outsiders interested in the companies increases. For these companies, stock prices are more informative than bond prices when they have to make a decision between issuing new stocks and issuing new debt. In fact, Faulkender and Petersen (2006) provide evidence that access to credit markets is quite important because of the higher visibility of quoted indexed firms.

The literature identifies a number of advantages for a quoted firm, especially when the firm is a member of the index of the most-traded stocks (Schoubben and Van Hulle,

2004). Markets allow efficient risk sharing, provide more informative stock prices, and quickly disseminate all the available public information about the firm. The information contained in stock prices helps to improve allocation of investments and creates opportunities for setting up effective managerial compensation plans. Furthermore, the stock markets can also provide disciplining devices through hostile takeovers and the threat of firing managers from their current positions (Schoubben and Van Hulle, 2004).

This conclusion is also in line with the credit rationing theory (Stiglitz and Weiss, 1981). In this case, the adverse selection aspect of interest rates is a consequence of different borrowers having different probabilities of repaying their loans. Thus, the interest rate a certain borrower is willing to pay may act as a screening device. Those who are willing to pay high interest rates perceive their probability of repaying the loan to be low.

Therefore, we include in our integrated model the variable *PERM* which measures the relative permanence in the market index by a certain company to consider the separation —signaling— equilibrium:

$$TD_{i,t} = \alpha_0 + \alpha_1 \cdot TD_{i,t-1} + \alpha_2 \cdot GO_{i,t} + \alpha_3 \cdot SIZE_{i,t} + \alpha_4 \cdot BKCY_{i,t} + \alpha_5 \cdot DIFD_{i,t} + \alpha_6 \cdot DEF_{i,t} + \alpha_7 \cdot ROA_{i,t} + \alpha_8 \cdot MT_{i,t} + \alpha_9 \cdot PERM_i + v_{i,t} \quad (11)$$

2.5. The ownership structure and the institutional setting

Dominant owners and relationship based lenders (controlling banks) are comfortable with lower levels of transparency or are equipped with the right instruments to deal with an asymmetric information environment; however, external equity providers prefer high levels of transparency or a minimally asymmetric information environment in order to increase firm value by reducing agency costs. When a firm reduces the agency costs of equity by becoming a member of the most-traded firms' index, everything else being equal, the firm increases the attractiveness of equity against debt financing.

Aggarwal and Aung (2009) find that when transparency reduces owner-manager agency costs (such as higher number of analysts' reports), it is associated with lower corporate debt levels. Furthermore, the asymmetries of information play a more important role for large firms, which require more outside financing, and for firms in services and in high technology industries, where the agency issues are likely to be more severe (Aggarwal and Aung, 2009). Lower quality firms cannot mimic higher quality firms by taking on more debt because they have higher expected bankruptcy costs at any debt level.

In agreement with this reasoning, we control for the ownership structure of companies in our integrated model (variable *OWN*). The presence or absence of shareholders with large stakes in a company influences the agency costs and asymmetric information problems. The empirical model with the new variable is:

$$TD_{i,t} = \alpha_0 + \alpha_1 \cdot TD_{i,t-1} + \alpha_2 \cdot GO_{i,t} + \alpha_3 \cdot SIZE_{i,t} + \alpha_4 \cdot BKCY_{i,t} + \alpha_5 \cdot DIFD_{i,t} + \alpha_6 \cdot DEF_{i,t} + \alpha_7 \cdot ROA_{i,t} + \alpha_8 \cdot MT_{i,t} + \alpha_9 \cdot PERM_i + \alpha_{10}\, OWN_i + v_{i,t} \quad (12)$$

Finally, as Aggarwal and Aung (2009) point out, asymmetric information problems can also be affected by the information disclosure environment in a country. To take into

account the institutional differences among countries (*c*) we include in our model the institutional variable, *INSTITUTIONAL*.

Therefore, we complement the integrated model of equation (12) with additional variables to consider the separation-signaling equilibrium, the influence of the ownership structure, and the environment where firms operate in the capital structure of firms. Our final empirical integrated model is:

$$TD_{i,t} = \alpha_0 + \alpha_1 \cdot TD_{i,t-1} + \alpha_2 \cdot GO_{i,t} + \alpha_3 \cdot SIZE_{i,t} + \alpha_4 \cdot BKCY_{i,t} + \alpha_5 \cdot DIFD_{i,t} + \alpha_6 \cdot DEF_{i,t} + \alpha_7 \cdot ROA_{i,t} + \alpha_8 \cdot MT_{i,t} + \alpha_9 \cdot PERM_i + \alpha_{10} OWN_i + \alpha_{11} INSTITUTIONAL_C + v_{i,t} \quad (13)$$

2.6. Research hypotheses

Once we have designed the empirical integrated model to analyse the influence of financial markets' asymmetric information on a firm's capital structure, our goal is to test the following four hypotheses:

H1: There is a negative relation between a firm's permanence in the stock index of the most-traded firms and its leverage due to lower asymmetry of information and higher transparency.

The market is a constant evaluator of the managerial performance. Indexed firms' managers are scrutinized by a large number of observers, including professional financial analysts, prospective investors, and creditors, which means that their asymmetries of information are lower than in the case of non-indexed firms. Indexed firm managers are also more risk adverse about future investment projects because most of their wealth is within the firm. Finally, the indexed firm managers are less financially constrained than non-indexed firm managers.

A firm that belongs to a market index of the most-traded stocks offers its investors, stockholders, and creditors a warranty of the quality of its assets that differentiates it from those firms outside the market index. In other words, this is one of many ways to convey information to capital markets. Such a situation is equivalent to the separating equilibrium proposed by Akerlof (1970). Therefore, those firms that belong to the index do not need high levels of debt for signaling the quality of their assets; there is a warranty provided by the market index to which they belong.

H2: Indexed firms with growth opportunities will prefer to finance their new opportunities with equity instead of debt to avoid debt overhang problems. Non-indexed firms need to finance their growth opportunities issuing debt to signal the quality of their opportunities.

Growth opportunities are intangible in nature and cannot be collateralized. Thus, growing firms should have lower leverage from the agency perspective. Growing companies have continuous large cash flow needs, and therefore have more problems because of the pressure of additional debt servicing. As growth may serve as an alternative quality signal, the signaling perspective would hypothesize less need for leverage for high quality firms.

Firms with highly profitable growth opportunities may lose their value if those opportunities are known by their main competitors (Cantillo and Wright, 2000; Azofra,

et al, 2007). Indexed firms do not need to issue short-term debt to show positive signals about their growth opportunities because being indexed is already a positive signal of the firm's quality. Indexed firms rely less upon debt financing because their informational environment improves over time, making equity financing more desirable after using internally generated funds thus avoiding debt overhang (Korajczyk and Levy, 2003).

H3: The lower transparency and visibility of non-indexed firms make them more financially constrained than indexed firms. We expect a significantly negative relationship between the deficit of funds and leverage for non-indexed firms.

Those firms with a deficit of funds to finance their investments face a weak competitive position and a higher likelihood of bankruptcy. Under those conditions, creditors will restrict their money supply to these firms, in particular to those with higher asymmetries of information. The financial constraints involved in the deficit of funds make the asymmetries of information even more significant for non-indexed firms.

H4: Non-indexed firms will take advantage of market timing for their leverage position to avoid financial restrictions. Thus, we should observe a positive relation between market timing and debt for the group of non-indexed firms.

During bull markets, with increasing stock prices, the firms' market-value of assets rises, thereby leading to an increase in the leverage capacity (Welch, 2004). In this environment, the separating equilibrium supposes a different situation for indexed and non-indexed firms. The indexed firms do not need to increase their debt to disclose additional information to the financial markets because they are already transparent. However, non-indexed firms can use the wealth effect caused by higher stock prices, and increase their debt level; they provide a better guarantee for their loans as a result of the higher market value of their assets. Therefore, whenever we observe bull markets, the stock prices of non-indexed firms (low capitalization companies) usually increase substantially more than those of indexed firms (high capitalization companies) in what is known as the size effect. Non-indexed firms take advantage of their favourable market conditions to issue more securities (equity and debt) when prices are going up and they suffer fewer financial restrictions in comparison to what occurs during bear markets. The separating equilibrium makes indexed firms less dependent on market conditions to define their optimal capital structure. Indexed firms are well-known in the market and they are less dependent on timing the markets to avoid financial restrictions.

3. DATA, VARIABLES, AND METHODOLOGY

3.1. Data

For the empirical analysis, we build an unbalanced panel of quoted firms using the Global Vantage (COMPUSTAT) Data Base. The unbalanced panel data contains 1,865 firms from the seven countries with the largest stock markets [(3)]: Spain, the United States, the United Kingdom, Germany, France, Belgium, and Australia. The period of analysis is from year 2001 to year 2006. For each firm we have at least five years of

(3) We have not included Japan and Italy because of lack of data on stock index membership. In the case of China, its stock markets are rather new in comparison with the rest of countries in the sample; Chinese companies are also in a particular institutional environment not comparable with the rest of countries.

firm observations for a total of 9,404 firm-year observations. The time structure of the panel used in the regression analysis is shown in Table 1. Financial firms were excluded from the sample because their capital structures are likely to be significantly different from the capital structure of non-financial firms which could bias the results. Firms with missing values for relevant variables were also excluded. We also excluded those firms with no debt or an extremely low volume of debt on their balance sheet (less than 5% of total assets at book value) because they could bias our results (Dang, 2010). In addition, we have winsorized the sample at its 5% upper and lower tails to control for outliers.

Table 1

Time structure of the panel

The table includes the time structure of the panel used in the regression analysis.

Companies	*Firm year observations*		*Firms (Obs)*	*% Obs*
	5	*6*		
Indexed companies (obs)	310 (1,550)	34 (204)	344 (1,754)	18.65
Non-indexed companies (obs)	1,476 (7,380)	45 (270)	1,521 (7,650)	81.35
Total companies (obs)	1,786 (8,930)	79 (3,474)	1,865 (9,404)	100.00

3.2. Variables measurement

The variables included in our integrated signaling model of capital structure in equation (13) are measured according to the following descriptions:

The proxy used for leverage (*TD*) is computed as the quotient between total debt and total assets at book value. Following Aggarwal and Aunt (2009) we have chosen book values because empirical models give similar findings to those based on market values. Hovakimian *et al*. (2001) find that the choice between book and market values does not influence empirical results significantly and Bowman (1980) shows that the correlation between book leverage and market leverage is very high. Our data shows a high correlation between book leverage and market leverage (table 5).

Growth opportunities (*GO*) are estimated with the market-to-book ratio. This ratio is defined as the market value of assets normalized by the book value of assets, where the market value of assets is the book value of assets less common equity (book value) plus the stock market capitalization (Andrés de*, et al.*, 2005; Bevan and Danbolt, 2002; Danbolt*, et al.*, 2002; Johnson, 1997a, b; 1996; Miguel and Pindado, 2001; Ozkan, 2002; Ozkan and Ozkan, 2004; Rajan and Zingales, 1995) [(4)].

The size of the companies (*SIZE*) is measured by the logarithmic transformation of total assets at book value since it is the usual solution when working with variables which do not have negative values and high variability (De Haas and Peeters, 2006).

(4) Theoretically Tobin's Q measures firm growth opportunities. Tobin's Q uses the cost of the reposition of assets which is difficult to calculate. For this reason, the growth opportunities have usually been approximated by the ratio of the market value to the book value of assets (Barclay*, et al*., 2003; Johnson, 1997a, b). Chung and Pruitt (1994) have compared the values of Q obtained by the method of Lindenberg and Ross (1981) with an approximate Q, obtaining the result that at least 96.6% of the variability of Tobin's Q is explained by the quotient between the market value and the book value of the assets.

The probability of bankruptcy (BKCY) is estimated with the Altman's Z-Score according to the following equation (Altman, 1968): Z = 1.2 (turnover fund/total asset) +1.4 (retained earnings/total assets) +3.3 (profit before interest and taxes/total asset) +0.6 (equity at market value/total liabilities) +1.0 (revenues/total assets).

The difference in the firm debt position from the industry average leverage (*DIFD*) is calculated at book values as debt over total equity by firm and year minus debt over total equity by industry and year. We use the Global Vantage (*COMPUSTAT*) industry codes to classify each company within an industry.

Deficit of funds (*DEF*) is estimated following Shyam-Sunder and Myers (1999) as the current portion of long term debt at the start of the period plus variation of fixed assets between the present year and the previous year, plus the variation of the working capital between the present year and the previous year, minus the cash flow of the period (net income plus depreciation and minus the dividend paid), and then all scaled by the total assets.

To measure the profitability we use the return on assets ratio (*ROA*) computed as the operating income over total assets at book value. The proxy for the market timing variable (*MT*) is the market value of the firm in the period *t* scaled by the market value of the previous period, *t–1* (Farhat*, et al.*, 2009).

PERM measures the presence or permanence of firms in the index of most-traded stocks. Through this variable, we want to measure the set of positive signals and the lower asymmetric information that indexed firms have in comparison to non-indexed firms. We compute *PERM* as the ratio of the number of years the company has been in the national market index of most-traded stocks divided by the number of years we have data about that company. Its maximum value is 1 if a company is in the market index every year and 0 when a quoted company has never been in the market index during the period of analysis. We use the following indexes of the most-traded stocks for each country: IBEX 35 for Spanish firms, S&P 500 for firms of the US, the FTSE 100 for firms of the UK, the DAX 30 for German firms, the CAC 40 for French firms, the BEL 20 for Belgian firms, and the ASX 200 for Australian firms.

The variable for ownership structure is *OWN*. We use the percentage of shares in the hands of the controlling stockholder plus the proportion of shares owned by the managers. This is a dummy variable which takes the value of 1 if the ownership concentration in a company by the controlling stockholder plus the managers during the period of study is higher than 10%, otherwise the value is 0.

Finally, we introduce the institutional environment using twenty-six variables that measure the relevance of the banking system and the capital market development in each country, as well as issues related to legal developments about investor protection, risk of expropriation, and accounting standards. The list of variables is in table 2. Introducing twenty-six variables in our empirical model at the same time reduces the degree of freedom and weakens our estimators; these variables are highly correlated among them. We decided to summarize the information of all these variables doing a principal component analysis. As a result, these twenty-six variables can be summarized

in six factors which explain 90.5% of the total variance. These factors are introduced in the regression model to control for institutional environment (see table 2) [5].

TABLE 2

INSTITUTIONAL VARIABLES AND PRINCIPAL COMPONENTS ANALYSIS TO SUMMARIZE THE INFORMATION ON INSTITUTIONAL ENVIRONMENT

The table includes the correlation between each factor and the original variables. The six factors obtained from the principal component analysis summarize over 90% of the information present in the twenty-six institutional variables selected to define the legal and institutional framework in each country.

	Original variables	*Components matrix*					
		F 1	*F 2*	*F 3*	*F 4*	*F 5*	*F 6*
Relevance of banking in each country	*LIQUID LIABILITIES / GDP*	-0.74	0.56	0.34	0.31	0.13	0.09
	BANK ASSETS / GDP	-0.86	0.42	0.03	0.07	-0.18	-0.17
	OTHER FINANCIAL INSTITUTIONS ASSETS / GDP	0.92	0.13	0.25	0.14	0.18	0.06
	PRIVATE CREDIT BY BANKS / GDP	-0.68	0.67	-0.21	-0.74	-0.12	-0.14
	PRIVATE CREDIT BY BANKS AND OTHER F. I. / GDP	0.61	0.72	0.15	0.12	0.12	-0.04
	BANK DEPOSITS / GDP	-0.65	0.63	0.38	-0.01	0.20	0.08
	FINANCIAL SYSTEM DEPOSITS / GDP	-0.65	0.63	0.38	-0.01	0.20	0.08
	BANK CREDIT / BANK DEPOSITS	-0.38	0.20	-0.74	-0.14	-0.40	-0.28
	NET INTEREST MARGIN	0.67	0.28	0.09	0.37	-0.33	0.10
	BANK CONCENTRATION	-0.75	-0.43	-0.28	-0.04	0.11	0.12
	BANK ROA	0.22	0.18	0.51	-0.67	-0.34	0.05
	BANK ROE	0.21	0.17	0.54	-0.53	-0.38	0.06
	BANK COST-INCOME RATIO	-0.13	-0.27	-0.52	0.61	0.39	0.14
	BANK Z-SCORE	-0.09	0.03	0.05	0.37	-0.54	0.66
Capital markets development	*STOCK MARKET CAPITALIZATION / GDP*	0.52	0.54	-0.22	-0.43	0.21	0.29
	STOCK MARKET TOTAL VALUE TRADED / GDP	0.63	0.68	-0.11	0.16	0.02	0.13
	STOCK MARKET TURNOVER RATIO	0.35	0.53	-0.10	0.63	-0.20	-0.13
	NO. OF LISTED COMPANIES PER 10K POPULATION	-0.17	0.21	-0.74	-0.20	0.06	0.29
	PRIVATE BOND MARKET CAPITALIZATION / GDP	0.89	-0.04	0.31	0.05	0.05	-0.10
	PUBLIC BOND MARKET CAPITALIZATION / GDP	-0.14	-0.54	0.66	0.14	0.05	0.25
	INTERNATIONAL DEBT ISSUES / GDP	-0.76	0.07	0.55	-0.06	0.66	0.02
Institutional indexes	*INVESTOR PROTECTION*	0.69	0.54	-0.44	-0.10	0.11	0.02
	RULE OF LAW	0.43	-0.48	0.30	-0.42	0.38	0.02
	CREDITOR RIGHTS	-0.55	0.64	0.25	0.14	0.31	0.11
	RISK OF EXPROPRIATION	0.38	0.28	0.70	0.39	0.05	-0.30
	ACCOUNTING STANDARDS	0.31	0.50	-0.49	-0.49	0.20	0.03
Variance explained by each factor		32.42%	20.50%	17.24%	10.43%	6.03%	3.88%
Cummulative total variance		32.42%	52.92%	70.16%	80.59%	86.62%	90.50%

3.3. METHODOLOGY

Panel data methodology is the most efficient tool to use when the sample is a mixture of time-series and cross-sectional data. The main advantage of the panel data methodology is that it allows us to overcome the unobservable and constant heterogeneity of each firm —competitive advantages and strategies, management quality and style, etc.— (Himmelberg, *et al.*, 1999; López and Rodríguez, 2008). Moreover, panel data contains higher informative contents, higher variability, less colinearity between the variables, more grades of freedom, and higher efficiency. Arellano and Bover (1990) argue that the panel data analysis allows assessment of the dynamicity of the adjustments and is

(5) The other way to measure institutional environment is using dummy variables for each country. We conclude that using the factors allows us to introduce more detailed differences among countries than using just the country dummy variables. As a robust analysis we repeated the regressions using the country dummy variables instead of the institutional factors without qualitative differences. The country dummy variables are not statistically significant whereas the first two of the institutional factors are statistically significant.

better in the identification and measurement of those effects which are not observable either with the cross-sectional analysis or the time-series analysis. Nevertheless, we face the common problem of simultaneity, given that some of the independent variables included in our integrated model, such as the growth opportunities, the deficit of funds, profitability, or the probability of bankruptcy can be determined simultaneously by the dependent variable. Therefore, we need to apply an econometric model which allows us to deal with constant heterogeneity and with endogeneity.

When the unobserved effect is correlated to independent variables, pooled OLS regression produces estimations that are biased and inconsistent. We can overcome this econometric issue by using either the first differences or the fixed effects (within) estimators (Nickell, 1981). However, if the strict exogeneity of the independent variables' condition fails, either the first differences or the fixed effects (within) estimators are inconsistent and have different probability limits. The general approach for estimating models that do not satisfy strict exogeneity is to use a transformation to eliminate the unobservable effects and instruments to deal with endogeneity (Wooldrigde, 2002). Thus, we use the two-step system estimator (SE) with adjusted standard errors for potential heteroskedasticity as proposed by Blundell and Bond (1998). This econometric method considers the unobserved effect transforming the variables into first differences, and uses the generalized method of moments (GMM) to deal with endogeneity problems. Those differences are reflected in the quality of the instruments involved (Levine*, et al.*, 2000). Specifically, the lagged values (in our case the dependent variable, *TD*) frequently involve weak instruments for the prediction of changes in the financial structure of firms.(6) The existence of weak instruments can lead to a poor asymptotic precision in finite samples (Alonso-Borrego and Arellano, 1999). Therefore, in this dynamic model it is also necessary to use an estimator that lessens this problem, substituting the specification in differences for the original regression specified in levels such as the system estimator (Blundell and Bond, 1998). Performing the model in this way, the system estimator involves two kinds of equations with their own instruments. The first category of equations is in levels, and its instruments are the lagged differences in the dependent and the independent variables. The second category of equations consists of equations in first differences with the levels of the dependent variable and the independent variables as instruments (Bond, 2002; Wooldrigde, 2002). For our case, by using the GMM method we can build instruments for those variables that are potentially endogenous (growth opportunities, deficit of funds, profitability and bankruptcy). In addition, this estimation method lets us deal with the issue of simultaneity between some explanatory variables (endogenous) and the dependent variable because the coefficients of endogenous variables are estimated using their values in previous years as instruments. Moreover, by using the dynamic dimension of panel data we can check out the response processes across time and identify how the different determinants included in our empirical integrated model explain the capital structure of the firm.

To test the model specifications' validity, we use the Hansen/Sargan test of over-identification of restrictions which examines the lack of correlation between the

(6) For the econometric estimations we adopt a dynamic analysis of the capital structure. We do so because a static analysis is unable to explain the dynamic nature of the capital structure (Fama and French, 2002; De Haas and Peeters, 2006). Moreover, Frank and Goyal (2003) argue that the capital structure of firms may be conditioned by a series of dynamic elements, which would advise against the application of a static model. An example of this is reflected in taxes and the cost of bankruptcy.

instruments and the error term. The AR1 and AR2 statistics measure the first- and second-order serial correlation. Given the use of first-difference transformations, we expect some degree of first-order serial correlation, although this correlation does not invalidate our results. However, the presence of second-order serial correlation does signal omitted variables. We also compute the F-test of joint significance for all independent variables. In addition, we use the adjustment for small samples proposed by Windmeijer (2005) when the sample is divided into the indexed and non-indexed firm subsamples. Since our sample size is not very large, the Windmeijer proposal improves the robustness of our results and avoids any potential downward bias in the estimated asymptotic standard errors.

4. RESULTS

4.1. Univariate statistics

Out of the 9,404 firm-year observations more than 81% correspond to non-indexed firms (7,650 firm-year observations). The reason for this split is because we consider only those market indexes in each country that include the most-traded stocks. As we see in table 3, the average firm in our sample has a debt to assets-at-book-value ratio of 56.42%, higher for the indexed firms and lower for non-indexed firms. However the debt-to-assets ratio at market value of non-indexed firms is higher than that of the indexed firms. It appears that the leverage of non-indexed firms is more affected by the mood of the stock market. There is a high correlation between the different variables to measure leverage: debt over total assets-at-book-value, long-term debt over total assets-at-book-value, and debt over total assets at market value (see table 5).

Moreover, the firms show that they have an internal funds deficit of about 2.57% of the total assets. We do not find a statistically significant difference for this variable between indexed and non-indexed firms (see table 4). On the other hand, there are statistically significant differences between indexed and non-indexed firms in growth opportunities, size, difference from the average industry leverage, profitability, market timing and ownership structure (table 4). On average, indexed firms are larger, less profitable but more leveraged than the industry, have more growth opportunities, and appear less worried about timing the market than non-indexed firms. This data indicates the existence of differences between indexed and non-indexed firms that justifies the conditions for the separating equilibrium.

The results show that once the firms join the group of indexed firms, they tend to remain in that group, which is a sign of the importance that firms give membership in the index. For example, Table 4 shows that the PERM value for the indexed firms is 92.89%. This result leads us to conclude that the turnover in this group is quite low and that the indexed firms' list remains constant over time.

4.2. Regression analysis

The multivariate analysis is divided into two parts. In the first part we perform a regression analysis of the integrated signaling model of capital structure over the whole

Table 3
Descriptive statistics

The table includes the mean, median, the standard deviation, minimum, and maximum of the following variables: debt on total assets (*TD*), long term debt on total assets (*LTD*), debt on equity at market value (*DEMV*), market value of assets on book value of assets (*GO*), deficit of funds for financing the variations in the working capital and in the fixed assets (DEF), the natural logarithm of the total assets (*SIZE*), the difference between the firm debt on equity and the industry debt on equity (*DIFD*), the return on the total assets (*ROA*), the Altman Z-Score (*BKCY*), the ratio of permanence of each firm in the index of the most-traded companies (*PERM*), the market timing variable (*MT*), and the ownership variable (*OWN*) that takes value 1 if the company has at least one shareholder with a participation in the capital higher than 5% and 0 otherwise.

Variable	Firms	Obs	Mean	Std. Dev.	Min	Max
TD	Indexed	1,754	0.6025	0.1624	0.1036	0.9391
	Non-indexed	7,650	0.5567	0.1714	0.0249	0.9538
	Overall	9,404	0.5642	0.1708	0.0249	0.9538
LTD	Indexed	1,754	0.1999	0.1179	0.0000	0.6346
	Non-indexed	7,650	0.1529	0.1348	0.0000	0.7092
	Overall	9,404	0.1606	0.1333	0.0000	0.7092
DEMV	Indexed	1,754	0.4190	0.2107	0.0172	0.9999
	Non-indexed	7,650	0.4739	0.2234	0.0154	1.0000
	Overall	9,404	0.4619	0.2191	0.0154	1.0000
GO	Indexed	1,754	1.7821	0.9300	0.5724	10.2627
	Non-indexed	7,650	1.4105	0.7276	0.3075	12.3977
	Overall	9,404	1.4713	0.7766	0.3075	12.3977
DEF	Indexed	1,754	0.0220	0.1922	-1.1997	0.9522
	Non-indexed	7,650	0.0265	0.2307	-1.2559	0.9658
	Overall	9,404	0.0257	0.2248	-1.2559	0.9658
SIZE	Indexed	1,754	8.9015	1.4632	2.6844	13.7461
	Non-indexed	7,650	5.7958	1.8648	0.9151	13.7676
	Overall	9,404	6.3037	2.1397	0.9151	13.7676
DIFD	Indexed	1,754	0.2543	1.4875	-2.3608	6.0000
	Non-indexed	7,650	-0.0682	1.3906	-2.6734	6.0000
	Overall	9,404	-0.0155	1.4117	-2.6734	6.0000
ROA	Indexed	1,754	1.0463	0.7225	-0.0122	4.8136
	Non-indexed	7,650	1.2591	0.7770	-0.0065	11.5919
	Overall	9,404	1.2243	0.7723	-0.0122	11.5919
BKCY	Indexed	1,754	3.2683	2.6371	-0.1984	32.1567
	Non-indexed	7,650	3.1098	2.5912	-1.7995	41.4896
	Overall	9,404	3.1357	2.5992	-1.7995	41.4896
PERM	Indexed	1,754	0.9289	0.1488	0.1667	1.0000
	Non-indexed	7,650	0.0091	0.0624	0.0000	0.8571
	Overall	9,404	0.1595	0.3502	0.0000	1.0000
MT	Indexed	1,754	1.2367	0.3991	0.0000	5.2421
	Non-indexed	7,650	1.3308	0.6734	0.0000	8.1351
	Overall	9,404	1.3154	0.6376	0.0000	8.1351
OWN	Indexed	1,754	0.4343	0.4960	0.0000	1.0000
	Non-indexed	7,650	0.3234	0.4678	0.0000	1.0000
	Overall	9,404	0.3416	0.4743	0.0000	1.0000

Table 4

Mean difference test for the indexed and non-indexed firms.

The table includes the mean difference test for the following variables: debt on total assets (*TD*), long term debt on total assets (*LTD*), debt on total assets at market value (*DEMV*), market value of assets on book value of assets (*GO*), deficit of funds for financing the variations in the working capital and in the fixed assets (*DEF*), the natural logarithm of the total assets (*SIZE*), the difference between the firm debt on equity and the industry debt on equity (*DIFD*), the return on the total assets (*ROA*), the Altman Z-Score (*BKCY*), the ratio of permanence of each firm in the index of the most traded companies (*PERM*), the market timing variable (*MT*), and the ownership variable (*OWN*) that takes value 1 if the company has at least one shareholder with a participation in the capital higher than 5% and 0 otherwise.

Variable	*Indexed*	*Non-indexed*	*Difference*	*P-value*
TD	0.6025	0.5567	0.0457	0.0000
LTD	0.1999	0.1529	0.0470	0.0000
DEMV	0.4190	0.4739	-0.0549	0.0000
GO	1.7821	1.4105	0.3717	0.0000
DEF	0.0220	0.0265	-0.0045	0.6109
SIZE	8.9015	5.7958	3.1057	0.0000
DIFD	0.2543	-0.0682	0.3225	0.0000
ROA	1.0463	1.2591	-0.2129	0.0000
BKCY	3.2683	3.1098	0.1585	0.1220
PERM	0.9289	0.0091	0.9199	0.0000
MT	1.2367	1.3308	-0.0942	0.0002
OWN	0.4343	0.3234	0.1109	0.0000

Table 5

Correlation matrix

The variables included in the matrix are: The total debt over total assets (*TD*), long term debt over total assets (*LTD*), total debt over total assets at market value (*DEMV*), the growth opportunities (*GO*), deficit of funds (*DEF*), the size of the company (*SIZE*), the return on assets (*ROA*), the probability of bankruptcy measured with the Altman's Z-Score (*BKCY*), the difference between the firm debt equity ratio and the industry average debt equity ratio (*DIFD*), the market timing variable (*MT*) and the permanence ratio of the company in the stock index (*PERM*). In parenthesis is the p-value of statistical significance.

	TD	LTD	DEMV	GO	DEF	SIZE	ROA	BKCY	DIFD	OWN	MT	PERM
TD	1.0000											
LTD	0.6948	1.0000										
	(0.0000)											
DEMV	0.6861	0.3120	1.0000									
	(0.0000)	(0.0000)										
GO	-0.2626	-0.1605	-0.6206	1.0000								
	(0.0000)	(0.0000)	(0.0000)									
DEF	-0.0013	0.1731	-0.0526	0.0899	1.0000							
	(0.9294)	(0.0000)	(0.0003)	(0.0000)								
SIZE	0.2652	0.3283	0.1160	0.0955	0.1621	1.0000						
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)							
ROA	0.0833	-0.2688	0.0097	0.0081	-0.0687	-0.1866	1.0000					
	(0.0000)	(0.0000)	(0.5066)	(0.5799)	(0.0000)	(0.0000)						
BKCY	-0.5463	-0.3556	-0.6131	0.6921	0.0623	-0.1224	0.2595	1.0000				
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)					
DIFD	0.8399	0.3499	0.5889	-0.1776	0.0070	0.2086	0.0619	-0.3644	1.0000			
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.6317)	(0.0000)	(0.0000)	(0.0000)				
OWN	-0.0037	-0.0025	-0.0257	0.0537	-0.0204	0.0689	-0.0469	0.0141	0.0073	1.0000		
	(0.8008)	(0.8647)	(0.0785)	(0.0002)	(0.1610)	(0.0000)	(0.0013)	(0.3333)	(0.6162)			
MT	-0.0337	0.0079	-0.1539	0.1733	0.1380	-0.0841	0.0369	0.1336	-0.0285	-0.0284	1.0000	
	(0.0209)	(0.5871)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0115)	(0.0000)	(0.0508)	(0.0513)		
PERM	0.1015	0.1365	-0.0890	0.1841	-0.0051	0.5542	-0.1062	0.0206	0.0821	0.0869	-0.0581	1.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.7250)	(0.0000)	(0.0000)	(0.1569)	(0.0000)	(0.0000)	(0.0001)	

sample to test our first hypothesis, *H1*. In the second part, we regress our empirical integrated model of capital structure separately over the subsamples of indexed and non-indexed firms to test our hypotheses, *H2*, *H3*, and *H4*.

The most relevant result from our analysis is the significant relation between the permanence ratio in the index (*PERM*) and the debt level (table 6). We report four regressions. In the first regression we exclude *SIZE* and *BKCY* to avoid multicolineary problems and *OWN* because it is not significant. The second regression includes *SIZE* as it is highly correlated to *PERM* (see table 5). The third regression includes *BKCY* as it is highly correlated to GO. Finally, in the fourth regression we include *OWN*. We repeat the same analysis but exclude those firms that have not been permanently in the market index (586 out of 1,754 firm-year observations) during the period of analysis (last four columns of table 6). We can see that the Hansen test of over-identification of restrictions, which tests the joint validity of the chosen instruments, allows us to accept the null hypothesis that the models are properly identified, and include the instruments used for solving the problems of simultaneity. Furthermore, we have tested and found that the error term does not have problems of second order identification through the second order autocorrelation-test.

TABLE 6

REGRESSION RESULTS OVER THE WHOLE SAMPLE: SYSTEM ESTIMATOR

The table shows the regression results for the empirical integrated model of capital structure.

$$TD_{i,t} = \alpha_0 + \alpha_1 \cdot TD_{i,t-1} + \alpha_2 \cdot GO_{i,t} + \alpha_3 \cdot SIZE_{i,t} + \alpha_4 \cdot BKCY_{i,t} + \alpha_5 \cdot DIFD_{i,t} + \alpha_6 \cdot DEF_{i,t} + \alpha_7 \cdot ROA_{i,t} + \alpha_8 \cdot MT_{i,t}$$
$$+ \alpha_9 \cdot PERM_i + \alpha_{10}\, OWN_i + \alpha_{11}\, INSTITUTIONAL_C + \alpha_{12}\, TEMP_t + v_{i,t}$$

Where *i* refers to companies, *t* to the years, and *c* to the countries. The dependent variable is the total debt over total assets (*TD*), and the independent variables are the growth opportunities (*GO*), deficit of funds (*DEF*), the size of the company (*SIZE*), the return on assets (*ROA*), the probability of bankruptcy measured with the Altman's Z-Score (*BKCY*), the difference between the firm debt equity ratio and the industry average debt equity ratio (DIFD), the permanence ratio of the company in the stock index (*PERM*), the market timing variable (MT), and the dummy variable for ownership (*OWN*). TEMP refers to the time dummies. There is one dummy for each of the years between 2001 and 2006. INSTITUTIONAL refers to the six institutional dummies created from a principal components analysis with 26 variables that measure institutional characteristics of each country that have been summarized in six factors that explain 90.5% of the total variance. Statistical significance: *** at the 1 percent level, ** at the 5 percent level, and * at the 10 percent level. The estimators of the year dummies and of the institutional factors are not reported for the sake of brevity. The first figure is the estimation, the figure in parenthesis the p value and the last figure the standard error.

Variables	*Whole sample*				*Firms with PERM equals 1 or 0*			
Constant	0.2248 ***	0.2821 ***	0.3639 ***	0.2954 ***	0.2945 ***	0.3054 ***	0.2622 ***	0.3048 ***
	(0.0010)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
	0.0680	0.0624	0.0928	0.0708	0.0502	0.0514	0.0741	0.0497
TD_{t-1}	0.6518 ***	0.5515 ***	0.3506 *	0.4874 ***	0.4912 ***	0.5189 ***	0.5681 ***	0.5005 ***
	(0.0000)	(0.0000)	(0.0910)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
	0.1275	0.1290	0.2075	0.1038	0.0885	0.1198	0.1558	0.0870
GO	-0.0143 **	-0.0085 *	-0.0074 **	-0.0045 *	-0.0067 **	-0.0041 *	-0.0070 **	-0.0042 ***
	(0.0120)	(0.0988)	(0.0307)	(0.0525)	(0.0159)	(0.0660)	(0.0124)	(0.0080)
	0.0057	0.0059	0.0072	0.0070	0.0047	0.0046	0.0045	0.0051
DEF	0.0040	-0.0196 **	-0.0314 *	-0.0325 ***	-0.0322 ***	-0.0201 **	-0.0288 **	-0.0323 ***
	(0.7590)	(0.0219)	(0.0510)	(0.0010)	(0.0040)	(0.0213)	(0.0270)	(0.0000)
	0.0130	0.0159	0.0161	0.0095	0.0112	0.0162	0.0130	0.0089

(Continue in next page)

TABLE 6 (CONT.)
REGRESSION RESULTS OVER THE WHOLE SAMPLE: SYSTEM ESTIMATOR

ROA	0.0062	0.0138	0.0196	0.0114	0.0152 **	0.0096 *	0.0069 *	0.0102
	(0.3310)	(0.4880)	(0.5350)	(0.4640)	(0.0269)	(0.0516)	(0.0719)	(0.3280)
	0.0064	0.0199	0.0316	0.0156	0.0138	0.0148	0.0190	0.0104
DIFD	0.0345 ***	0.0807 ***	0.0720 ***	0.0727 ***	0.0748 ***	0.0784 ***	0.0756 ***	0.0757 ***
	(0.0060)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
	0.0125	0.0146	0.0144	0.0101	0.0112	0.0136	0.0112	0.0101
PERM	-0.0082 *	-0.0744 **	-0.1417 *	-0.0898 **	-0.0147 *	-0.0190 *	-0.0248 *	-0.0039 *
	(0.0770)	(0.0482)	(0.0610)	(0.0334)	(0.0530)	(0.0845)	(0.0800)	(0.0973)
	0.0528	0.1058	0.1259	0.0929	0.0796	0.0972	0.0982	0.1155
MT	-0.0045	0.0121 **	-0.0090	0.0097 **	0.0081 **	0.0100 *	0.0083 **	0.0099 *
	(0.3200)	(0.0310)	(0.1570)	(0.0390)	(0.0138)	(0.0960)	(0.0127)	(0.0700)
	0.0045	0.0056	0.0063	0.0047	0.0055	0.0060	0.0055	0.0055
SIZE		0.0038 **				0.0029 **		
		(0.0142)				(0.0200)		
		0.0026				0.0022		
BKCY			-0.0033 *				-0.0026 *	
			(0.0568)				(0.0550)	
			0.0058				0.0043	
OWN				-0.0131				-0.0240
				(0.7840)				(0.5770)
				0.0477				0.0430
AR1	-4.39	-4.38	-2.87	-4.56	-4.52	-4.2	-4.01	-4.45
	(0.000)	(0.000)	(0.004)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
AR2	0.09	0.9	0.83	0.8	0.19	0.02	0.01	0.41
	(0.930)	(0.369)	(0.406)	(0.422)	(0.850)	(0.986)	(0.991)	(0.681)
Sargan	23.23	15.25	23.02	19.29	15.35	13.2	14.94	13.39
	(0.332)	(0.292)	(0.041)	(0.115)	(0.355)	(0.432)	(0.311)	(0.418)
Hansen	18.71	12.99	14.72	13.8	11.53	10.73	11.05	11.41
	(0.604)	(0.449)	(0.325)	(0.388)	(0.644)	(0.634)	(0.606)	(0.576)
OBS	9,404	9,404	9,404	9,404	8,818	8,818	8,818	8,818

We observe, as hypothesized, that the longer the presence in the stock index (*PERM*), the lower the leverage in book value. This result supports our first hypothesis that being part of the index serves those firms as a signal of warranty and higher transparency to investors, creditors, and shareholders. Thus, firms that either permanently belong to the index (*PERM = 1*), or have been added to the index during the period of analysis (*0 < PERM < 1*), do not need high levels of debt to signal the quality of their assets. Another explanation is that being part of the index means higher transparency which reduces the asymmetry of information allowing firms to reduce their cost of capital when issuing new shares.

We observe a positive relation between the difference in companies' leverage from the average industry leverage and the proportion of debt. Thus, companies are aware of the existence of a target debt ratio and they try to be as close as possible to that target. The coefficient estimated for the variable which measures debt (TD_{t-1}) is equal to $1 - \lambda$ which corresponds to the adjustment cost to the target debt ratio. As a consequence of this, the coefficient λ measures the speed of adjustment to the optimal debt ratio. Our results indicate that the speed of adjustment for the companies in our sample to the

optimal debt ratio is about 0.5 (with a maximum of 0.65 and a minimum of 0.35); that is to say, that they approach their optimum capital structure at the rate of 50% per year. This indicates that the costs of adjustment to the target debt ratio allow the companies to adjust to their optimal debt ratio in 2 years [(7)].

Additional results reported in table 6 indicate that the agency problems of growth opportunities make it more difficult to finance those growth opportunities with debt. We observe that the larger the size of the firm, the more leveraged they are. This result is consistent with previous research (Johnson, 1997a, b; Rajan and Zingales, 1995).

To test hypotheses *H2*, *H3* and *H4* we split up our sample into two subsamples: the subsample of indexed firms (1,754 observations) and the subsample of non-indexed firms (7,650 observations). The results for indexed firms are in table 7 and the results for non-indexed firms are in table 8.

TABLE 7

REGRESSION RESULTS FOR THE INDEXED FIRMS: SYSTEM ESTIMATOR

The table shows the regression results for the empirical integrated model of capital structure.

$$TD_{i,t} = \alpha_0 + \alpha_1 \cdot TD_{i,t-1} + \alpha_2 \cdot GO_{i,t} + \alpha_3 \cdot SIZE_{i,t} + \alpha_4 \cdot BKCY_{i,t} + \alpha_5 \cdot DIFD_{i,t} + \alpha_6 \cdot DEF_{i,t} + \alpha_7 \cdot ROA_{i,t} + \alpha_8 \cdot MT_{i,t} + \alpha_9 \, OWN_i + \alpha_{10} \, INSTITUTIONAL_C + \alpha_{11} \, TEMP_t + v_{i,t}$$

Where *i* refers to companies, *t* to the years, and *c* to the countries. The dependent variable is the total debt over total assets (*TD*), and the independent variables are the growth opportunities (*GO*), deficit of funds (*DEF*), the size of the company (*SIZE*), the return on assets (*ROA*), the probability of bankruptcy measured with the Altman's Z-Score (*BKCY*), the difference between the firm debt equity ratio and the industry average debt equity ratio (*DIFD*), the market timing variable (*MT*), and the dummy variable for ownership (*OWN*). *TEMP* refers to the time dummies. There is one dummy for each of the years between 2001 and 2006. *INSTITUTIONAL* refers to the six institutional dummies created from a principal components analysis with 26 variables that measure institutional characteristics of each country that have been summarized in six factors that explain 90.5% of the total variance. Statistical significance: *** at the 1 percent level, ** at the 5 percent level, and * at the 10 percent level. The estimators of the year dummies and of the institutional factors are not reported for the sake of brevity. The first figure is the estimation, the figure in parenthesis the p value and the last figure the standard error.

Variables	**Observations with PERM>0**				**Observations with PERM=1**			
Constant	0.3018 ***	0.2319 ***	0.4090 ***	0.3222 ***	0.2080 **	0.2577	0.2426	0.2570
	(0.0000)	(0.0050)	(0.0000)	(0.0000)	(0.0430)	(0.5610)	(0.2360)	(0.3660)
	0.0633	0.0822	0.0601	0.0759	0.1025	0.4423	0.2043	0.2842
TD_{t-1}	0.4466 ***	0.3730 ***	0.4813 **	0.3671 **	0.6727 ***	0.5852 **	0.5038 *	0.6624 ***
	(0.0000)	(0.0010)	(0.0480)	(0.0180)	(0.0000)	(0.0125)	(0.0559)	(0.0000)
	0.0807	0.1106	0.1151	0.1544	0.1638	0.3809	0.8602	0.1842
GO	-0.0096 **	-0.0135 *	-0.0123	-0.0125 **	-0.0591	-0.0765 **	-0.0023 *	-0.0648 *
	(0.0116)	(0.0730)	(0.1240)	(0.0161)	(0.3100)	(0.0253)	(0.0993)	(0.0536)
	0.0061	0.0075	0.0080	0.0089	0.0607	0.0667	0.2798	0.1046
DEF	-0.0112	0.0351 **	0.0124 *	0.0009	0.0625 **	0.1074 **	0.0346 *	0.0516 **
	(0.7250)	(0.0361)	(0.0506)	(0.9790)	(0.0340)	(0.0484)	(0.0795)	(0.0485)
	0.0317	0.0385	0.0186	0.0326	0.0654	0.1534	0.1333	0.0737
ROA	0.0527 ***	0.0805 ***	0.0825 ***	0.0703 ***	0.0027	0.0048	0.0559	-0.0126
	(0.0000)	(0.0020)	(0.0000)	(0.0010)	(0.9100)	(0.9640)	(0.8340)	(0.8140)
	0.0096	0.0260	0.0124	0.0214	0.0241	0.1061	0.2661	0.0535

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(7) The period of adjustment is computed as: 1 year / 0.5 = 2 years. The range for the period of adjustment will be 1.54 to 2.86 years.

TABLE 7 (CONT.)
REGRESSION RESULTS FOR THE INDEXED FIRMS: SYSTEM ESTIMATOR

DIFD	0.0805 ***	0.0693 ***	0.0483 ***	0.0896 ***	0.0005	-0.0015	0.0193	0.0005
	(0.0000)	(0.0010)	(0.0050)	(0.0000)	(0.9940)	(0.9840)	(0.8140)	(0.9950)
	0.0165	0.0198	0.0172	0.0220	0.0643	0.0775	0.0821	0.0818
MT	0.0212	0.0457 *	0.0447 ***	0.0190	0.0396	0.0395	0.0273	0.0452
	(0.1600)	(0.0900)	(0.0000)	(0.2860)	(0.4410)	(0.5590)	(0.6440)	(0.5560)
	0.0151	0.0269	0.0106	0.0178	0.0513	0.0674	0.0591	0.0767
SIZE		0.0075				0.0007		
		(0.2580)				(0.9860)		
		0.0066				0.0392		
BKCY			-0.0218 ***				-0.0223 *	
			(0.0030)				(0.0841)	
			0.0072				0.1110	
OWN				0.0359				-0.0790
				(0.5790)				(0.8620)
				0.0647				0.4528
AR1	-2.6 ***	-2.41 **	-2.65 ***	-2.25 **	-1.65 *	-0.61	-1.25 **	-0.47
	(0.009)	(0.016)	(0.008)	(0.024)	(0.099)	(0.543)	(0.011)	(0.638)
AR2	-0.1	-0.5	-1.02	-0.5	-0.99	-0.85	-0.16	-0.31
	(0.917)	(0.614)	(0.306)	(0.615)	(0.321)	(0.398)	(0.870)	(0.756)
Sargan	9.58	9.18	4.85	7.31	8.36	3.05	10.65	2.27
	(0.385)	(0.327)	(0.773)	(0.504)	(0.790)	(0.384)	(0.140)	(0.518)
Hansen	7.69	6.46	2.3	4.4	0.05	3.47	3.5	4.2
	(0.565)	(0.596)	(0.971)	(0.819)	(0.933)	(0.274)	(0.400)	(0.830)
OBS	1,754	1,754	1,754	1,754	1,168	1,168	1,168	1,168

We observe that the growth opportunities of indexed firms that have been in the market index either during the entire period (*PERM* = 1) or during some of the years included in our study (*PERM* > 0) show a significant negative relationship with debt level. This result confirms our hypothesis *H2* that postulates that being a part of the market index changes the order of use of the sources of funds. Indexed firms have more transparency and lower asymmetric information which reduces the need for the use of debt to signal the quality of their growth opportunities; these firms are also the largest which means they have fewer financial restrictions. Thus, the companies in the index can choose the source of funds with the lowest cost; as the asymmetric information is reduced, the cost of equity decreases more than the cost of debt. indexed firms can avoid the overhang problem, reducing the debt level and financing their growth opportunities with new equity. Our results confirm this reasoning as we observe a negative relation between growth opportunities and leverage for indexed firms (table 7) and a positive relation for non-indexed firms (table 8). The coefficient estimated for those companies that belong to the index throughout the entire period of study (*PERM* = 1) is larger than in the case in which we include all the companies that have been in the index during some of the years studied (*PERM > 0*). Non-indexed firms are forced to use debt as a signaling devise about the existence of future growth options. In contrast, indexed firms are already placed in the signaling equilibrium and do not need to convey positive signals about their quality through higher debt levels.

Table 8

Regression results for the non-indexed firms: System estimator

The table shows the regression results for the empirical integrated model of capital structure.

$$TD_{i,t} = \alpha_0 + \alpha_1 \cdot TD_{i,t-1} + \alpha_2 \cdot GO_{i,t} + \alpha_3 \cdot SIZE_{i,t} + \alpha_4 \cdot BKCY_{i,t} + \alpha_5 \cdot DIFD_{i,t} + \alpha_6 \cdot DEF_{i,t} + \alpha_7 \cdot ROA_{i,t} + \alpha_8 \cdot MT_{i,t} + \alpha_9 OWN_i + \alpha_{10} INSTITUTIONAL_C + \alpha_{11} TEMP_t + v_{i,t}$$

Where *i* refers to companies, *t* to the years, and *c* to the countries. The dependent variable is the total debt over total assets (*TD*), and the independent variables are the growth opportunities (*GO*), deficit of funds (*DEF*), the size of the company (*SIZE*), the return on assets (*ROA*), the probability of bankruptcy measured with the Altman's Z-Score (*BKCY*), the difference between the firm debt equity ratio and the industry average debt equity ratio (DIFD), the market timing variable (*MT*), and the dummy variable for ownership (*OWN*). *TEMP* refers to the time dummies. There is one dummy for each of the years between 2001 and 2006. *INSTITUTIONA*L refers to the six institutional dummies created from a principal components analysis with 26 variables that measure institutional characteristics of each country that have been summarized in six factors that explain 90.5% of the total variance. Statistical significance: *** at the 1 percent level, ** at the 5 percent level, and * at the 10 percent level. The estimators of the year dummies and of the institutional factors are not reported for the sake of brevity. The first figure is the estimation, the figure in parenthesis the p value and the last figure the standard error.

Variables	***Firms with PERM=0***			
Constant	0.3495 ***	0.3630 ***	0.3454 ***	0.3715 ***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
	0.0613	0.0625	0.0663	0.0681
TD_{t-1}	0.4160 ***	0.4424 ***	0.4240 ***	0.4199 ***
	(0.0000)	(0.0000)	(0.0010)	(0.0010)
	0.1091	0.1083	0.1294	0.1258
GO	0.0085 **	0.0066 *	0.0087 **	0.0075 *
	(0.0230)	(0.0980)	(0.0160)	(0.0940)
	0.0037	0.0041	0.0036	0.0046
DEF	-0.0378 ***	-0.0264 *	-0.0375 ***	-0.0403 ***
	(0.0020)	(0.0880)	(0.0030)	(0.0000)
	0.0119	0.0154	0.0127	0.0114
ROA	0.0069	-0.0012	0.0064	-0.0086
	(0.7170)	(0.9600)	(0.7930)	(0.5450)
	0.0190	0.0235	0.0246	0.0143
DIFD	0.0821 ***	0.0848 ***	0.0824 ***	0.0793 ***
	(0.0000)	(0.0000)	(0.0000)	(0.0000)
	0.0132	0.0139	0.0136	0.0147
MT	0.0085 *	0.0100 *	0.0088	0.0079 **
	(0.0700)	(0.0660)	(0.1100)	(0.0115)
	0.0053	0.0054	0.0055	0.0050
SIZE		-0.0028		
		(0.1960)		
		0.0022		
BKCY			0.0005	
			(0.8970)	
			0.0036	
OWN				-0.0286
				(0.5860)
				0.0526
AR1	-3.8	-3.67	-3.58	-3.69
	(0.000)	(0.000)	(0.000)	(0.000)
AR2	0.49	0.22	0.46	0.51
	(0.623)	(0.823)	(0.642)	(0.608)
Sargan	16.74	14.91	16.4	13.32
	(0.335)	(0.385)	(0.290)	(0.502)
Hansen	11.49	11.47	11.3	11
	(0.717)	(0.649)	(0.663)	(0.686)
OBS	7,650	7,650	7,650	7,650

In our hypothesis *H3* we posited that non-indexed firms would suffer more financial constraints in comparison to indexed firms; this hypothesis is supported by our results. As can be observed in table 8, non-indexed firms reduce their debt level when their deficit of funds increases while the indexed firms appear to issue more debt to finance their deficit of funds, especially those firms that have permanently been in the market index (*PERM* = 1, see table 7). Recall that indexed firms are in the separating (or signaling) equilibrium whilst non-indexed firms are in the joint equilibrium. Therefore, the findings show that the former ones use this comparative advantage in financing their deficit of funds with external debt, even considering that its relative cost is higher than the cost of common equity. However, for non-indexed firms, due to greater problems of asymmetries of information and lower transparency, creditors are more reluctant to finance firms with a deficit of funds.

Finally, hypothesis H4 is supported by our results. We do find a significant and positive relation between market timing and leverage for the non-indexed firms that does not appear for the indexed firms that have consistently been in the index (*PERM* = 1). Thus, non-indexed firms will take advantage of markets when prices go up to increase their leverage whereas they will be financially constrained in bearish markets.

To check the robustness of the results, we consider an alternative measure for the dependent variable: total debt over total assets at market value (*DEMV*). In this case, the results are qualitatively similar and consistent with the current results displayed in the tables. Additionally, we re-estimated the different regressions considering our original dependent variable (*TD*) and the new dependent variable used for robustness reasons (*DEMV*) but this time the two of them are winsorized at their 5% upper and lower tails. Once again, the results are similar and consistent to those previously reported [(8)].

5. CONCLUSIONS

Investors distinguish between companies inside and outside of the market indexes of the most-traded companies in each country. One of the reasons for such differentiation is to invest in firms that are the most liquid, transparent, and have the fewest problems of asymmetric information in each national market. The market index satisfies the conditions established by Akerlof (1970) for the existence of the separating equilibrium that helps to solve the adverse selection problem. It also permits differentiation in the financial policy followed by each of these two groups of companies. Consequently, we should observe differences in the capital structures of indexed and non-indexed firms.

We propose four hypotheses for testing the differences in the capital structure of indexed and non-indexed firms. To test our hypotheses we develop an empirical integrated model of capital structure that takes into account the trade-off, pecking order, and market timing theories. The hypotheses are tested over a sample of 1,865 non-financial companies from the seven countries with the largest stock markets during the period 2001-2006.

The regression results permit us to accept all our hypotheses. Thus, we observe that the longer the company is present in the national market index of most-traded firms, the lower its leverage. From this result, we conclude that being part of the market index

(8) These results are available upon request to the authors.

serves as a warranty for investors about the quality of the company as it increases transparency and reduces asymmetric information. This warranty is not available for non-indexed firms. Indexed companies with growth opportunities show less leveraged capital structures than non-indexed firms. For these firms, equity issues are more attractive than debt issues as the cost of equity decreases in a higher proportion to the cost of new debt when investors perceive more transparency and lower asymmetric information. The greater problems of asymmetric information that investors find in non-indexed firms increase the financial restrictions faced by these companies to finance their investments, particularly in bear markets. Finally, non-indexed firms are more influenced by the timing of the market. During periods of bullish markets, non-indexed firms find more relaxed conditions to finance their investments; whereas when markets become bearish they face tougher financial conditions in comparison with indexed companies that observe more consistency between the different phases in stock market movement.

As a future line of research, we are interested in exploring the differences in the speed of adjustment to the optimal debt ratio between indexed and non-indexed companies.

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Economic consequences of the first-time IFRS introduction in Europe *

Consecuencias económicas de la adopción por primera vez de las NIIF en Europa

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ABSTRACT Advocates of mandatory IFRS adoption claim that IFRS increases financial statement comparability and enhances the quality of financial disclosure, which in turn leads to more liquid markets. Using first-time disclosure (IFRS restatements), this study tests empirically this assertion by examining whether IFRS adoption by representative European countries results in more liquid markets. We propose that IFRS introduction can directly affect market liquidity by improving comparability. Our findings suggest that, at the industry level, larger restatements in net income increase uncertainty among investors, and by extension stock illiquidity. For industries with fewer restating peers, lack of information comparability additionally suppresses investment activities with larger liquidity costs.

KEYWORDS Comparability; Financial information; IFRS first adoption; Quality, Market liquidity.

RESUMEN Los partidarios de la obligatoriedad de las NIIF argumentan que su implantación aumenta la comparabilidad de la información de los estados financieros y realza la calidad de la información contable, lo que conduce a mercados más líquidos. Este estudio comprueba dicha afirmación, utilizando las reexpresiones de la información que proceden de la primera aplicación de las NIIF, al objeto de examinar si dio lugar a mercados más líquidos en los países europeos más representativos. Proponemos que la introducción de las NIIF puede afectar directamente a la liquidez de los mercados al mejorar la comparabilidad. Nuestras conclusiones sugieren que, dentro de los sectores de actividad, las reexpresiones de mayor importe en el resultado neto introducen mayor incertidumbre, contribuyendo así a que los mercados sean más ilíquidos. Adicionalmente, en los sectores con menos empresas que reexpresan, la falta de comparabilidad en la información suprime las actividades de inversión con mayores costes de liquidez.

PALABRAS CLAVE Calidad informativa, Comparabilidad; Información financiera; Primera adopción de las NIIF; Liquidez del mercado.

* **Acknowledgments:** This study has been previously circulated under the title «Market Liquidity Effects of the IFRS Introduction in Europe». We would like to acknowledge for valuable comments and recommendations Beatriz García Osma, anonymous referees, Vedran Capkun, Thomas Jeanjean, Soledad Moya, Chris Nobes, Ester Oliveras, Herve Stolowy, seminar participants at HEC-Paris, European FMA conference, 20th Asian-Pacific Conference on International Accounting Issue and Finance Forum. A previous version of this study has been awarded with the best paper prize at the 20th Asian-Pacific Conference on International Accounting Issue. Platikanova gratefully acknowledges the financial support of Banco de Sabadell.
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1. INTRODUCTION

Since 2005, more than 7,000 listed firms from the European Union have been required to comply with the International Financial Reporting Standards (IFRS). Advocates of mandatory IFRS adoption claim that IFRS increases financial statement comparability and enhances the quality of financial disclosure, which in turn leads to more liquid markets. The notion is that improved information disclosure reduces transaction costs, since investors come not to expect informed trading and thereby the costs associated with information asymmetry are lowered. The purpose of this study is to test this assertion by examining whether IFRS results in more liquid markets. Using first-time disclosure (i.e., IFRS restatements), we compare the effect of IFRS adoption on market liquidity in representative European capital markets and draw conclusions on the marginal effect of accounting disclosure on capital market development. More specifically, we consider how market liquidity responds to new information contained in local-IFRS accounting reconciliations. We hypothesize that reported differences of net income and equity affect market liquidity. The quality of information is high if users are able to identify similarities in and differences between two sets of economic phenomena (FASB, 2008; IASB, 2008). A uniform standard —such as IFRS— is proposed to eliminate informational externalities arising from lack of comparability and therefore to improve information quality. We argue that the introduction of IFRS positively influences investment activities and stock liquidity by reducing the costs that different and incomparable accounting techniques —especially ambiguously disclosed— impose on users of financial information (Ball, 2006). We test empirically the assertion that first-time disclosure in the form of accounting restatements directly affects market liquidity by providing new information to investors about the relative performance of adopting firms, thus improving comparability of accounting information. We measure the magnitude of accounting restatements relative to industry peers and relate it to capital market adjustments.

Results suggest that accounting differences have a direct effect on market liquidity costs. Our findings confirm that large deviations from the industry average in accounting restatements of net income suppress stock liquidity, most likely due to the greater uncertainty about the IFRS implementation. This result is robust to the use of different proxies of market liquidity. In contrast to net income, reconciliations in shareholder's equity do not seem to relate unambiguously to market liquidity. Depending on the liquidity measure, we estimate a marginal effect of different signs and magnitude. Therefore, we cannot draw conclusions on the restatement effect of shareholder's equity on capital markets.

We report also findings on information comparability using the number of restating industry peers at different levels of aggregation, namely at the country level and at the sample level. We propose that investor uncertainty, and by extension, market liquidity is determined by the number of restating peers. Findings confirm the proposition that high levels of information uncertainty adversely affect market liquidity, and that this uncertainty is partially related to the number of restating peers. We find that liquidity costs are larger for firms with fewer comparable peers, and that the peer effect is significant in both statistical and economical terms.

At the country level, we complement previous findings by directly relating market liquidity and accounting restatements. After controlling for stock characteristics and

respective restatements in net income and shareholder's equity, we observe that French and German firms are significantly more liquid after IFRS introduction. In contrast, results suggest that the market response to first-time IFRS disclosure by UK firms is negative. Our findings are consistent with other studies which confirm that: 1. IFRS reporting contains price sensitive information and market market reaction after the early release of restated accounts from UK accounting to IFRS is significant (Christensen *et al.*, 2009), and 2. Countries with the largest ex ante distances to IFRS show the least significant adjustments (Osma and Pope, 2011). We recognize that our estimates are reliable only for market adjustments motivated by first-time disclosure under IFRS (i.e., accounting reconciliations), and encourage empirical research on the long-term effect of IFRS implementation.

Our study has the following contribution to the capital market research in accounting. First, we contribute to the extensive literature on IFRS effect by proposing and implementing an empirical test which directly relates market liquidity costs to the adoption of IFRS. Second, we build on prior literature that examines the importance of accounting comparability on capital markets. We propose and find empirical support that large deviations from industry peers affect market liquidity costs.

The remainder of the paper is structured as follows: in Section 2 we develop the hypotheses building on two bodies of research - (1) market reaction to accounting reconciliations; and (2) determinants of market liquidity. Subsequently, we present our research design and discuss the sample selection in Section 3. In section 4, we present our empirical findings and elaborate on their implications. Finally, in Section 5 we conclude and other directions for future research.

2. PRIOR LITERATURE AND HYPOTHESIS DEVELOPMENT

Two streams of literature are particularly relevant to our study. The first stream examines changes in accounting standards (GAAP) and predicts the market reaction to first-time IFRS disclosure, including accounting reconciliations from local GAAP to IFRS. The second stream focuses on the determinants of market liquidity and proposes that information asymmetry problems are a prime determinant of capital allocation decisions.

2.1. Market reaction to accounting reconciliations

Extensive research in recent decades has discussed market reactions to information gains from financial reporting under alternative accounting standards. Before 2008, non-U.S. firms were required to file their financial results prepared under home-country standards with accompanying reconciliations to U.S. GAAP (20-F). This requirement was based on investor concerns that in contrast to the U.S., non-U.S. firms often operate in stakeholder-driven corporate environments, where management incentives to report low-quality earnings are stronger. Therefore, more extensive disclosure, along with the associated cost of complying with SEC rules, protects investors and prevents the listing of firms that are not able to satisfy stricter U.S. reporting requirements (Biddle and Saudagaran, 1989). Recent attempts to estimate the market value of accounting information are carried out in studies on mandatory changes in GAAP. Both management and market perspectives are examined. Shroff (2010) proposes that, due to their limited

attention, managers may fail to recognize some of the deficiencies of using GAAP for internal decisions. Changes in GAAP that require managers to collect and process additional information in order to implement the new standards can inform managers about the future cash flow consequences of their decisions. Similarly, with their limited attention and, perhaps, understanding of accounting standards, investors might be reluctant to make cross-border investments given the high costs of acquiring and processing information about foreign firms. DeFond, Hu, Hung and Li (2011) find that mandatory IFRS adoption results in a greater increase in foreign investment in countries with strong implementation credibility that experience relatively large increases in uniformity. Using a sample of twenty one¡countries, Barth, Landsman, and Lang (2008) find that the financial reporting quality of firms applying IFRS is generally higher than that of firms applying non-U.S. domestic standards.

The mandatory introduction of IFRS in the EU has motivated numerous studies on market reaction to reporting practices, including information quality, in different institutional environments. Several studies collect information on accounting differences in their effort to directly estimate the economic effects of this mandatory change in GAAP. For a set of large UK firms mandated to adopt IFRS in 2005, Horton and Serafeim (2010) examines the market reaction to the release of the IFRS reconciliation and the value relevance of the reconciled amounts. Their findings support the notion that there is a significant, positive relationship between the stock return and the magnitude of the difference in net income based on IFRS and UK GAAP. Aharony, Barniv, and Falk (2010) compares the value relevance of three accounting amounts —goodwill, asset reevaluations, and research and development expenses— for firms in fourteen European countries in the year prior to and the year of IFRS adoption. Their findings support the value relevance for firms in countries whose domestic accounting standards were more comparable to IFRS, and the increase in value relevance of the three accounting amounts attributable to IFRS adoption that is greater for firms in countries whose domestic accounting standards were less comparable to IFRS. Osma and Pope (2011) use accounting differences to construct their measure of strategic balance sheet management based on opening balance sheet line items reported under both IFRS and local GAAP for the transition year. Their analysis confirms prior results that IFRS transition leads to significant changes in summary accounting measures. Their study also concludes that some of the countries with the largest ex ante distances to IFRS show the least significant adjustments. Barth, *et al.* (2011) also report on the value relevance of differences in net income based on IFRS and domestic standards using cross-sectional stock prices and annual stock return regressions. In contrast to Aharony, *et al.* (2010), their analysis is based on disclosed reconciliation amounts for each sample firm at a single point in time, and therefore, more precisely estimates the effect of the application of IFRS on the incremental value relevance of the net income differences.

2.2. Capital market costs around the adoption of IFRS

There are at least two reasons why mandatory IFRS adoption would be expected to reduce liquidity costs: 1. Greater financial disclosure and transparency, and 2. Enhanced information comparability. First, the switch from domestic standards to IFRS represents a substantial increase in a firm's commitment to timely and high-quality accounting disclosure. Greater information asymmetry among market participants translates into higher transaction costs and lower liquidity for trading shares, thus raising the

required rate of returns and lowering current stock prices (Diamond and Verrecchia, 1991). Hence, it is reasonable to assume that the improved information disclosure under IFRS reduces information asymmetry, thereby lowering transaction costs. A number of empirical studies examine the economic consequences of this increased disclosure before 2005, i.e., after a voluntary switch to high-quality accounting standards (e.g., IFRS or US GAAP). Empirical findings are consistent with the expectation that IFRS introduction lowers market liquidity costs: Public firms switching to IAS or US GAAP experience lower bid-ask spreads and higher stock turnover ratios (Leuz and Verrecchia, 2000), and it is more than likely that the increased disclosure of early IFRS adopters (Daske and Gebhardt, 2006) plays a role. Second, prior research argues not only that disclosure, but also a single set of uniform accounting standards, is likely to improve comparability of financial reporting records across countries. Convergence benefits, such as lowering the costs of comparing a firm's financial position and performance across countries, are expected. In the presence of such benefits, European capital markets would become more globally competitive, consequently increasing liquidity for European firms (e.g., Armstrong, Barth, Jagolinzer, and Riedl, 2010). Empirical research suggests that the voluntary adoption of IFRS is followed by a positive price response in the stock exchange (e.g., Armstrong et al., Barth et al., Daske, Hail, Leuz, and Verdi, 2008), and this price response could be due, at least in part, to the process of convergence and greater information comparability across countries.

Empirical studies on the capital-market effect of the mandatory adoption of IFRS are not conclusive. Daske, *et al.* (2008) examine the economic consequences of mandatory IFRS adoption in twenty-six countries and find that market liquidity improves around the time of mandatory IFRS adoption, with capital market benefits concentrated in countries with strong legal enforcement and managerial incentives for transparent disclosure. Garcia, Torres and Veira (2008) focus on accounting conservatism around the introduction of IFRS and confirm that conservatism is more pronounced for common-law-based developed economies. Capkun, Cazavan, Jeanjean and Lawrence (2008) examine restated financial statements of EU firms and discuss the value relevance of reported earnings under IFRS, in the presence of earnings management during the transition period. Christensen, Lee and Walker (2009) document significant, non-uniform IFRS application across European countries, with a positive effect on capital markets in investor-friendly environments, such as in the UK. Byard, Li and Yu (2011) find that mandatory adoption of IFRS in EU countries resulted, in an improvement in analysts' forecast accuracy, and that this effect is more pronounced for firms in countries with better law enforcement. Beuselinck, Joos and Khurana (2008) examine price synchronicity and documents increased synchronicity in the post-IFRS adoption period when analyst activity is higher. Additionally, they find that synchronicity returns to pre-IFRS adoption levels during the post-IFRS adoption period for firms with higher institutional ownership, which is consistent with a continuing private information advantage enjoyed by institutional investors under the IFRS regime.

2.3. Hypotheses development

The use of accounting methods that differ in content and quality might impose a significant cost on those who rely on accounting information. Often referred to as information asymmetry costs, these costs arise from a lack of comparability and an uncertainty around the quality of financial disclosure. Economic theory proposes that

high information asymmetry costs translate into high cost of capital, illiquid markets and suppressed investment activities. Proponents of IFRS find grounds for a mandated introduction in the stated objectives of IASB: «develop…, high quality, understandable and enforceable global accounting standards…, that require high quality, transparent and comparable information…, to help participants in the world's capital markets and other users» (IASB constitution, revised March 2010). Their argument is that the EU endorsement of IFRS will foster capital market developments. The IASB has been tireless in promoting IFRS at a political level, and its efforts have paid off handsomely in terms ranging from endorsement to mandatory adoption (Ball, 2006). Whether political action translates into actual implementation is another matter and extensive research attempts to quantify the economic effect of mandated IFRS.

Comparability should improve financial reporting quality by allowing financial statement users to identify similarities in, and differences between, two or more sets of economic phenomena (FASB, 2008; IASB, 2008). DeFond, et al. (2011) directly relate comparability with foreign investment and find that investors and other stakeholders are indeed able to compare «like with like» (GAAP Convergence, 2002). In this line of research, we argue that mandatory IFRS adoption permits investors to revise their evaluation of the relative position of different stocks in the market portfolio. If the deviation from industry peers is high, we propose that uncertainty around the truthful disclosure of financial performance and first applications of international standards increase. We suggest that this uncertainly is reflected in market liquidity measure [(1)], and hypothesize that a large deviation from industry peers generates uncertainty around the use of judgment in the application of IFRS. Our expectation is that there is a negative relationship between absolute deviations in restatement differences and market liquidity. Furthermore, we propose that the number of comparable peers with reported accounting differences for the same fiscal period in their respective industry is inversely related to market liquidity measures. DeFond, *et al.* argue that benefits from mandatory IFRS are indispensably related to the number of reporting peers [(2)]. We build on the same argument and observe the effect of information comparability on different market liquidity measures.

3. SAMPLE SELECTION AND RESEARCH DESIGN

3.1. Sample selection

Previous studies examine the capital-market response to the mandatory IFRS adoption either with a global sample of first-time adopters (Daske *et al.*, 2008) or with a focus on a particular country (e.g., Horton and Serafeim, 2010; Christensen *et al.*, 2009). This study attempts to estimate the effect of the mandatory adoption of IFRS on market liquidity costs with the expectation that this effect is heterogeneous across adopting countries.

(1) In finance theory, deviation from a group benchmark is used as a measure of risk/uncertainty. In accounting research, deviation/variance in analyst forecast is employed as a proxy of uncertainty among analysts.

(2) DeFond *et al.* (2011) provide an example to illustrate the intuition behind the improved comparability at the industry level. Prior to mandatory IFRS adoption there were two firms in the Finnish petroleum industry that use Finnish GAAP. Thus, the uniform use of Finnish GAAP results in only two peers in the petroleum industry using Finnish accounting standards. After mandatory IFRS adoption, the uniform use of IFRS resulted in those firms joining 80 peers in the petroleum industry that use comparable accounting standards. DeFond *et al.* construct a measure of comparability which we also capture in our study with the number of peers with reported accounting differences.

It is because of this assumed heterogeneity that the study takes on a cross-country focus. The four selected countries are commonly assumed to represent the four different legal origin groups: France (Continental-French group), Germany (Continental-German group), Sweden (Continental-Swedish group) and the United Kingdom (Common Law-British group). The most common approach in empirical accounting research is to group countries into only two legal origin groups: Code-law (Continental) and Common-law group.

We impose the following criteria to yield our final sample: non-financial firms with accounting reconciliations and market data available in Thomson Datastream as of April 2011, with more than three comparable peers and valid industry classification. The final sample is comprised of 966 non-financial firms from the four countries: France (381), Germany (238), Sweden (54) and the United Kingdom (293). Early voluntary adopters are excluded, because they have provided accounting restatements before the mandatory introduction in 2005. The accounting standards followed are as reported by Thomson Datastream. Accounts are restated not only when a firm changes its accounting policy or the accounting standards followed, but also after merger and acquisition and as a correction of accounting irregularities, for instance. Only accounting restatements that follow the adoption of IFRS are included. If a restating firm in 2005 reports under domestic GAAP, according to the database, it is excluded from the sample (due to the ambiguous disclosure). Additionally, if an early adopter restates its accounting information for 2004, it is also excluded from the study (due to the lack of information about the nature of those restatements). Appendix A presents the step-wise procedure which we followed to construct our sample.

3.2. Research design

We hypothesize that IFRS adoption permits investors to compare industry peers, thus reducing uncertainty around relative market valuations. Since we expect to find information gains from peer comparisons, we use industry-adjusted variables. Our dependent variable is an industry-adjusted liquidity measure, where the adjusted variable is computed by subtracting the firm-specific liquidity measure from the corresponding industry average. Following previous literature, we employ a set of liquidity measures: bid-ask spread, illiquidity and zero returns. Empirically, we estimate the following model:

$$Liquidity_t = \beta_0 + \beta_1 NoPeer_t + \beta_2 |\Delta NI_t| + \beta_3 |\Delta EQ_t| + bControl_t + Country + Industry + \xi_t \quad (1)$$

where *Liquidity* is one of the three (industry-adjusted) liquidity measures (bid-ask spread, illiquidity and zero returns), *NoPeers* – the number of restating firms in a particular industry, $|\Delta NI_t|$ the absolute restatement in net income ($\Delta NI_t^{IFRS} - \Delta NI_t^{GAAP}$) deflated by total assets, $|\Delta NI_t|$ – the absolute restatement in shareholder equity ($\Delta EQ_t^{IFRS} - \Delta EQ_t^{GAAP}$) deflated by total assets, *Control* – a set of known determinants of market liquidity as control variables (market value, share turnover and return volatility). Binary variables for the resident country are included to capture cross-country variance in market liquidity.

If there are information gains from peer comparison, we expect to find a positive association between market liquidity and the number of restating peers ($\beta_1 \prec 0$).

Moreover, if the accounting restatements provide new information about the relative position within a particular industry, we propose that the absolute deviation of restated variables from the industry average increases market uncertainty, thus suppressing stock liquidity ($\beta_2 \prec 0$ and $\beta_3 \prec 0$). Following Barth, *et al.* (2011), we focus on restated net income and equity book value. In our robustness checks, we (1) compute the industry peers both at the country and sample level, (2) deflate accounting variables by total assets under both IFRS and GAAP, (3) use unsigned instead of absolute differences, and (4) incorporate restatements in other variables (total assets, intangibles, fixed assets). Those checks produce similar to the tabulated results.

The empirical analysis explores three measures of market liquidity costs: the proportion of zero return days, the Amihud (2002) illiquidity (or price impact) metric, and the bid-ask spread. Following Daske, *et al.* (2008) the measurement of these dependent variables is as follows: «zero return days» is the proportion of zero daily returns out of all trading days in a given year. The zero returns metric commonly serves as a proxy for illiquidity. Its advantage is that it relies exclusively on price data, which is frequently available for EU firms. «Illiquidity» is a measure suggested by Amihud (2002). This variable captures the price impact of trade, i.e., the ability of an investor to trade in stock without affecting the price. It is the median daily price impact over the year computed as the weakly absolute price change in percent divided by trading volume. Higher values indicate more illiquid stocks. «Bid-ask spread» is a proxy for information asymmetry that is commonly used in the accounting literature. The variable is computed as the difference between the closing bid and ask prices for each day divided by the mid-point. Financial information is obtained in Thomson Datastream as of April 2011. In accordance with Barth, *et al.* (2011), the measurement period for all three variables starts in month four and runs for one year relative to the fiscal-year end. Sensitivity tests vary the start month of the measurement period and its length, but the empirical results are quantitatively similar and are not statistically significant. In several specifications, we compare pre- with post-adoption period. We split the sample relative to the adoption year: pre-adoption refers to the year proceeding the first-time disclosure, while post-adoption – to the year after the mandatory introduction of IFRS. All variables are winsorized at the 5% level to reduce the impact of extreme observations on empirical findings.

Prior empirical studies on the capital-market response to the adoption of international standards face a number of empirical challenges. First, IFRS reporting is mandated for all publicly traded firms in a particular country and, thus, it is hard to find an appropriate benchmark against which to evaluate and attribute the market response to the IFRS introduction. Second, the first-time application of IFRS may create a short-lived adoption effect; for instance, with the break in the historical financial information, some financial analysts may find it difficult to perform their future profitability analysis, whereas sophisticated and well-informed investors may be in a better position to understand and unravel the one-time effect of IFRS adoption. Moreover, IFRS 1 provides firms with certain recognition and disclosure exemptions when they apply IFRS for the first time, which may create short-term differences across firms. Therefore, there could be a time period over which information asymmetries among investors increase, even though IFRS reporting itself is more informative (Daske *et al.*, 2008). Third, the mandatory adoption of IFRS is a step in the process of international harmonization. This mandatory adoption follows the voluntary application of IAS/IFRS in some countries (e.g., in Germany) where management was allowed to use the international standards before the mandatory switch in 2005. The application of international standards by

voluntary adopters creates the possibility that investors more than likely only partially anticipate the effect of IFRS reporting requirements on the financial accounts that were previously reported on under the domestic accounting regime. How IFRS reporting affects market liquidity costs could be difficult to identify, in particular in estimation settings where the actual impact of the international standards is not observable. In cases where a benchmark group does not exist, we may attribute the change in market liquidity to the IFRS accounts, while observed changes could be the result of other regulatory changes or management choices that happen simultaneously with the adoption of international standards. Daske *et al.* (2008) conduct a thorough study of the capital-market effect of IFRS introduction, with a benchmark sample of non-adopting countries and a global worldwide sample. The authors recognize the difficulty of benchmarking the consequences of a regulatory change that simultaneously affects all firms in an economy; and report that the magnitude and statistical significance of the documented effects vary substantially depending on the benchmark sample, the length of their sample period, and whether the sample includes firms from IFRS-adopting countries that have not yet switched to IFRS as a benchmark.

Most studies on IFRS adoption elaborate their estimation models under the assumption that the actual effect of this accounting change is difficult to quantify. As a result, the selection of comparable peers (i.e., similar but non-adopting firms) and the choice of estimation period (i.e., the event format) largely determine empirical results. We attempt to measure the IFRS effect from a different perspective. Our underlying assumption is that if we can observe the actual effect of mandatory IFRS implementation in the form of accounting restatements, we can directly relate market liquidity to IFRS adoption. Because our tests for market liquidity effects are based on disclosed reconciliations for each sample firm at a single point in time, our inferences are less influenced by the research design limitations mentioned above, thereby permitting us to more directly assess the effect of IFRS application on market liquidity measures. Similarly to Barth, *et al.* (2011) and Osma and Pope (2011), we observe accounting restatements for 2004 and obtain our estimates using the cross-sectional regression method. Since we have unique observations for each firm in the sample, we cannot include fixed effects.

Our focus is on the first-time, annual disclosure based on IFRS. Although firms are required to disclose the adjustment in their first financial statements prepared in accordance with IFRS, including interim financial statements, some firms disclose the adjustment in press releases before such financial statements are issued. We measure both market liquidity and market value variables four months after fiscal year-end, corresponding to the final year domestic standards were applied, which for our sample firms is 2004. An implicit assumption is that investors are familiar with the adjustment four months after the beginning of the IFRS adoption year.

4. RESULTS

4.1. Descriptive statistics

Table 1 exhibits descriptive statistics. We tabulate both average and t-statistics for significant differences in means around IFRS adoption. Tabulated statistics support the notion that the introduction of IFRS would have a positive effect on adopting countries. Descriptive statistics of market liquidity measures, panel A of table 1, suggest that the

there is a positive association between market liquidity and IFRS adoption in 2005 for three countries: France, Germany and Sweden. The bid-ask spread decreases with 1.2% for French firms and with 0.9% for German and Swedish firms. This difference is both economically and statistically significant (with the exception of Sweden). In order to provide robust findings, we compare three liquidity measures which are proposed to capture different aspects of stock liquidity (i.e., price information in the case of bid-ask spread, and information on trading volume in the the case of illiquidity). All three liquidity variables confirm that stocks from those countries are significantly more liquid after IFRS introduction.

Table 1

Descriptive statistics

Panel A: Dependent variable

	France		*Germany*		*Sweden*		*UK*	
	Before	***After***	***Before***	***After***	***Before***	***After***	***Before***	***After***
Bid-ask spread	0.037	0.025	0.036	0.027	0.032	0.023	0.039	0.038
(t-test)	(2.98 ***)		(3.45 ***)		(1.37)		(0.03)	
Illiquidity	9.84	8.29	11.42	10.16	3.95	2.75	0.09	0.13
(t-test)	(2.39 ***)		(1.59)		(1.71 *)		(1.93 *)	
Zero returns	0.288	0.259	0.362	0.271	0.496	0.457	0.495	0.453
(t-test)	(1.56)		(3.63 ***)		(0.58)		(3.25 ***)	
N	381		238		54		293	

Panel B: Independent variables (Mean)

	France	*Germany*	*Sweden*	*UK*
Accounting variables				
ΔNI	0.918%	0.112%	0.373%	0.603%
ΔEQ	2.188%	5.634%	0.354%	-0.717%
No. Peers	11	9	9	11
Market variables				
InMV	*4.723*	*4.045*	*6.196*	*5.516*
RVol	*0.287*	*0.206*	*0.284*	*0.452*
InTurn	*0.234*	*-0.691*	*1.495*	*6.101*

Notes : Table 1 presents descriptive statistics for the dependent variables (panel A) and independent variables (panel B). Definitions (dependent variables): Bid-ask spread – the difference between the closing bid and ask prices for each day divided by the mid-point; Illiquidity – the median daily price impact over the year computed as the weakly absolute price change in percent divided by trading volume (higher values indicate more illiquid stocks); Zero return days – the proportion of zero daily returns out of all trading days in a given year. Definitions (independent variables): ΔNI – the restatement in net income ($NI^{IRFS} - NI^{GAAP}$) deflated by total assets; ΔEQ – the restatement in shareholder equity ($EQ^{IRFS} - EQ^{GAAP}$) deflated by total assets; No.Peers – the number of restating firms in a particular industry (2-digit SIC code); Market value (MV) – the stock price times the number of shares outstanding; Share turnover (Turn) – the annual euro trading volume deviated by the market value of outstanding equity; Return variability (RVol) – the annual standard deviation of monthly stock returns. Mean differences (t-test) are statistically significant at the 0.1% (***), 1% (**), 5% (*) and 10% level (•).

Descriptive statistics suggest a positive response on capital markets to the adoption of IFRS in three out of four countries. Our findings, however, propose that users of financial information do not necessarily perceive IFRS disclosure by UK firms similarly. There are three caveats to be noted in relation to the unambiguous IFRS effect in the UK. First, descriptive statistics suggest that market liquidity is affected by IFRS adoption. We carry out regression analysis, where other factors explaining changes in market liquidity are also incorporated, and only then provide robust findings on the IFRS effect in the case of UK. Second, the sample of UK firms comprises non-financial firms with available reconciliations and market data in Thomson Datastream [(3)]. For this sub-set of UK firms, our findings suggest that market reaction to IFRS adoption might have not been positive. Since the three liquidity measures do not coincide, at this stage we abstain from bold conclusions about the liquidity changes around IFRS adoption for UK firms. Although UK firms have lower bid-ask spreads and less zero-return days after the introduction, illiquidity suggests that traded volume is not responding similarly to the introduction of IFRS. Third, the main contribution of this study is the establishment of a direct relation between actual accounting restatements and market data. Unfortunately, the use of first-time disclosure, which permits us to establish this direct relationship, has the following limitation: we can draw conclusions about the market response to accounting reconciliations at the time of adoption, and do not observe possible market reversals, motivated by IFRS disclosure, in the subsequent years. It is more than likely that users of financial information are confused with the first-time disclosure but later become familiar and even find it more relevant for investment decisions. Since firms are not require to reconcile their results on a regular basis (i.e., in contrast to cross-listed stocks in the US), we observe only the first-time accounting restatements and cannot unambiguously relate the long-term liquidity costs with accounting information reported under IFRS.

Panel B of table 1 tabulates the percentage change in both net income and shareholder's equity by country. The magnitude of accounting restatements is similar to other studies which draw observations from the same data source. Our findings support the expectation that firms from Continental Europe follow accounting standards which deviate more from IFRS, and, therefore, their restatements are larger in comparison to UK firms. On average, out of the four countries, French firms have the largest restatements of net income (about 1%). French firms, however, have lower restatements in shareholder's equity, especially in comparison to German firms. Our results suggest that IFRS introduction requires accounting restatements of shareholder's equity as large as 3% of total assets, in the case of Germany. The leading position of German firms in this sort might be explained with the peculiarity of this sub-sample. Germany has the largest sample of voluntary adopters in Europe. Since some of the largest firms have already switched to IFRS before 2005, our sample is biased towards firms of a relatively smaller size relative to the population of German firms. Descriptive statistics on market capitalization (Panel B; market variables) confirm this bias. Later in the regression analysis, we incorporate other variables in the estimation model, thus distinguishing the IFRS effect on market liquidity at country level from firm characteristics, including size.

(3) We have a sub-sample of about 300 non-financial firms from the UK. Barth, *et al.* (2011) relate accounting reconciliations with stock price/market return data and report results for about 380 UK firms. Osma and Pope (2011) tabulate descriptive statistics for a larger sub-set of UK firm, both financial and non-financial. Similarly to our study, however, their regression analysis with market data employs a reduced panel of firms. Although the closing price to compute market returns is available for a large number of stocks in Thomson Datastream, lack of information on bid and ask prices or trading volume reduces our final sample.

Along with other independent variables, panel B reports figures on the number of peers restating their accounting in accordance with international standards. We hypothesize that the number of peers with accounting restatements is positively associated to market liquidity. We assume that users of accounting information compare firms within standard industry groups (*sic.*), which contain comparable peers. To provide robust findings on the comparability hypothesis, we group first peers at the country level (tabulated) and later – at the sample level. On average, French and UK firms have a larger number of comparable peers at the country level, in comparison to German and Swedish firms. We explain this finding with the larger sub-sample of firms from those countries. Later in the analysis, we permit investors to compare firms across border and consider comparable peers at the sample level. Table 2 tabulates correlations across variables, along with the respective statistics for significance. Liquidity measures are highly correlated, supporting the expectation that those constructs capture different aspects of stock liquidity. We propose that the absolute difference in accounting restatements of both net income and shareholder's equity increases market uncertainty about the fundamentals of adopting firms. Consistent with this proposition, we find a significant, positive correlation between absolute restatements and liquidity measures.

Table 2
Correlation matrix

	Adj.Spread	*Adj.Illiq*	*Adj.Zero.*	*No.Peers*	*|ΔN I|*	*|ΔEQ|*	*lnM V*	*lnRV ol*	*lnT urn*
Adj.Spread	1.0000								
Adj.Illiq.	0.777*	1.000							
	(0.000)								
Adj. Zero.	0.704*	0.573*	1.000						
	(0.000)	(0.000)							
No. Peers	0.000	0.000	0.000	1.000					
	(1.000)	(1.000)	(1.000)						
|ΔN I|	0.067*	0.066*	0.048	0.088*	1.000				
	(0.038)	(0.039)	(0.122)	(0.001)					
|ΔEQ|	0.073*	0.055*	0.069*	-0.023	0.192*	1.0000			
	(0.025)	(0.084)	(0.029)	(0.373)	(0.000)				
lnM V	-0.581*	-0.526*	-0.406*	-0.152*	-0.136*	-0.104*	1.000		
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)			
lnRV ol	-0.300*	-0.038	-0.253*	-0.090*	-0.045*	-0.031	0.498*	1.000	
	(0.000)	(0.218)	(0.000)	(0.000)	(0.090)	(0.232)	(0.000)		
lnT urn	-0.192*	-0.222*	-0.167*	-0.011	0.069*	0.010	-0.159*	0.269*	1.000
	(0.000)	(0.000)	(0.000)	(0.538)	(0.009)	(0.704)	(0.000)	(0.000)	

Notes : Table 2 presents the correlation matrix (p-value in brackets). Correlations are statistically significant at the 0.1% (***), 1% (**), 5% (*) and 10% level (•). Adjusted liquidity measures are computed by subtracting the firm-specific liquidity measures from the corresponding industry average.

Additionally, all three liquidity measures are negatively and significantly correlated with prime determinants of market liquidity, namely market capitalization, return volatility and share turnover. Consistent with the expectation that relatively small firms with high return volatility are more risky investments, we find that there is a significant negative correlation between the magnitude of accounting restatements and size/volatility. It is

interesting that share turnover is negatively and significantly correlated with restatements in net income. If some trades are motivated by uncertainty around firm performance, we can explain this negative correlation. Although correlations between restated accounts and other independent variables are statistically significant, it is not larger than 0.5 and, therefore, multicollinearity is not a concern in our regression analysis.

4.2. Regression analysis

4.2.1. *Main results*

In this section, we present the main empirical results on the IFRS effect of restating firms. In table 3, we partially replicate the baseline regression reported by Daske *et al.* (2008). We first estimate the market adjustment in liquidity measures for the full sample (Panel A). Then we partion the sample in three groups based on the absolute restatement differences in net income and common equity. In 2005, we rank firms based on their restatement differences and assign to the high (low) $\Delta NI / EQ$ group those firms in the top (bottom) three deciles of the absolute restatement distribution (Panel B). Since we extrapolate the group assignment to years before the adoption of IFRS, we can estimate the marginal effect of international standards on market liquidity in panel format. Later, we focus on the information role of restatement magnitude on market liquidity (see, tables 4 and 5). We tabulate ordinary least squares (OLS) coefficient estimates and, in parentheses, t-statistics based on 2-dimension (firm and year) clustered standard errors (see, Peterson, 2009; Gow, Ormazabal and Taylor, 2010).

Table 3

IFRS effect: Ex post diversion in liquidity measures

Panel A: IFRS effect: OLS estimates with fixed effects

Liquidity measures			
	Bid-ask spread	Illiquidity	Zero returns
IFRS effect	-0.105 ***	-0.044 •	-0.138 ***
	(0.000)	(0.097)	(0.000)
Controls:			
lnM V	-0.313 ***	-0.658 ***	-0.083 **
	(0.000)	(0.000)	(0.007)
lnRV ol	0.058	0.671 ***	-0.464 ***
	(0.192)	(0.000)	(0.000)
lnT urn	-0.251 ***	-0.615 ***	-0.070 ***
	(0.000)	(0.000)	(0.001)
Firm fixed effects	Yes	Yes	Yes
2-dimension clustered St.err.	Yes	Yes	Yes
Adj.R^2	0.933	0.979	0.862
N	2,822	2,966	3,007

(Continue in next page)

TABLE 3 (CONT.)
IFRS EFFECT: EX POST DIVERSION IN LIQUIDITY MEASURES

Panel B : IFRS effect across deciles based on restatement differences in net income and common equity

Liquidity measures			
	Bid-ask spread (1)	Illiquidity (2)	Zero returns (3)
Low ΔN I	-0.071 *	-0.079 •	-0.110 **
	(0.015)	(0.064)	(0.002)
High ΔN I	-0.017	0.064	-0.119 ***
	(0.565)	(0.186)	(0.000)
Low ΔEQ	-0.108 ***	-0.012	-0.049
	(0.000)	(0.779)	(0.168)
Low ΔEQ	-0.054 •	-0.046	-0.036
	(0.060)	(0.325)	(0.256)
Initial controls	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes
2-dimension clustered St.err.	Yes	Yes	Yes
Adj.R^2	0.932	0.980	0.858
N	2,706	2,847	2,888

Notes : Table 3 presents panel data analysis on the relation between market liquidity and IFRS disclosure. Panel A tabulates results with dummy for the pre– and post-adoption period; Panel B exhibits empirical findings on the IFRS effect for groups based on ex post restatement differences in net income and common equity. Other variables are as defined in Table 1. Regression coeffcients are statistically significant at the 0.1% (***), 1% (**), 5% (*) and 10% level (•).

Table 3 contains the panel data analysis. In panel A, we explain average market liquidity of all restating firms, independent of restatement differences, around the IFRS introduction. Empirical results suggest that, after controlling for market value, return volatility and share turnover, the adoption of international standards is likely associated with improved liquidity. Findings are somewhat sensitive to the choice of liquidity measure. The 2-dimension cluster of standard errors, along with our focus on restating firms, can explain the difference across studies.

In panel B (table 3) we investigate further the information effect of restatement differences by partioning the full sample into low/high groups. Our main claim is that large absolute differences in net income and shareholder's equity - two key variables of interests for investors - increase uncertainty about firm prospects, thus suppressing trading and stock liquidity. Therefore, the market response should be a function of restatement differences. We observe one restatement per firm and assign firms based on ex post restatements to groups. As we interact the group assignment with the IFRS event, we interpret the regression coefficient as marginal IFRS effect across groups. Column (1) to (3) present estimation results from two independent sorts.

Empirical findings give partial support to our claim. We find that market liquidity decreases after IFRS introduction for firms with low reconciliation differences in net

income. The change in market liquidity costs is not significant for firms with high restatements in net income (with the exception of zero returns). The results are more ambiguous for the sorting schemes based on restatements in shareholders' equity. At this stage, our analysis suggest that market reaction to accounting restatements, as reflected in liquidity costs, might be significantly different across restatement groups. The decrease in bid-ask spreads is larger in the group of low restatements in common equity. However, the empirical results are not consistent across liquidity measures.

Although the sorting schemes permit us to examine variation across groups based on ex-post disclosure in panel settings, they disregard significant information which restatement magnitudes might contain. In Table 4, we focus on the introductory year and explain market liquidity with restatement differences in net income and common equity. In this part of analysis, we establish a direct relation between the size of reconciliation differences and liquidity costs.

TABLE 4
DIRECT IFRS EFFECT ON MARKET LIQUIDITY

Panel A: IFRS effect: Baseline regression

Liquidity measures			
	Bid-ask spread	*Illiquidity*	*Zero returns*
$\lvert\Delta NI\rvert$	1.219 **	3.462 *	1.470 •
	(0.010)	(0.016)	(0.051)
$\lvert\Delta EQ\rvert$	0.160	-0.853 *	0.916 **
	(0.468)	(0.016)	(0.002)
Controls:			
lnM V	-0.428 ***	-1.034 ***	-0.217 ***
	(0.000)	(0.000)	(0.000)
lnRV ol	-0.131 ***	1.038 ***	-0.187 ***
	(0.000)	(0.000)	(0.000)
lnT urn	-0.331 ***	-0.896 ***	-0.310 ***
	(0.000)	(0.000)	(0.000)
UK	1.435 ***	-0.366 *	1.697 ***
	(0.000)	(0.016)	(0.000)
France	-1.050 ***	-0.452 ***	-1.237 ***
	(0.000)	(0.000)	(0.000)
Germany	-1.206 ***	-0.540 ***	-1.782 ***
	(0.000)	(0.000)	(0.000)
Sweden	-1.049 ***	7.325 ***	0.151
	(0.000)	(0.000)	(0.627)
Adj.R²	0.827	0.948	0.619
N	905	954	966

(Continue in next page)

TABLE 4 (CONT.)
DIRECT IFRS EFFECT ON MARKET LIQUIDITY

Panel B : Comparability and reporting peers

Liquidity measures						
	Bid-ask spread	*Illiquidity*	*Zero returns*	*Bid-ask spread*	*Illiquidity*	*Zero returns*
No. peers	-0.006 ***	-0.010 ***	-0.003 **	-0.012 ***	-0.023 ***	-0.006 **
	(0.000)	(0.000)	(0.008)	(0.000)	(0.000)	(0.009)
|ΔNI|	1.410 *	3.293 **	1.321 *	1.366 *	3.231 **	1.307
	(0.058)	(0.004)	(0.092)	(0.069)	(0.004)	(0.094)
|ΔEQ|	0.296	-0.505	0.232	0.296	-0.503	0.232
	(0.289)	(0.304)	(0.451)	(0.299)	(0.321)	(0.449)
Controls:						
lnM V	-0.291 ***	-0.684 ***	-0.161 ***	-0.289 ***	-0.682 ***	-0.161 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
lnRV ol	-0.139 ***	0.725 ***	-0.168 ***	-0.136 ***	0.732 ***	-0.166 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
lnT urn	-0.244 ***	-0.620 ***	-0.213 ***	-0.243 ***	-0.620 ***	-0.213 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.550	0.584	0.362	0.547	0.582	0.361
N	905	954	966	905	954	966

Notes: Table 4 tabulate empirical findings obtained with our baseline regression (Equation (1)). Ac- counting and market variables are as defined in Table 1. Regression coeffcients are statistically significant at the 0.1% (***), 1% (**), 5% (*) and 10% level (•).

Empirical results confirm previous findings that reconciliation differences are significantly associated with liquidity costs. We contrast regression coefficients obtained with alternative liquidity measures to draw conclusions on the test sensitivity. Our findings are that firms with larger restatements in net income face high market liquidity costs. In economic terms, a difference in restated net income of about 1.22% is estimated to increase the bid-ask spread with 1%. In contrast, reconciliations in shareholder's equity do not seem to relate unambiguously to market liquidity, as the estimates are sensitive to the choice of liquidity measures.

The regression model includes two sets of control variables: market variables and country fixed effects. If market variables are highly correlated to restatement variables, our results might be driven by multicollinearity. The correlation matrix, however, rejects this possibility. The correlation between market variables and accounting restatements is low, which is a condition for accurate regression estimates. In line with established diagnostic tools, we inspect the regression coefficients for economic intuition; regression problems can be often detected if non-intuitive relations between variables are established. We estimate a negative relationship between market variables and stock liquidity, consistent with previous findings in finance research. Firms of larger size, with less volatile returns and with high share turnover are expected to have lower bid-ask spread, lower illiquidity and few days with zero returns. Therefore, we propose that our models are well-specified.

The country dummy variables capture the cross-country variation in stock liquidity. In contract to descriptive statistics, regression coefficients of those variables disentangle country effect on market liquidity from other factors which might be correlated with a firm's country of origin. Our results support previously reported findings: French and German firms are significantly more liquid after the introduction of IFRS, and this improvement is not explained by stock characteristics and industry variance. Although the country effect for the UK is significant across model specifications at the 5% level, its sign is not stable. Two out of three specifications estimate the country effect for UK as negative. At this stage, we can suggest that it is more than likely IFRS adoption by UK firms was not that positively accepted by users of financial information as it was in the case of France and Germany. We discuss the robustness of this finding later in the study, where other determinants are also included. Findings for Swedish firms are even more ambiguous. The coefficient sign of this dummy variable is not significant across estimation procedures, and moreover, the sign changes across specifications. Therefore, we abstain from conclusions on the direction of change in market liquidity following IFRS introduction for this country group.

Panel B of table 4 presents the robustness test. We augment the model by including the number of restating industry peers. We report findings on information comparability using comparable peers at different levels of aggregation, at the country level and at the sample level. If comparability is a factor, we propose that investor uncertainty, and by extension market liquidity, should be significantly affected by the possible benchmark group of restating peers. Since users of financial information compare accounting restatements across peers, we predict that information asymmetry is lower for larger groups of restating peers. We model a linear relation between restating firms and market liquidity but recognize that the relation might be non-linear (i.e., diminishing returns on information acquisition for larger groups of restating peers).

Empirical results are largely consistent with the argument of improved comparability. First, our results on the information effect of *NI* restatement are robust and still significant. We interpret these results in relation to the information asymmetry problems, which increase for firms with large restatements under IFRS of key performance indices (i.e., net income). Second, we find empirical support of the peer effect. The number of restating peers improves users' understanding about the management discretion over IFRS application. The peer effect is statistically significant across specifications. Third, the information effect of restated equity is no longer significant across models after the inclusion of the peer group. We propose that the information contained in equity restatements might be more difficult to interpret (e.g., fair-value disclosure), and, therefore, the number of peers is critical to extract the information content of those restatements.

At the country level, results are largely equivalent across models (panel A *vs.* panel B; not tabulated). Other things equal, French and German firms are significantly more liquid after IFRS introduction. Empirical results for the UK and Sweden are even more supportive of previously reported effects. We provide the following interpretation. Although UK GAAP is generally considered close to IFRS already, there are a number of significant differences which may influence the market response to IFRS introduction. Among those differences are capitalization of development costs (i.e., a choice under SSAP 13), and reclassification of an operating lease as a financial lease, along with more extensive disclosure on the substance of transaction under IAS 17, in comparison to SSAP 21. Additionally, UK accounting, as a common-law regime, is generally considered

very close to IFRS already and hence it is likely that the transition is a pure translation of accounting numbers with no impact on expected cash flows. Beside these expectations, empirical studies confirm that IFRS reporting contains price sensitive information, which also explains the significant market reaction after the early release of restated accounts from UK accounting to IFRS (Christensen *et al.*, 2009). Descriptive statistics, along with our regression estimates, additionally suggest that uncertainty on capital markets around the introduction of IFRS by UK firms could have been high.

We reconcile our results with previous studies on the economic consequences of the mandated adoption of international standards. We find empirical research on the topic not conclusive for the following reasons and admit that this study also faces the same limitations. First, the retrospective application of IFRS includes mandatory adjustment and exemptions (voluntary adjustments). Empirical findings suggest French firms use exemptions to minimize the difference in equity reported under French accounting and IFRS (Cazavan and Jeanjean, 2007), thus improving their leverage. It could be that information asymmetry increases because of the managerial discretion over the application of optional exemptions. For instance, an exemption that IAS 19 permits direct recognition in equity of all cumulative actuarial gains and losses (instead of the corridor approach) may have a significant effect on reported equity. To reach a conclusion on the marginal effect of a specific IFRS adjustment on market liquidity costs, it is necessary to distinguish accounting adjustments that are required from those that are optional. The notes to the financial statements contain details on accounting choices, but, unfortunately, this information is not available in public databases, such as Thomson Datastream. Second, IFRS application could produce no material difference, for instance, in reported equity but this could still affect investor perception of corporate transparency, financial reporting quality and, by extension, affect market liquidity costs. For example, recognition of stock options in the income statement does not affect shareholder's equity, as the decrease in equity reserve is off-set with an increase in capital surplus. Nevertheless, even when accounting differences are off-set within a particular account, they could still affect capital market uncertainty. Valuable information about the quality of corporate governance and managerial compensation policy could be disclosed, for instance, with the stock option information discussed above. To test this assertion with empirical data, disclosures that are not available in any public database, but only in the annual reports of firms adopting IFRS, are once again required.

4.2.2. *Robustness tests: Low Delta vs. High Delta firms*

Table 5 presents our results across groups based on rankings of and. As before, we rank firms based on their restatement differences and assign to the high (low) group those firms in the top (bottom) three deciles of the absolute restatement distribution. We estimate the information effect of IFRS restatements across groups and test for the significance in the coefficient estimates (t-test).

Empirical results are partially supportive of previous results. As predicted, we find that firms with high reconciliation differences in net income have higher liquidity costs. The results are not sensitive to the choice of liquidity measures. Market liquidity of firms with lower NI restatements is not affected by the size of reported differences in net income under alternative accounting regimes (with the exception of zero returns). Interestingly, we find that liquidity costs of low firms respond positively to equity restatements. Similarly to panel results, we find that bid-ask spreads lower if restatements in net income and

equity are marginal. If we sort firms based on equity restatements (Panel B), results are supportive of the negative effect of restatement differences on market liquidity costs; however, it is difficult to distinguish systematic trends across sorted firms. We interpret those results in conjunction with previous test and propose that restatements in net income are a significant factor in the formation of market liquidity costs. Restatements in equity have a marginal, if any, effect on liquidity measures, according to our results.

TABLE 5

RESTATEMENT EFFECT BY DECILES.

Panel A: Deciles of absolute restatements in net income

Liquidity measures						
	Bid-ask spread		*Illiquidity*		*Zero returns*	
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
	Low ΔNI	*High ΔNI*	*Low ΔN*	*High ΔNI*	*Low ΔNI*	*High ΔN*
$\lvert \Delta NI \rvert$	28.392	1.140 *	11.203	3.442 •	46.209 *	2.064 *
	(0.159)	(0.026)	(0.659)	(0.057)	(0.043)	(0.017)
$\lvert \Delta EQ \rvert$	-0.864 *	0.231	-0.596	-0.924 •	1.312 •	1.152 **
	(0.030)	(0.377)	(0.471)	(0.054)	(0.054)	(0.005)
Test" Low *ΔNI* = High *ΔNI*"						
t – test$_{\lvert \Delta NI \rvert}$	-1.79		-0.28		-2.38 **	
p-value	(2.86)		(0.42)		(0.018)	
t – test$_{\lvert \Delta EQ \rvert}$	0.074 ***		0.779		0.20	
p-value	(0.004)		(0.672)		(0.845)	
Initial controls	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R^2	0.795	0.833	0.957	0.939	0.579	0.613

Panel B : Deciles of absolute restatements in common equity

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
	Low ΔEQ	*High ΔEQ*	*Low ΔEQ*	*High ΔEQ*	*Low ΔEQ*	*High ΔEQ*
$\lvert \Delta NI \rvert$	1.441 *	1.081 *	1.203	4.735 **	0.625 **	0.115
	(0.050)	(0.035)	(0.485)	(0.005)	(0.007)	(0.767)
$\lvert \Delta EQ \rvert$	9.276	0.186	-4.900	-1.024 *	2.366	0.274 •
	(0.256)	(0.466)	(0.676)	(0.013)	(0.331)	(0.063)
Test" Low ΔEQ =High ΔEQ"						
t – test$\lvert \Delta NI \rvert$	-0.20		1.67**		-0.54	
p-value	(0.68)		(0.02)		(1.42)	
t – test$\lvert \Delta EQ \rvert$	0.839		0.095		0.586	
p-value	(0.497)		(0.985)		(0.155)	
Initial controls	Yes	Yes	Yes	Yes	Yes	Yes
Adj.R2	0.802	0.842	0.953	0.945	0.509	0.523

Notes : Table 5 tabulates empirical results about the restatement effect by decile groups. The sorting is based on the absolute difference in net income (panel A) and common equity (panel B). Intimal controls (market value, return volatility, share turnover, number of peers, country fixed effects) are not tabulated. Accounting and market variables are as defined in table 1. Regression coeffcients/t-test are statistically significant at the 0.1% (***), 1% (**), 5% (*) and 10% level (•).

5. CONCLUSIONS

Economic theory proposes that high information asymmetry costs translate into high cost of capital, and by extension, underdeveloped capital markets with suppressed investment activities. The mandatory introduction of IFRS was partially motivated with the disclosure of more comparable financial information and the resolution of investor uncertainty around the quality of financial disclosure. Using first-time disclosure (i.e., IFRS restatements), we test empirically the proposition that IFRS adoption increases market liquidity for a sample of representative European countries. We collect information from accounting reconciliations and draw conclusions on the marginal effect of accounting disclosure under IFRS on capital market development. More specifically, we propose that there is a direct relation between market liquidity and accounting disclosure under IFRS, which (improved) comparability can explain. Our findings confirm that capital markets respond to some extent positively to IFRS adoption. We propose that, at the industry level, liquidity measures would be adversely affected by the magnitude of accounting restatements in net income and shareholder's equity (relative to industry peers) and by the group size of restating peers. Our results support this proposition: we observe that firm stocks are more liquid in the presence of a larger number of restating peers and for smaller restatements in net income relative to the industry benchmark. Therefore, we propose that mandated IFRS disclosure improves comparability, which directly affect market liquidity.

This study has a number of limitations. First, we limit the interpretation of empirical findings to the observed short-term market response. It is more than likely that users of financial information are confused with the first-time disclosure but later become familiar and even find it more relevant for investment decisions. Since firms are not required to reconcile their results after the introductory year, we cannot empirically estimate possible market adjustments justified with accounting disclosure. Second, we relate accounting restatements to market liquidity under the assumption that the main effect of IFRS adoption is contained in the reported reconciliations. It is possible that IFRS application require adjustments that are off-set within a specific account. At the aggregate level, however, we cannot estimate their marginal effect of individual restatements, resumed in restated net income and shareholder's equity, on value-relevance or information comparability.

The contribution of this study is two-fold. First, we observe the actual effect of mandated IFRS implementation in the form of accounting restatements and directly relate market liquidity to IFRS adoption. We complement other studies which use first-time restatements but focus on value-relevance of accounting restatements (Barth, et al., 2011) or strategic managerial adjustments in the transitory year (Osma and Pope, 2011). Second, we estimate the effect of accounting comparability after IFRS introduction by measuring the deviation of accounting restatements from the industry average and the number of comparable peers. Thus, we contribute to the literature on the dispersion of accounting practices and the role of information comparability on capital markets.

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Appendix A

Sample selection

Sample	*France*	*Germany*	*Sweden*	*UK*	*Total*
Non-missing accounting information on total assets, net income and common equity	866	583	360	1,891	3,700
Missing market information	(122)	(124)	(16)	(531)	(793)
Missing information on accounting standards followed	(58)	(24)	(102)	(267)	(451)
Late adopters (AIM)	(0)	(0)	(0)	(101)	(101)
Early adopters and US listings	(35)	(152)	(25)	(96)	(308)
Local standards reported, missing accounting restatements or missing	(270)	(45)	(163)	(603)	(1,081)
Final sample	***381***	***238***	***54***	***293***	***966***

The Impact of the Spanish Financial Act (44|2002) on audit quality *

El impacto de la Ley Financiera (44|2002) en la calidad de auditoría

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ABSTRACT This study examines the impact of the Financial Act 44|2002 (FA henceforth) on audit quality in Spain. Our goal is to provide empirical evidence on whether the audit reforms recommended by the EU and introduced under the FA actually result in higher audit quality. These audit reforms introduce rules and actions to reinforce auditor independence and competence and thus, incentivise audit quality. The public oversight body for the audit profession (the Institute of Accounting and Auditing – ICAC) and the main professional audit body (the Spanish Institute of Chartered Accountants – ICJCE) maintain the view that the changes ensure and increase audit quality (Fernández and Combarros, 2002; Atarés and Canales, 2004). However there is no empirical evidence to support this argument. We empirically test the effect of the FA on audit quality by assessing the ability of auditors to constrain opportunistic earnings management practices. We use data from Spanish companies for the pre- and post-FA periods 2000-2001 and 2003-2004 respectively. The study shows that audit quality has increased after the FA. These results support European recommendations on questions regarding audit regulation.

KEYWORDS Audit quality; Earnings management, Audit reforms, Financial Act 44|2002.

RESUMEN Este estudio examina el efecto de la Ley Financiera 44|2002 en la calidad de la auditoría en España. Las medidas introducidas con la Ley Financiera están dirigidas a reforzar la independencia y competencia del auditor y, por tanto, su calidad. Los máximos representantes del Instituto de Contabilidad y Auditoría de Cuentas (ICAC) y del Instituto de Censores Jurados de Cuentas de España (ICJCE), han defendido que los cambios propuestos por la UE e introducidos con la Ley Financiera, han provocado un aumento de la calidad de auditoría en España (Fernández y Combarros, 2002; Atarés y Canales, 2004). No obstante, para apoyar tales afirmaciones son necesarias evidencias empíricas. El presente estudio mide la calidad de auditoría como la capacidad de limitar las prácticas de gestión del resultado. Los datos utilizados son obtenidos de los estados financieros auditados presentados por las empresas españolas en los años 2000, 2001, 2003 y 2004. Los resultados muestran un aumento de la calidad de auditoría con la implementación de la Ley Financiera, evidenciando el éxito de las recomendaciones europeas en materia de auditoría.

PALABRAS CLAVE Calidad de auditoría; Gestión del resultado; Reformas en auditoría, Ley Financiera 44|2002.

* **Acknowledgments:** We appreciate the helpful comments and suggestions from Beatriz García Osma, Nieves Gómez Aguilar, Begoña Giner, Juan Manuel García Lara, Belén Gil de Albornoz, Ana Gisbert, José A. Gonzalo Angulo, Lucía Lima, José Luis Ucieda, and seminar participants at the IV Jornada REFC, and the 2009 Annual Meeting of the Asociación Española de Contabilidad y Administración de Empresas, INTACCT Workshops and Universidad Autónoma de Madrid. We acknowledge financial assistance from the European Commission Research Training Network INTACCT (Contract MRTN-CT-2006-035850) and the Spanish Ministry of Science and Innovation (ECO2010-19314).

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Recibido 04-08-10 · Aceptado 21-07-12 · · ISSN: 0210-2412

1. INTRODUCTION

The role that auditors play in securing financial information quality is of paramount importance. They are a crucial party in influencing a firm's attitude towards opportunistic accounting behaviour. However, a number of past financial scandals have revealed weaknesses in auditing and awakening regulators to the need for improvement in the quality of the audit system. Against this backdrop, the European Union (EU) has encouraged its member states to improve, harmonise and ensure audit quality through the implementation of common audit rules and actions (Commission Recommendation 2001|256|EC; Commission Recommendation 2002|590|EC; Directive 2006|43|EC).

The audit reforms included under the Spanish Financial Act 44|2002 of 22.nd of November (FA henceforth) are in line with these European Union targets. Their aim is to recover confidence in audit quality and their focus is to reinforce auditor independence, introducing rules to improve competence and strengthening the effectiveness of the audit supervisory and disciplinary system.

An important question as yet unanswered is whether the implementation of stricter audit rules and tighter supervision such as those imposed by the FA and recommended by the EU actually improve audit quality. In the Spanish case, the public oversight body for the audit profession (the Institute of Accounting and Auditing - ICAC) and the main professional audit body (the Spanish Institute of Chartered Accountants - ICJCE) argue that the changes in the FA ensure and increase audit quality (Fernández and Combarros, 2002; Atarés and Canales, 2004). However there is no empirical evidence to support this argument.

In this paper, we empirically test the effect of the FA on audit quality. We expect the audit reforms introduced under the FA have led to greater audit quality by increasing the probability of detecting audit failure, disciplining auditors and incentivising them to constrain managerial opportunism. Auditors deal with intensified opposing interests; keeping their clients on the one hand, and avoiding stricter legal or professional penalties related to low audit quality on the other (e.g. Francis and Krishnan 1999; Francis and Wang 2008). Our expectation is consistent with evidence in previous studies (e.g. Hilary and Lennox 2005; Maijoor and Vanstraelen 2006; DeFond and Lennox 2011), and the European Commission's goals (Directive 2006|43|EC).

To test our prediction, we assess auditors' efficacy in constraining opportunistic earnings management practices for the pre- and post-FA periods, 2000-2001 and 2003-2004, respectively. Consistent with the literature, we use the magnitude of the absolute value of discretionary accruals as a proxy for audit quality. Auditors are considered to provide greater audit quality if they constrain managers' flexibility to report discretionary accruals (e.g. Becker et al. 1998; Francis and Krishnan 1999; Lee and Mande 2003).

Consistent with our expectation, the results show a lower level of discretionary accruals being reported after the FA regardless of the type of auditor (big or non-big

audit firms) [(1)]. This indicates that the FA has encouraged both big and non-big auditors to provide higher audit quality.

This paper extends previous literature on the impact of institutional factors and the legal requirements encouraging auditors to supply high quality audits (e.g. Lee and Mande 2003; Khurana and Raman 2004; Maijoor and Vanstraelen 2006; Francis and Wang 2008; DeFond and Lennox 2011). We also extend previous literature (Gassen and Skaife 2009; Ruiz-Barbadillo et al. 2009) on the impact of the audit reforms in a code-law country.

The Spanish context provides an excellent setting to test whether higher audit quality is attained by applying some of the regulatory audit rules and actions recommended by the EU (e.g. audit-partner rotation rule and quality controls actions) (Commission Recommendation 2001|256|EC; Commission Recommendation 2002|590|EC; Directive 2006|43|EC). Our study is relevant to the ongoing EU debate as to how audit rules should be amended to guarantee higher audit quality.

Our research is of interest to governmental institutions, academics, investors and other users of financial information because it provides evidence of the success of the European recommendations on questions regarding audit regulation.

The rest of the paper is organised as follows. Section 2 describes the Spanish context and the FA. Section 3 provides a literature review and develops the research hypotheses. Sections 4 and 5 introduce the research design and sample. Section 6 discusses the main results and section 7 the sensitivity tests. Finally, section 8 presents conclusions, addresses the limitations of the study and suggests lines of future research.

2. INSTITUTIONAL SETTING

The Spanish audit profession was first regulated by the Audit Act (19|1988). Some of the audit rules emanating from the Eighth Directive (84|253|EEC) of the European Commission were implemented under this Act. Additionally, a public oversight body for the audit profession, the ICAC, was set up.

In the nineties, the first cases of audit failures sanctioned by the ICAC appeared (BOICAC 1993, 1994, 1995). These events marked the beginning of a period of an increasing lack of confidence in the audit profession and also brought into question the effectiveness of the ICAC in guaranteeing the quality of the audit work (García Benau *et al.*, 1999; Combarros, 2000).

With the aim of recovering confidence in the audit profession in Spain, audit reforms were implemented under the FA (44|2002). The main objective of the FA is developing and promoting financial institutions. However, it has also made significant changes to audit regulation.

The Spanish audit reforms, based on EU recommendations [(2)], focused on increasing audit quality and recovering investor confidence in the audit profession, which

(1) In this study, the big audit firms are: Arthur Andersen, Deloitte & Touche, KPMG, PricewaterhouseCoopers and Ernst & Young. The remaining are considered non-big audit firms.

(2) The European recommendations that significantly influenced the elaboration of the FA (Commission Recommendation 2001/256/EC; Commission Recommendation 2002/590/EC) were published years later in the Directive 2006/43/EC.

had also been damaged at an international level [3]. With this goal, rules on auditor independence and competence were reinforced. Also, enforcement mechanisms to oversee, monitor and sanction auditors were strengthened. Table 1 presents the main audit reforms implemented under the FA.

Table 1
Main specific reforms on auditing under the FA

Main reforms	Auditing Act 19/1988	Financial Act 44/2002	Expected impact on
Reinforcing auditor independence and competence rules			
Access to the profession	The Examination Access Test is decentralised *	The Examination Access Test is unified under ICAC supervision	Competence
Rule for continuous training	On a Voluntary Basis	Continuous training is compulsory	Competence
Rule on rotation	Mandatory audit-firm rotation. Rule for a minimum period but unlimited maximum period**	Mandatory audit-partner rotation	Independence
Rule on non-audit services	No existing rule	Ban on providing certain non-audit services	Independence
Rule on incompatibilities	Rules on family and business relations	Reinforcing rules on family and business relations	Independence
Rule on transparency in the audit contracts: hours and invoicing fees	Compulsory information sent to the ICAC	Information should be disclosed in financial statements	Independence
Supervisor's activities over auditors			
Supervisor's activities	Mainly reactive controls carried out by the ICAC (inspections)	Mainly proactive controls carried out by the three Spanish statutorily recognised professional auditing bodies (quality controls)	Competence & Independencåe
Funding of ICAC to carry out the quality controls	Tax paid by auditors per audit report	Tax per audit report is increased to raise the financial resources needed to achieve effective quality controls	Competence & Independence
Strengthening disciplinary sanctions to auditors			
Types of sanctions	Light to severe sanctions: Ranging from a fine to expulsion from the ROAC and disqualification as an auditor	Very severe sanctions are implemented. Fines are also increased and a minimum is fixed	Competence & Independence

* There were several entrance tests organized by the three Spanish statutorily recognised professional auditing bodies.
** Mandatory audit-firm rotation is reformed under the Law 1995. So, mandatory audit-firm-rotation was never implemented.

(3) Before 2002 numerous international financial scandals appeared, some of which had serious consequences for the big audit firms. In 2002 following the Enron scandal the audit firm Arthur Andersen collapsed. As a result, most of their Spanish clients followed their audit partners to Deloitte, the Spanish audit firm that acquired Arthur Andersen's assets and human capital.

Specifically, new rules to reinforce auditor independence were incorporated. They cover mandatory audit-partner rotation for public interest companies [4] (FA 44|2002 art. 51), a ban on providing certain non-audit services (FA 44|2002 art. 51), regulate auditor incompatibilities (FA 44|2002 art. 51) and transparency in audit contracts (FA 44|2002 *disposición adicional decimocuarta*). In parallel, and with the aim of improving auditor competence, continuous training programs became compulsory (FA 44|2002 art. 49) and, under ICAC supervision (FA 44|2002 art. 48), one officially recognised entrance examination for statutory auditors was created. This replaced the previous entrance tests organized by the three statutorily recognised professional auditing bodies in Spain (the Spanish Institute of Chartered Accountants – ICJCE, the Register of Economist-Auditors – REA and the General Register of Auditors – REGA).

Before 2002, the supervisory system for auditors was mainly composed of inspections carried out by the ICAC. Since then, the system has been reinforced by introducing improved quality controls which are carried out by the three previously-mentioned professional auditing bodies (FA 44|2002 art. 53) under ICAC supervision. The quality controls are financed through an increased tax (per audit report) paid by auditors (FA 44|2002 art. 53).

To make enforcement more effective in sanctioning auditors, the new scheme of disciplinary actions was tightened. Sanctions for auditors became more severe and fines heavier (FA 44|2002 art. 53).

Changes also occurred on another but complementary front. Investor protection was reinforced. The stock exchange sanctions were strengthened (FA 44|2002 art. 45) and the structure and functions of the Stock Exchange Commission were reorganized (FA 44|2002 art. 46). This is expected to increase the likelihood of detecting client misreporting and thus, the detection of inadequate audit work, leading to subsequent sanctions. Accordingly, this extra protection provides a stronger incentive for auditors to supply higher audit quality (Francis and Wang 2008). Additionally, an audit committee became compulsory for listed companies (FA 44|2002 art. 47) with the aim of examining auditors' independence and mediating in conflicts between management and outside auditors to prevent financial frauds (Klein 2002).

3. HYPOTHESES DEVELOPMENT

3.1. The influence of FA reforms on audit quality

Audit quality can be defined as the joint probability of detecting and reporting material misstatements such as financial errors, lower quality accounting figures or earnings management practices (DeAngelo, 1981).

Discovering a misstatement is attributed to auditor *competence*, while reporting one is related to auditor *independence*. Therefore, the level of audit quality is influenced by the degree of auditor competence and also by its independence which are in turn, determined by several factors.

(4) Art.51 of the FA defines companies of public interest as those meeting at least one of the following three criteria: *a)* being listed; *b)* under public supervision, or *c)* reporting annual sales greater than 30 million €.

In Spain, the specific reforms introduced under the FA focus on influencing both the degree of auditor competence and independence, thereby incentivising auditors to supply higher quality auditing. To this end, three main groups of reforms are introduced: *a)* Reinforcing rules on auditor independence and competence; *b)* implementing improved quality controls, and *c)* strengthening disciplinary sanctions on auditors.

We expect that the consequence of this reinforcement of the rules guaranteeing auditor competence and independence will translate into lower earnings management practices. To be more specific, we expect the quality of the auditor's work to be influenced in two ways. On the one hand, rules on competence focus on reinforcing the auditor's training and are expected to increase the detection of lower quality accounting figures [(5).] On the other hand, rules on independence are expected to reduce auditor dependence on the client, thus discouraging permissiveness with lower quality accounting numbers. For example, the rules that mandate auditor rotation (e.g. Myers *et al.,* 2003) and limit the provision of non-audit services (e.g. Frankel *et al.,* 2002) are expected to reduce the economic dependence formed between auditors and their clients.

Additionally, the implementation of improved quality controls (effective supervisory measures) is expected to encourage auditors to supply higher quality auditing. Firmer supervision should encourage them to minimise the risk of conducting inadequate audit work. Moreover, the feedback provided by the internal revision process is expected to improve auditor competence (e.g. Bannister and Wiest, 2001; Hilary and Lennox, 2005).

Finally, the Spanish audit disciplinary system has been tightened. The sanctions for deficient audit work have become more likely and costly. As previously explained, the existence of rules on auditor independence and competence and of supervisory actions are essential mechanisms for incentivising auditors to supply high quality work. However, these mechanisms only show their full potential if they are reinforced by the threat of disciplinary action. Auditors make a bigger effort to provide audit quality if they are more likely to be detected and sanctioned for not providing it (e.g. Bannister and Wiest, 2001; Maijoor and Vanstraelen, 2006; Francis and Wang, 2008).

Concluding, we argue that the quality controls and reinforced rules on auditor competence should increase auditors' ability to detect misreporting. Additionally, reinforced rules on auditor independence are expected to reduce clients' influence on their auditors. And finally, the strengthened supervisory and disciplinary actions should increase the detection of inadequate audit work and of subsequent sanctions. Thus, we expect these reforms will led to greater audit quality by increasing the probability of detecting audit failure, disciplining auditors and incentivising them to constrain managerial opportunism. Accordingly, it may be argued that the FA results in higher audit quality. Consequently, we test the following hypothesis:

H1: Audit quality has increased after the enactment of the FA.

(5) The effect of the introduction of new rules on auditor competence should be treated with caution as they are mainly expected to impact audit quality in the long-term rather than in the short-term which is the period under study in this paper.

3.2. The cost of enforcement sanctions after FA

The increased cost of enforcement sanctions is expected to encourage auditors to adopt a more conservative profile. Previous evidence demonstrates that auditors adjust audit effort depending on the direction of earnings management risk. Specifically, the evidence indicates that there is a conservative bias on the part of auditors to avoid potential exposure to sanctions (e.g. Barron *et al.*, 2001; Abbott *et al.*, 2006). Income-increasing accruals choices are more likely associated with enforcement sanctions because more costly (negative) consequences are expected when financial reporting scandals result from overstatement of profits and net assets rather than understatements (e.g. Dechow *et al.*, 1995; Bannister and Wiest, 2001).

Spanish auditors are subject to ICAC enforcement sanctions imposed by its audit disciplinary system which has been tightened under the FA. These sanctions for deficient audit work are now more likely. Also, they are more costly, as more severe disciplinary actions are implemented in the new regulation.

Because the cost of enforcement sanctions under the FA has increased, the FA is expected to encourage auditors to be more conservative in an attempt to protect themselves from ICAC supervision. Thus, we expect them to curb income-increasing accruals practices, but to be more lenient with income-decreasing accruals practices. We test the following hypothesis:

H2: Auditors have become more conservative after the FA.

3.3. The influence on the FA on big and non-big auditors

The audit reforms introduced under the FA are expected to increase the detection of inadequate audit work and the cost of audit failure.

The costs associated to an audit failure may affect big *vs.* non-big auditors differently. On the one hand, big auditors face higher incentives to avoid litigation risk and reputation damage compared to non-big auditors. As Lys and Watts (1994) and Lee and Mande (2003) explain, big auditors are more likely to be sued due to their higher perceived deep pockets. In addition, they face greater losses if their reputation is highly damaged due to high client-specific rents (Deangelo, 1981). On the other hand, big auditors seem to be less (or only equally) affected by the risk of enforcement sanctions than non-big auditors because the penalties are proportionally less costly for them (Bonner *et al.*, 1998; De Fuentes *et al.*, 2010; DeFond and Lennox, 2011).

In Spain, the costs of an audit failure are similar for both big and non-big auditors, because the litigation risk is low. In fact, the probability of receiving any enforcement sanction by the ICAC is much higher compared with the risks of being sued.[(6)] Hence, any expected cost of an audit failure is associated with enforcement sanctions and a potential loss of reputation rather than with litigation costs (e.g. Francis and Wang, 2008; De Fuentes *et al.,* 2010). Under these circumstances, we predict that any increase in the cost of audit failure after the FA will have a similar impact on big and non-big

(6) In this paper, the risk of enforcement sanctions is defined as the probability of being penalised by the ICAC and litigation risk is defined as the process of bringing a lawsuit against independent auditors.

auditors. We thereby expect an increase in audit quality for both types of auditors. Thus, we hypothesised that:

H3: The FA has impacted the audit quality provided by both big and non-big auditors.

4. METHODOLOGY

4.1. Measurement of audit quality: Discretionary accruals

A firm's financial statements are the output of a negotiation process between managers and auditors (e.g. Becker *et al.*, 1998). Therefore, the quality of the auditee's financial reporting is a reflection of the audit quality as a whole.

Since audit quality is not directly observable and, consequently, difficult to measure empirically, prior studies assume that it is inversely related to earnings management and adopt discretionary accruals to proxy for the auditor's degree of permissiveness. Following earlier literature (e.g. Becker *et al.,* 1998; Francis and Krishnan, 1999; Krishnan, 2003), we also adopt the level of discretionary accruals reported by audited firms as a proxy for audit quality.

According to the Jones (1991) model, discretionary accruals (DA) are estimated in two steps. Firstly, for a given year *t*, total accruals (TA) are calculated as:

$$TA_t = \Delta CA_t - \Delta Cash_t - \Delta CL_t\, \Delta DCL_t - Dep_t \quad (1)$$

where: *ΔCA* is the change in current assets; *ΔCash* is the change in cash and cash equivalents; *ΔCL* is the change in current liabilities; *ΔDCL* is the change in long-term debt included in current liabilities and *Dep* is depreciation and amortization charges.

Secondly, discretionary accruals (*DA*) are estimated as the residuals of the following regression, computed by sector and year:

$$\frac{TA_t}{AS_{t-1}} = \beta_0 + \beta_1 \frac{(\Delta REV_t - \Delta REC_t)}{AS_{t-1}} \beta_2 \frac{PPE_t}{AS_{t-1}}{}_t + \varepsilon \quad (2)$$

where: *ΔREV* is the change in revenues; *ΔREC* is the change in receivables and *PPE* is gross property plant and equipment. In order to control for scale effects all variables are deflated by prior period total assets (AS_{t-1}).

All accruals measures are considered in absolute values in order to avoid the compensation of positive and negatives values, and because earnings quality is affected whatever the sign of (discretionary) accruals. Finally, income-increasing discretionary accruals (i.e. positive accruals) and income-decreasing discretionary accruals (i.e. negative accruals) are also considered separately as proxies for audit quality (e.g. Bannister and Wiest, 2001; Jeong-Bon *et al.*, 2003; Cahan and Wei, 2006).

4.2. Research design

Our research design examines the effect of the FA on audit quality. To do this, we study the differences in discretionary accruals measures before and after the year 2002. In particular, we use the following general model:

$$Y = \beta_0 + \beta_1 FA + \beta_2 BIG + \sum_k \beta_k \text{ control variables} + \varepsilon \quad (3)$$

As explained above, the dependent variable *Y* is a proxy for audit quality based on the degree of the auditee's financial reporting quality. Concretely, *Y* is measured by various discretionary accruals proxies that are grouped into three variables: *a)* |*DA*|, the absolute value of discretionary accruals at year *t* divided by beginning of period total assets; *b)* |*INCDA*|, the absolute value of income-increasing discretionary accruals divided by beginning of period total assets; and *c)* |*DECDA*|, the absolute value of income-decreasing discretionary accruals at year *t* divided by beginning of period total assets.

To examine how the audit reforms introduced under the FA affect audit quality, a dummy variable, FA, is included. FA equals one for the years 2003 and 2004 and zero otherwise. This independent variable enables us to identify differences in discretionary accruals between the pre- and post- *FA* periods. Hence, we use the independent variable FA in model (3) to test *H1* and *H2*.

To test *H1*, we run model (3) using the absolute value of discretionary accruals (|*DA*|) as our dependent variable. Consistent with H1, if there is higher audit quality after the *FA*, we expect a decrease in |*DA*|. Hence, we expect coefficient β_1 to be negative and significant.

To test *H2*, we run model (3) using income-increasing (|*INCDA*|) and income-decreasing (|*DECDA*|) discretionary accruals as dependent variables. If auditors have become more conservative after the FA, we expect them to be more willing to reduce |*INCDA*| than |DECDA|. Hence, the coefficient $\beta_{1.1}$ for the sample of |*INCDA*| firms should be negative and significantly different from the coefficient $\beta_{1.2}$ for the sample of |*DECDA*| firms. We follow the methodology used in Garcia Lara *et al.* (2006) to estimate the statistical significance of the differences between these two β_1 coefficients in regressions with |*INCDA*| and |*DECDA*| as dependent variables [7].

The model also includes the variable *BIG*, which is a dummy variable that equals one if the auditor is a big audit firm (Arthur Andersen, Deloitte & Touche, KPMG, PricewaterhouseCoopers and Ernst & Young) and zero otherwise. Moreover, the model considers a set of other control variables that prior research suggests are associated with discretionary accruals. Several studies argue that large companies present lower levels of discretionary accruals to mitigate political costs (eg: Watts and Zimmerman, 1978). Therefore, we include the logarithm of total sales (*SIZE*) as a proxy for company size. With higher growth, the level of accruals is expected to increase and thus, the

(7) The statistical significance difference is estimated as $\frac{\beta_{1.1} - \beta_{1.2}}{\sqrt{\sigma_{1.1}^2 + \sigma_{1.2}^2}}$, where β_1 is the estimated coefficient and σ_1 the standard error of the variable FA.

possibilities of manipulation too (eg: Arnedo *et al.*, 2007). To control for growth firms we include the sales growth for the year (*GROWTH*). Managers might also use discretionary accruals to avoid infringing the firms' debt-covenants (eg: Beneish and Press, 1993). Our proxy for leverage (*LEV*) is calculated as total liabilities divided by total assets. Previous studies also identify a close relationship between discretionary accruals and profitability (eg: Kothari *et al.*, 2005). We measured profitability as return on assets (*ROA*) defined as net income divided by total assets. With this proxy we also control for changes in the macroeconomic conditions over time [8]. Finally, we include industry dummies to control for industry fixed effects.

To test *H3* and examine the impact of the *FA* on the audit quality provided by big and non-big auditors, we run the following model:

$$Y = \beta_0 + \beta_1 FA + \beta_2 BIG + \beta_3 FA*BIG + \sum_k \beta_k \text{ control variables} + \varepsilon \quad (4)$$

The dependent variable Y is measured by $|DA|$, the absolute value of discretionary accruals at year *t* divided by beginning of period total assets. The model (4) is similar to the model (3) but it also includes the interaction dummy variable, *FA*BIG*, which is used to test whether big auditors are affected by the audit reforms in similar ways to smaller ones. The coefficient on *FA*BIG* shows how the audit reforms have affected discretionary accruals ($|DA|$) reported by companies audited by big auditors compared to non-big auditors. Consistent with the idea that the *FA* has impacted on the audit quality provided by both big and non-big auditors, we expect the coefficient of β_3 to not be statistically significant, indicating that the impact of the FA on the increase of audit quality for both types of auditors is the same in sign and similar in magnitude.

5. SAMPLE AND DATA

5.1. Sample

To carry out our empirical tests, we focus on individual financial statements of Spanish companies for the period 2000-2004. The financial and auditing information was collected from the SABI database [9]. Companies with negative equity were excluded. In order to work with financial reports that are audited we selected firms that meet two out of three criteria for at least two successive years: *a)* Total assets greater than 2.4 million euros; *b)* net operating income greater than 4.8 million euros, and *c)* average number of employees greater than 50 [10]. Following previous research in this area, financial firms are excluded from our sample due to their particular characteristics which make estimating their discretionary accruals non comparable to other firms.

(8) As additional unreported analyses, we have also controlled for the changes in the economic environment across time by including another variable at firm level: LOSS (a dummy variable that equals one if a firm has losses in the current period, zero otherwise) and two macroeconomic variables at the country level: *GDPG* (gross domestic product growth) and *INF* (inflation rate). The sensitivity analyses allow us to rule out that the changes found in the level of discretionary accruals are not attributed to differences in the economic environment between the two *FA* periods. Results obtained are consistent with the evidence reported in section 6.2. Results are available from the authors on request.

(9) The «Sistema Anual de Balances Ibéricos» (*SABI*) is the Bureau van Dijk's database for Spanish and Portuguese companies equivalent to the pan-European AMADEUS database.

(10) The requirements are in accordance with the Royal Decree 572/1997 for firms that should present audited annual reports.

The classification by sector is made according to CNAE codes; we have also excluded industrial sectors with fewer than twenty firms per year to have enough observations in every year and sector to estimate discretionary accruals. Consistent with Peasnell et al. (2000) all observations for the year 2002 are excluded to avoid the effect of the transition period. Finally, to avoid potential problems with outliers, companies with extreme values for all variables were excluded. The final sample contains 18,325 firm-year observations for the pre- and post-FA periods 2000-2001 and 2003-2004.

5.2. Descriptive statistics

Table 2 presents descriptive statistics of the control variables, by type of audit firm and period. Results show differences between companies audited by the two types of auditors, big and non-big. Approximately 23% of the sample is audited by big auditors who usually audit larger firms as the relative mean and median of *SIZE* and *SALES* show. The relative values for the mean and the median of the return on assets (*ROA*) indicate that companies audited by big auditors are more profitable than those audited by non-big auditors. Differences of *SIZE*, *SALES* and *ROA* between firms audited by both types of auditors remained relatively constant across periods.

Table 2
Descriptive statistics of the control variables

Pre-FA 2002

	Big auditors N= 2,049 (11%)			*Non-big auditors N= 6,130 (34%)*			*Tests of Differences*	
	Mean	*Std Dev*	*Median*	*Mean*	*Std Dev*	*Median*	*Mean t-value*	*Median z-value*
SIZE	10.086	1.075	9.949	9.476	0.725	9.365	-23.8***	-24.6**
SALES	60,808	372,707	20,930	18,393	40,533	11,676	-5.14***	-24.7**
GROWTH	0.111	0.255	0.075	0.122	0.222	0.085	-1.69*	-0.73
LEV	0.643	0.186	0.664	0.647	0.188	0.676	0.99	1.37*
ROA	0.045	0.056	0.036	0.040	0.046	0.031	-3.51***	-3.29***

Post-FA 2002

	Big auditors N= 2,208 (12%)			*Non-big auditors N= 7,938 (43%)*			*Tests of Differences*	
	Mean	*Std Dev*	*Median*	*Mean*	*Std Dev*	*Median*	*Mean t-value*	*Median z-value*
SIZE	10.173	1.148	10.010	9.508	0.770	9.402	-25.8***	-26.4***
SALES	71,719	371,362	22,241	19,648	36,554	12,118	-6.58***	-26.2***
GROWTH	0.077	0.234	0.043	0.104	0.229	0.067	-1.32	-0.91
LEV	0.637	0.193	0.663	0.645	0.192	0.678	1.76*	1.95***
ROA	0.041	0.054	0.033	0.037	0.047	0.028	-2.61***	-2.69***

*, **, *** Indicates significance at 10%, 5% and 1% respectively. t and z values are based on two-tailed tests. Variable definitions: *SIZE* = Logarithm of sales; *SALES* = Sales; *GROWTH* = Sales growth for the year; *LEV* = Total liabilities divided by total assets; *ROA* = Net income divided by total assets.

With respect to GROWTH and LEV, no clear pattern arises. Some difference exists in growth and leverage between companies audited by both types of auditors. The results indicate that companies audited by big auditors only have significantly higher GROWTH in the pre-FA period. The tabulated evidence for median values shows that the leverage ratio (LEV) is lower in firms audited by big auditors, compared to those audited by non-big auditors. However, the test of means indicates that average values of LEV in companies audited by big auditors are only significantly lower for the post-FA period.

Table 3 displays the correlation coefficients for the main variables used in the models. Spearman (Pearson) correlation coefficients are presented above (below) the diagonal. As can be seen in table 3 there is a negative and statistically significant Spearman (coeff = -0.024, *p*-value<0.01) and Pearson (coeff = -0.027, *p*-value < 0.01) correlation between our dependent variable |*DA*| and *FA*, our proxy for the enactment of the *FA*. This is consistent with our main expectation that |*DA*| are lower after the *FA*. The values of the correlation coefficients for the independent variables are low (less than 41%) which means that we do not expect any multicolinearity problems.

Table 3
Spearman (above) and Pearson (below) Correlation Matrix

	|*DA*|	*FA*	*BIG*	*SIZE*	*GROWTH*	*LEV*	*ROA*
|*DA*|	1	-0.024 ***	-0.001	0.026 ***	0.079 ***	0.140 ***	0.030 ***
FA	-0.027 ***	1	-0.039 ***	0.008	-0.064 ***	-0.004	-0.041 ***
BIG	-0.001	-0.039 ***	1	0.266 ***	0.011	-0.017 **	0.032 ***
SIZE	0.015 **	0.014 *	0.302 ***	1	0.189 ***	0.092 ***	0.114 ***
GROWTH	0.108 ***	-0.035 ***	0.017 **	0.146 ***	1	0.127 ***	0.179 ***
LEV	0.153 ***	-0.008	-0.014 *	0.087 ***	0.128 ***	1	-0.407 ***
ROA	0.031 ***	-0.036 ***	0.036 ***	0.115 ***	0.139 ***	-0.391 ***	1

*, **, *** Indicates significance at 10%, 5% and 1% respectively. Variable definitions: |*DA*| = Absolute value of discretionary accruals; *FA* = Dummy variable that equals one for the years 2003 and 2004 and zero otherwise; *BIG* = Dummy variable that equals one if the auditor is a big firm (Arthur Andersen, Deloitte & Touche, KPMG, PricewaterhouseCoopers and Ernst & Young), zero otherwise; *SIZE* = Logarithm of sales; *GROWTH* = Sales growth for the year; *LEV* = Total liabilities divided by total assets; *ROA* = Net income divided by total assets.

6. MAIN RESULTS

6.1. Univariate analysis

Table 4 shows parametric (*t-test*) and non-parametric (*z-test*) univariate tests for differences between the discretionary accruals measures reported by companies audited by big and non-big auditors for the pre- and post- FA periods.

The descriptive statistics reported in table 4 show that the number of observations in our sample is larger for the post-FA period. Table 4 also shows that the mean and median for all the discretionary accruals measures (|*DA*|, |*INCDA*|, |*DECDA*|) in the pre-FA period are significantly larger than their corresponding values in the post-FA period. This evidence suggests that the FA has encouraged auditors to reduce managers' flexibility to employ discretionary accruals. More specifically, table 4 shows

that the mean (*t-value* = -2.44) and median (*z-value* = -1.66) values of the absolute discretionary accruals (|*DA*|) reported by companies audited by big auditors in the pre-FA period are significantly larger than their corresponding values in the post-FA period. Similar results are found for the differences between the mean (*t-value* = -2.84) and median (*z-value* =-2.84) of the |*DA*| reported by companies audited by non-big auditors. The evidence suggests that after the FA of 2002, both types of auditors have reduced managers' flexibility to employ discretionary accruals. Consequently, the results indicate that audit quality has increased in the post-FA period. This evidence provides empirical support for *H1*.

TABLE 4

DESCRIPTIVE STATISTICS OF DISCRETIONARY ACCRUALS. PARAMETRIC AND NON-PARAMETRIC TESTS

Panel A: Full sample

	Pre-FA 2002 *N = 8,179 (45%)*				*Post-FA 2002* *N = 10,146 (55%)*				*Tests of Differences*	
	N	*Mean*	*Std Dev*	*Median*	*N*	*Mean*	*Std Dev*	*Median*	*Mean t-value*	*Median z-value*
|*DA*|	8,179	0.179	0.165	0.129	10,146	0.170	0.158	0.123	-3.66***	-3.28***
|*INCDA*|	4,165	0.182	0.170	0.130	5,280	0.172	0.162	0.125	-2.73***	-2.41***
|*DECDA*|	4,014	0.175	0.159	0.126	4,866	0.167	0.153	0.121	-2.47**	-2.25**

Panel B: Companies audited by big auditors

	Pre-FA 2002 *N = 2,049 (11%)*				Post-FA 2002 *N = 2,208 (12%)*				Tests of Differences	
	N	*Mean*	*Std Dev*	*Median*	*N*	*Mean*	*Std Dev*	*Median*	*Mean t-value*	*Median z-value*
|*DA*|	2,049	0.180	0.166	0.128	2,208	0.168	0.154	0.122	-2.44**	-1.76**
|*INCDA*|	1,016	0.181	0.169	0.128	1,101	0.163	0.154	0.117	-2.63***	-2.11**
|*DECDA*|	1033	0.178	0.162	0.127	1,107	0.173	0.155	0.129	-0.81	-0.40

Panel C: Companies audited by non-big auditors

	Pre-FA 2002 *N= 6,130 (34%)*				*Post-FA 2002* *N= 7,938 (43%)*				*Tests of Differences*	
	N	*Mean*	*Std Dev*	*Median*	*N*	*Mean*	*Std Dev*	*Median*	*Mean t-value*	*Median z-value*
|*DA*|	6,130	0.178	0.164	0.129	7,938	0.170	0.159	0.123	-2.84***	-2.79***
|*INCDA*|	3,149	0.182	0.171	0.131	4,179	0.175	0.164	0.128	-1.79*	-1.66**
|*DECDA*|	2,981	0.174	0.157	0.126	3,759	0.166	0.152	0.118	-2.33**	-2.32**

*, **, *** Indicates significance at 10%, 5% and 1% respectively. t and z values are based on two-tailed tests. Variables definition: |*DA*| = Absolute value of discretionary accruals; |*INCDA*| = Absolute value of income-increasing discretionary accruals; |*DECDA*| = Absolute value of income-decreasing discretionary accruals.

Table 4 also presents evidence of the differences between the absolute value of income-increasing (|*INCDA*|) and income-decreasing (|*DECDA*|) discretionary accruals, for the pre- and post-FA periods. These results indicate a decrease in |*INCDA*| reported by companies audited by big auditors that is statistically significant using both parametric (t-*value* = -2.63) and non-parametric (z-*value* = -2.11) tests. A significant reduction is also found in the mean (t-*value* = -1.79) and median (z-*value* = -1.66) values of |*INCDA*| reported by firms audited by non-big auditors. Interestingly, the results indicate that

the decrease in the mean (t-*value* = -2.33) and median (z-*value* = -2.32) values of |*DECDA*| is only statistically significant for companies audited by non-big auditors. Although the univariate results are not conclusive enough to accept *H2*, they suggest that big auditors in the post-FA seem to be more willing to reduce income-increasing earnings management than income-decreasing earnings management. This is consistent with previous studies (eg: Becker *et al.,* 1998; Jeong-Bon *et al.,* 2003; Cano, 2010) that report that big auditors allow more client flexibility for income-decreasing practices and insist on being more conservative to minimise the potentially higher negative consequences of an audit failure. In Spain, these costs are mainly reflected in terms of loss of reputation and enforcement sanctions rather than litigation, which is unlikely. Hence, big auditors may avoid potential enforcement sanctions and loss of reputation by preferring a more conservative profile. Income-decreasing choices are less associated with enforcement sanctions than income-increasing ones (e.g. Bannister and Wiest, 2001). Finally, big auditors may more readily oblige clients to a more conservative stance, because they can more easily maintain their independence since the negative consequence of losing a particular client is smaller for them than it would be for a non-big auditor (Cano, 2010).

As explained above, the evidence shows that companies audited by both types of auditors have been reporting significantly lower |*DA*| after the FA. Thus, the univariate results are consistent with H3 because they indicate that big as well as non-big auditors have provided higher audit quality since 2002. Thus, these results provide evidence to accept *H3*.

6.2. Multivariate analyses

Table 5 displays the results of models (3) and (4), where we study the impact of the FA (44|2002) on audit quality. Model (3) has been regressed three times, on each occasion using a different dependent variable. Columns (1), (2) and (3) report results obtained for running equation (1) when the dependent variable is |DA|, |INCDA| and |DECDA| respectively. Column (4) reports results obtained from running model (4) when the dependent variable is |DA|.

The coefficient on FA in column (1) is negative and statistically significant (coeff = -0.009, t-*value* = 3.794), implying that |*DA*| are lower after the FA. The results reflect that the FA has encouraged Spanish auditors to supply higher audit quality. We, therefore, conclude that the results support *H1*.

Columns (2) and (3) present the results for |*INCDA*| and |*DECDA*| respectively. The coefficients on FA in column (2) and (3) are also negative and statistically significant. The results show that companies not only report lower |*INCDA*|, but also lower |DECDA|. These results seem to indicate that the FA encourages auditors to constrain not only earnings management practices that overstate reported earnings but also those that understate them. Table 5 also shows the test for differences in the coefficients on FA in columns (2) and (3). The test estimates a negative but insignificant t-statistic value (coeff = -0.003, *t-value* = -0.820). There is no significant difference between the two FA coefficients in regressions (2) and (3). This shows that the reduction of |*INCDA*| is not significantly higher than the reduction of |*DECDA*|. Overall, the results do not provide evidence to affirm that auditors have become more conservative after the *FA*. Thus, they do not support *H2*. The results seem to indicate that after the *FA* auditors not only

TABLE 5

ACCRUALS-BASED TEST FOR AUDIT QUALITY AND THE EFFECT OF THE FA

Dependent Variable	*Predicted sign*	*(1)* |*DA*|	*(2)* |*INCDA*|	*(3)* |*DECDA*|	*(4)* |*DA*|
Intercept		0.192 ***	0.091 ***	0.174 ***	0.191 ***
		(8.163)	(2.657)	(5.250)	(8.127)
FA	-	-0.009 ***	-0.010 ***	-0.007 **	-0.008 ***
		(-3.794)	(-3.119)	(-2.080)	(-3.065)
BIG	+	0,005	-0,001	0.010 **	0.006
		(1.588)	(-0.169)	(2.497)	(1.514)
*FA*BIG*	-				-0.002
					(-0.541)
SIZE	-	-0.005 ***	-0.005 **	-0.005 **	-0.005 ***
		(-3.500)	(-2.458)	(-2.394)	(-3.489)
GROWTH	+	0.044 ***	0.017 **	0.073 ***	0.044 ***
		(8.643)	(2.254)	(10.594)	(8.642)
LEV	+	0.118 ***	0.104 ***	0.134 ***	0.118 ***
		(16.699)	(10.280)	(13.622)	(16.693)
ROA	+	0.234 ***	0.264 ***	0.197 ***	0.234 ***
		(8.639)	(6.722)	(5.305)	(8.632)
Industry effects		included	included	included	included
Test for differences in coefficients on FA	-			(-0.820) regressions (2) – (3)	
F-statistic		34.46 ***	16.73 ***	20.32 ***	33.60 ***
Adj. R-squared		0.066	0.061	0.078	0.066
Maximum VIF		1.37	1.36	1.39	1.37
Nº of observations		18.325	9.445	8.880	18.325

*, **, *** Indicates significance at 10%, 5% and 1% respectively. In parentheses, the *t-student* statistics. Maximum *VIF* refers to the maximum value of the variance inflation factor (*VIF*) across the independent variables (excluding industry effects and interacting factors). Variable Definitions: |*DA*| = Absolute Value of Discretionary Accruals; |*INCDA*| = Absolute value of income-increasing discretionary accruals; |*DECDA*| = Absolute value of income-decreasing discretionary accruals; *FA* = Dummy variable that equals one for the years 2003 and 2004 and zero otherwise; *BIG* = Dummy variable that equals one if the auditor is a big firm (Arthur Andersen, Deloitte & Touche, KPMG, PricewaterhouseCoopers and Ernst & Young), zero otherwise; *FA*BIG* = Interaction between big auditors and the years 2003 and 2004. Firm characteristics: *SIZE* = Logarithm of sales; *GROWTH* = Sales growth for the year; *LEV* = Total liabilities divided by total assets; *ROA* = Net income divided by total assets; *Industry effects* = A set of industry dummies based on the two-digit CNAE codes.

reduce flexibility to allow income-increasing manipulation but also to permit income-decreasing practices. These are common to countries with high alignment between accounting and taxation, and debt oriented systems, such as Spain (Coppens and Peek, 2005). Our results differ from those found in the US (e.g. Dechow *et al.,* 1995; Bannister and Wiest, 2001; Cahan and Wei, 2006) (11), where there are less incentives to use income-decreasing earnings management (Arnedo *et al.,* 2007).

(11) Previous studies show that when the risk of sanctions increases, US auditors are more likely to constrain managers from reporting income increasing discretionary accruals than income decreasing discretionary accruals (e.g. Dechow *et al.,* 1995; Bannister and Wiest, 2001; Cahan and Wei, 2006).

Column (4) in table 5 shows that the coefficient on FA is negative and statistically significant (coeff = -0.008, t-*value* = -3.065) and the coefficient for the variable *FA*BIG* is statistically insignificant (coeff = -0.002, t-*value* = -0.541). The results indicate that companies audited by both types of auditors have reported lower |*DA*| since 2002. This evidence shows that they have both reduced managers' flexibility to report accruals which reflects that both are similarly affected by the audit reforms. The results provide evidence to support *H3* and can be expected in countries where strict enforcement mechanisms have been implemented to control both types of auditors. This seems to be the case of Spain, a code-law country where there is low risk of litigation (Francis and Wang, 2008).

The coefficient on BIG show the differences in discretionary accruals between companies audited by big and non-big auditors. The coefficients on BIG in column (1) is positive but statistically insignificant (coeff=0.005, *t*-value=1.588). A similar result is presented in column (4). The sum of the coefficients on BIG and the interaction term between the FA and BIG dummies is statistically insignificant (coeff=0.002, *t*-value=0.541). These results show that companies audited by big auditors, when compared to non-big auditors, present similar |DA| which thus indicates that both types provide similar audit quality. These findings are consistent with previous evidence on code-law countries where it is found that big auditors lack the incentive to supply higher audit quality because the environment is one of low litigation risk and median investor protection. This results from an atmosphere where audit failure is less likely to be detected (Navarro and Martínez 2004; Vander Bauwhede and Willekens 2004; Francis and Wang 2008; De Fuentes et al. 2010). Contrary to this evidence, Van Tendeloo and Vanstraelen (2008) state that big auditors provide higher audit quality in European countries with high tax alignment, which is often an institutional characteristic of code-law countries. They argue that in countries where tax authorities apply stricter enforcement, audit failure is more likely to be detected so big auditors are incentivised to supply higher audit quality. In Spain, previous evidence does not clarify this point. Evidence from Navarro and Martínez (2004) and De Fuentes et al. (2010) indicates that there is no difference in the audit quality provided by big or non-big Spanish auditors. Nevertheless, some audit quality differentiation is identified in the Spanish context. Evidence from Cano (2007; 2010) indicates that clients of big auditors are more conservative because they engage less in loss-avoiding earnings management practices and more in income-decreasing manipulation.

The coefficient on BIG in column (2) is negative but statistically insignificant (coeff = -0.001, *t-value* = -0.169) while the coefficient on BIG in column (3) is positive and statistically significant (coeff = 0.010, *t-value* = 2.497). Consistent with previous findings from Cano (2007; 2010), the results indicate that big auditors allow client flexibility for |*DECDA*| but do not for |*INCDA*|. Hence, they provide evidence to support that clients of big auditors are more conservative.

Finally, the results show a significant association between our control variables and discretionary accruals. They indicate that managers of larger companies tend to report lower levels of discretionary accruals, while companies with high leverage, growth and profitability tend to report higher levels. These results for the control variables are in line with those found in previous studies (e.g. Arnedo *et al.*, 2007; Van Tendeloo and Ann Vanstraelen, 2008).

6.3. Analysis of potential heterogeneity in the audit market

In this section we analyse the potential heterogeneity in the distribution of auditors. The distinction between big and non-big auditors does not fully capture the heterogeneity of the audit market, because non-big auditors may also be classified as second-tier and small auditors. Big auditors could behave somehow differently to second-tier/ small auditors after the FA. Therefore, it is interesting to know whether audit quality (and conservatism) increases after the FA for companies audited by second-tier and/or small auditors and whether there are significant differences between the three types of auditors (big, second-tier and small auditors). To evaluate this, we divide our sample in three subsamples. In the first, we include companies audited by big auditors; in the second, those audited by second-tier auditors [(12)], and in the third, firms audited by the rest of the auditors.

The descriptive statistics (not reported) [(13)] based on the mean and the median of |*DA*|, indicate that the three types of auditors provide similar audit quality. The results are consistent with previous evidence found in code-law countries where big auditors lack the incentive to supply high audit quality (Navarro and Martínez, 2004; Vander Bauwhede and Willekens, 2004; Francis and Wang, 2008; De Fuentes *et al.*, 2010).

Table 6 displays the results of running model (3) for each subsample. The coefficients on *FA* in columns (1), (3) and (7) are negative and significant. This is consistent with *H1* and *H3*, because it shows that the three types of auditors have reduced |*DA*| after the FA. Table 6 also shows the tests for differences in the coefficients on *FA* across types of auditors. The tests for differences indicate that the reduction of |*DA*| after 2002 is significantly greater for second-tier (coeff = -0.018, *t-value* = -1.789) auditors' clients compared to the reduction of |*DA*| for those of small auditors' clients. This indicates that the *FA* has a higher positive impact on the audit quality provided by second-tier auditors. As previously found, there is no significant difference in the reduction of |*DA*| of big and non-big auditors' clients (second-tier and small auditors' clients).

Table 6 also reports the regression results separately for companies with |*INCDA*| and |*DECDA*|. The coefficients on *FA* in columns (5) and (6) are statistically significant and there is no significant difference between both coefficients (coeff = 0.001, *t-value* = 0.029). This finding indicates that second-tier auditors' clients reduce both |*INCDA*| and |*DECDA*|. Hence, the results for second-tier auditors' clients are similar to those described in section 6.2. Slightly different results are found for big and small auditors' clients. The coefficients on FA are negative in all columns and only significant in columns (2) and (8). This indicates that big and small auditors' clients are only willing to significantly reduce |*INCDA*|. Despite this, the tests of differences show that the coefficients on *FA* for |*INCDA*| do not differ significantly from the ones for |*DECDA*|. This means that there are no significant differences between the lower levels of |*INCDA*| and |*DECDA*|. Only the reduction of |*INCDA*| of big auditors' clients may be considered as significantly different from the reduction of |*DECDA*| (coeff = -0.013, *t-value* = -1.427). Consequently, the evidence rejects *H2* but suggests that big auditors

(12) The second-tier audit firms considered in this study are: BDO Audiberia, Grant Thornton, Audishipana, Confeauditores, Auren, Gassó and Mazars. The second-tier audit firms selected in this study are identified on the list of the Spanish newspaper *Expansión* published on the 3.rd of March of the year 2008.

(13) The descriptive statistics are available upon request.

tend to become more conservative since the FA. This is consistent with the previous evidence for Spain (e.g. Cano, 2010).

This analysis reveals that the results from section 6.2 that provided evidence to reject H2 are mainly found for companies audited by second-tier auditors, which represent 6 percent of the sample. A possible explanation is that these auditors tend to reduce both types of discretionary accruals to differentiate their audit work and increase market perception of audit quality with the possible intention of positioning themselves alongside the big auditors. Alternatively, the more notable reduction of |*DECDA*| for companies audited by second-tier auditors after the *FA* may be the consequence of stricter supervision controls over these auditors after the *FA*.

7. SENSITIVITY ANALYSES

7.1. Using other discretionary accruals measures

The robustness of our results is analysed by using other discretionary accruals measures. Table 7 presents the results obtained using the measures of Dechow et al. (1995), Kasznik (1999) and Dechow and Dichev (2002) as a dependent variable. The results are consistent and provide further support for *H1* and *H3*.

The coefficient FA is statistically significant in columns (1), (4) and (7). Additionally, the sum of the coefficients of the BIG variable and the interaction term between the FA and BIG dummies is statistically insignificant for the three additional tests. Consistent with the evidence reported in section 6.2, the results indicate that big auditors (compared to non-big auditors) have no incentives to supply higher audit quality in Spain.

The panels A and B in table 7 show that there are no significant differences in the coefficients on FA in regressions using |*INCDA*| or |*DECDA*| as a dependent variable. The *t-statistics* for the test of differences in coefficients across models are negative but insignificant. Hence, the results reported when discretionary accruals are calculated by using the Kasznik (1999) and Dechow and Dichev (2002) models do not support H2. However, they do support H2 when discretionary accruals are calculated using the Dechow *et al.* (1995) model. The coefficient on *FA* in column (8) is negative and statistically significant (coeff = -0.012, *t-value* = -3.559) and the coefficient on *FA* in column (9) is negative but statistically insignificant (coeff = -0.003, *t-value* = -0.870). Moreover, the test of differences in the coefficients on FA in columns (8) and (9) reports a negative and significant *t-statistic* value (coeff = -0.009, *t-value* = -1.777) indicating that there are significant differences in the lower levels of |*INCDA*| and |*DECDA*|. This again suggests that, after the FA, auditors are more willing to reduce |*INCDA*| than |*DECDA*|. Indeed, they only significantly reduce |*INCDA*| but not |*DECDA*|. This result indicates that auditors have become more conservative after the *FA*. The results that provide evidence to reject *H2* are found for three out of four different discretionary accruals measures. Overall, the main results from section 6.2 are consistent regardless of the method used to calculate the discretionary accruals.

TABLE 6

ADDITIONAL ANALYSIS. CONTROLLING FOR TYPES OF AUDIT FIRMS

	Big auditors			***Second-Tier auditors***			***Small auditors***		
Dependent Variable	*(1) |DA|*	*(2) |INCDA|*	*(3) |DECDA|*	*(4) |DA|*	*(5) |INCDA|*	*(6) |DECDA|*	*(7) |DA|*	*(8) |INCDA|*	*(9) |DECDA|*
Intercept	0.154 ***	0.183 ***	0.129	0.089	0.167	-0.051	0.151 ***	0.125 **	0.055
	(4.023)	(3.357)	(1.545)	(0.525)	(1.126)	(-0.315)	(3.896)	(2.338)	(1.034)
FA	-0.009 **	-0.016 **	-0.003	-0.025 **	-0.025 *	-0.026 **	-0.007 **	-0.007 *	-0.006
	(-1.999)	(-2.424)	(-0.453)	(-2.552)	(-1.664)	(-2.047)	(-2.496)	(-1.889)	(-1.512)
Firms characteristics	included	included	included	included	included	included	included	included	included
Industry effects	included	included	included	included	included	included	included	included	included
Test for differences in coefficients on FA	(-1.435) regressions (4) – (1)		(-1.427) regressions (2) – (3)	(-1.789)* regressions (4) – (7)		(0.029) regressions (5) – (6)	(0.478) regressions (7) – (1)		(-0.310) regressions (8) – (9)
F-statistic	10.36 ***	5.27 ***	6.26 ***	4.93 ***	3.14 ***	2.83 ***	24.03 ***	12.20 ***	14.11 ***
Adjusted R-squared	0.075	0.069	0.083	0.110	0.110	0.100	0.063	0.059	0.070
Maximum VIF	1.35	1.31	1.42	1.44	1.43	1.52	1.41	1.42	1.41
N.º of observations	4,257	2,117	2,140	1,094	542	552	12,974	6,786	6,188

*, **, *** Indicates significance at 10%, 5% and 1% respectively. In parentheses, the *t-student* statistics. Maximum VIF refers to the maximum value of the variance inflation factor (*VIF*) across the independent variables (excluding industry effects and interacting factors). Variable Definitions: |*DA*| = Absolute value of discretionary accruals; |*INCDA*| = Absolute value of income-increasing discretionary accruals; |*DECDA*| = Absolute value of income-decreasing discretionary accruals, *FA* = Dummy variable that equals one for the years 2003 and 2004 and zero otherwise. Firm characteristics: *SIZE* = Logarithm of sales; *GROWTH* = Sales growth for the year; *LEV* = Total liabilities divided by total assets; *ROA* = Net income divided by total assets; Industry effects = A set of industry dummies based on the two-digit CNAE codes.

TABLE 7

SENSITIVITY ANALYSIS. USING DIFFERENT ACCRUALS MEASURES

	Panel A: Kasnik (1999)			*Panel B: Dechow & Dichev (2002)*			*Panel C: Modified Jones*		
Dependent Variable	*(1) |DA|*	*(2) |INCDA|*	*(3) |DECDA|*	*(4) |DA|*	*(5) |INCDA|*	*(6) |DECDA|*	*(7) |DA|*	*(8) |INCDA|*	*(9) |DECDA|*
Intercept	0.195***	0.179***	0.211***	0.027**	0.030*	0.038**	0.194***	0.200***	0.177***
	(7.914)	(5.191)	(6.005)	(2.401)	(1.764)	(2.282)	(7.288)	(5.595)	(4.496)
FA	-0.008***	-0.009***	-0.007**	-0.004***	-0.004***	-0.003**	-0.008***	-0.012***	-0.003
	(-3.129)	(-2.855)	(-2.212)	(-3.222)	(-2.765)	(-2.059)	(-2.858)	(-3.559)	(-0.870)
BIG	0.006	0.002	0.010**	0.000	0.002	0.000	0.008*	0.009**	0.008*
	(1.607)	(0.469)	(2.557)	(0.064)	(1.218)	(0.031)	(1.866)	(2.060)	(1.843)
*FA*BIG*	-0.001			0.003			-0.001		
	(-0.173)			(1.194)			(-0.115)		
Firms characteristics	included	included	included	included	included	included	included	included	included
Industry effects	included	included	included	included	included	included	included	included	included
Test for differences in coefficients on FA			(-0.544) regressions (2) – (3)			(-0.427) regressions (5) – (6)			(-1.777)* regressions (8) – (9)
F-statistic	33.53***	16.44***	20.26***	14.90***	15.39***	11.29***	33.00***	17.95***	21.58***
Adjusted R-squared	0.066	0.060	0.077	0.045	0.082	0.067	0.065	0.063	0.085
Maximum VIF	1.37	1.37	1.38	1.39	1.38	1.30	1.37	1.36	1.39
Nº of observations	18,323	9,429	8,894	11,795	6,272	5,523	18,308	9,720	8,588

*, **, *** Indicates significance at 10%, 5% and 1% respectively. In parentheses, the t-student statistics. Maximum *VIF* refers to the maximum value of the variance inflation factor (*VIF*) across the independent variables (excluding industry effects and interacting factors). Variable Definitions: |*DA*| = Absolute value of discretionary accruals; |*INCDA*| = Absolute value of income-increasing discretionary accruals, |*DECDA*| = Absolute value of income-decreasing discretionary accruals; *FA* = Dummy variable that equals one for the years 2003 and 2004 and zero otherwise, *BIG* = Dummy variable that equals one if the auditor is a big firm (Arthur Andersen, Deloitte & Touche, KPMG, PricewaterhouseCoopers and Ernst & Young), zero otherwise; *FA*BIG* = Interaction between big auditors and the years 2003 and 2004. Firm characteristics: *SIZE* = Logarithm of sales; *GROWTH* = Sales growth for the year; *LEV* = Total liabilities divided by total assets; *ROA* = Net income divided by total assets; Industry effects = A set of industry dummies based on the two-digit CNAE codes.

7.2. Controlling for homogenous samples over time

We carried out several analyses for homogeneous samples bearing in mind that discretionary accruals could decrease after the FA for reasons other than an increase in audit quality. Table 8 presents the results for these additional tests.

The first test applies a balanced-sample-design using the same companies before and after 2002 to counter any risk that discretionary accruals have decreased because different companies have been analysed. The second test controls for the effect of the FA on non-financially distressed companies (14) which are characterised by lower levels of discretionary accruals (Garcia Lara *et al.*, 2009). Accordingly, variations in the level of these accruals between the pre- and post-FA periods could be caused by differences in the number of firms becoming financially distressed between the two periods. The third test controls for the effect of the FA on higher quality financial reports, which are identified as those with an unqualified audit opinion.

After applying all these tests, we may conclude that our findings are consistent with *H1* and *H3*, because the results for our variables of interest do not change. Curiously, our results support H2 that affirms that auditors have become more conservative after the *FA*. The results, in columns (3), (6) and (9), show that the coefficients on FA are negative but insignificant. Additionally, the tests for differences in the coefficients on *FA* in regressions with |*INCDA*| and |*DECDA*| estimate *t-statistics* that are negative and significant using a balanced sample (coeff = -0.011, *t-value* = -2.222) and a non-financially distressed sample (coeff = -0.001, *t-value* = -2.004). And a *t-statistic* that is almost significant using an unqualified audit opinion sample (coeff = -0.008, *t-value* = -1.483). Overall, the results for reduced samples indicate that after the FA, auditors are more willing to significantly reduce |*INCDA*| than |*DECDA*|. Hence, they support *H2*.

The evidence obtained with this latter analysis provides possible explanations for the prior evidence reported in section 6.2 and the non-acceptance of *H2*. When we apply data restrictions we mainly remove the companies that have reduced |*DECDA*| after the *FA*. This indicates that the *FA* mostly encourages auditors to constrain |*DECDA*| in financially distressed companies (15) which are characterised by presenting higher levels of discretionary accruals (eg: Francis and Krishnan, 1999). This suggests that auditors identify the |*DECDA*| reported by this type of company as practices of earnings manipulation with a higher risk of audit failure than the |*DECDA*| reported by the other types of companies. This stricter control over the |*DECDA*| is consistent with previous evidence (Garcia Lara *et al.*, 2009) stating that the more pronounced the income-decreasing manipulation is, the less reliable the earnings of these companies are. Thus, this result does not entirely contradict that in section 6.2 but rather enhances our understanding that auditors seem to value income-decreasing differently according to companies' financial health.

(14) In order to distinguish between companies in financial distress and those which are not we use Zmijewski's score (1984) which is calculated as follows: $Z = (-4.336 - 4.513*ROA + 5.679*LEV + 0.004*LIQ)$. Where *ROA* is measured as net income to total assets (return on assets), *LEV* is measured as total debt to total assets (financial leverage) and *LIQ* is measured as current assets to current liabilities (liquidity).

(15) The regression results for companies in financial distress show that these companies significantly reduce |*DECDA*| after the FA. Results are provided on request.

TABLE 8

SENSITIVITY ANALYSIS. CONTROLLING FOR HOMOGENOUS SAMPLES

	Balance Sample			*Non-Financially Distressed Sample*			*Unqualified Opinion Sample*		
Dependent Variable	*(1) |DA|*	*(2) |INCDA|*	*(3) |DECDA|*	*(4) |DA|*	*(5) |INCDA|*	*(6) |DECDA|*	*(7) |DA|*	*(8) |INCDA|*	*(9) |DECDA|*
Intercept	0.213***	0.196***	0.046	0.209***	0.120***	0.181***	0.157***	0.162***	0.170***
	(6.098)	(4.210)	(1.240)	(7.945)	(3.361)	(4.801)	(5.714)	(4.045)	(4.188)
FA	-0.011***	-0.014***	-0.003	-0.008***	-0.012***	-0.002	-0.009***	-0.012***	-0.004
	(-3.656)	(-3.900)	(-0.846)	(-2.785)	(-3.437)	(-0.803)	(-2.900)	(-3.035)	(-1.059)
BIG	-0.003	-0.007	0.006	0.004	-0.003	0.011***	0.001	-0.001	0.006
	(-0.818)	(-1.470)	(1.397)	(0.845)	(-0.605)	(2.595)	(0.198)	(-0.217)	(1.392)
*FA*BIG*	0.006			0.001			0.003		
	(1.079)			(0.076)			(0.520)		
Firms characteristics	included	included	included	included	included	included	included	included	included
Industry effects	included	included	included	included	included	included	included	included	included
Test for differences in coefficients on FA			(-2.222)** regressions (2) – (3)			(-2.004)** regressions (5) – (6)			(-1.483) regressions (8) – (9)
F-statistic	23.14***	11.20***	14.83***	24.62***	13.75***	13.57***	25.25***	12.26***	15.60***
Adjusted R-squared	0.061	0.054	0.076	0.059	0.059	0.065	0.066	0.059	0.079
Maximum VIF	1.38	1.37	1.39	1.32	1.22	1.27	1.39	1.40	1.39
Nº of observations	13,374	6,875	6,499	14,848	7,809	7,039	13,620	7,027	6,593

*, **, *** Indicates significance at 10%, 5% and 1% respectively. In parentheses, the t-student statistics. Maximum *VIF* refers to the maximum value of the variance inflation factor (*VIF*) across the independent variables (excluding industry effects and interacting factors). Variable Definitions: |*DA*| = Absolute value of discretionary accruals; |*INCDA*| = Absolute value of income-increasing discretionary accruals; |*DECDA*| = Absolute value of income-decreasing discretionary accruals; *FA* = Dummy variable that equals one for the years 2003 and 2004 and zero otherwise; *BIG* = Dummy variable that equals one if the auditor is a big firm (Arthur Andersen, Deloitte & Touche, KPMG, PricewaterhouseCoopers and Ernst & Young), zero otherwise; *FA*BIG* = Interaction between big auditors and the years 2003 and 2004. Firm characteristics: *SIZE* = Logarithm of sales; *GROWTH* = Sales growth for the year; *LEV* = Total liabilities divided by total assets; *ROA* = Net income divided by total assets; Industry effects = A set of industry dummies based on the two-digit CNAE codes.

8. CONCLUSIONS

This study examines whether the new audit rules and actions recommended by the EU and introduced under the *FA* really results in higher audit quality in Spain. Such arguments have been strongly defended by the main Spanish professional audit bodies (Fernández and Combarros, 2002; Atarés and Canales, 2004).

The results of this study find evidence that Spanish auditors provide higher audit quality after the *FA*. Additionally, they also show that not only companies audited by big auditors report lower levels of manipulation after the FA but also those audited by smaller ones. Therefore, the implementation of stricter audit rules and actions in Spain has impacted on both big and non-big auditors.

The results also indicate that the *FA* encourages auditors to constrain not only earnings management practices that overstate reported earnings but also those that understate them. More specifically, they indicate that the reduction in |*DECDA*| after the *FA* is mostly concentrated in financially distressed companies. This shows that the *FA* is encouraging auditors to constrain |*DECDA*| when companies face serious financial problems, and practices of earnings manipulation have a higher risk of detection as an audit failure. Regarding the type of auditor, the reduction in |*DECDA*| after the *FA* is mainly found in companies using second-tier auditors. Indeed, the results suggest that big auditors, who only reduce the earnings management practices that overstate reported earnings, tend to become more conservative after the *FA*.

The results are of interest to governmental institutions, academics, investors and other users of financial information because they provide evidence of the success of the European recommendations on questions regarding audit regulation. The results also underline the importance of studying the effect of audit rules and actions in code-law countries in which the expected effect of audit enforcement mechanisms on income-decreasing manipulation and non-big auditors seems to be at odds with the expected effect in common-law countries.

This study is subject to limitations common to all those that examine the impact of regulatory actions over time. Besides the impact of the *FA* on audit quality, other factors, which are considered constant in this study, could also be affecting it. Another limitation is that audit quality is not directly observable. Finally, it should be mentioned that the improvement in the quality of the financial statements attributable to a change in the auditor's behaviour could also be thanks to changes in other areas reformed under the *FA* (e.g. corporate governance). For all these reasons, the results of this paper should be treated with caution.

For future research, it would be interesting to study the impact of other regulations on audit quality and look into the use of other proxies rather than the ability to constrain discretionary accruals levels. Also, it would be interesting to analyse in further details the differences in audit quality between big, small and second-tier auditors.

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La evaluación de la probabilidad de fracaso financiero. Contraste empírico del contenido informacional de la auditoría de cuentas *

Evaluation of the likelihood of financial failure. Empirical contrast of the informational content audit of accounts

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RESUMEN La posibilidad de detectar las tensiones financieras latentes de la empresa, y de anticipar eventuales fallos financieros en el futuro, es una cuestión de extraordinaria importancia para la actividad económica por sus implicaciones sobre el riesgo de crédito y sobre la estabilidad financiera de clientes, proveedores, y otros grupos de interés. Aplicando métodos de regresión logística sobre una muestra de pymes, este trabajo analiza si el proceso de auditoría externa proporciona indicios significativos de cara a inferir la existencia de tensiones financieras latentes en el cliente, y evaluar la probabilidad de que éste sufra un fallo financiero. Los resultados indican que ciertas evidencias externas, como la reiteración de dictámenes con salvedades o las tasas anómalas de rotación de auditores, están relacionadas con fenómenos subyacentes de tensión financiera y pueden ser utilizadas como medidas fiables de riesgo de crédito y predictores de la probabilidad de incurrir en una insolvencia. El modelo diseñado logra una capacidad predictiva de acierto del 87%.

PALABRAS CLAVE Pronóstico del fallo financiero; Auditoría; Calidad de la información contable.

ABSTRACT Detecting corporate latent financial distress, and anticipating future bankruptcies, are critical issues for financial management, given their implications for credit risk and the collateral effects on financial stability of customers, suppliers, and other stakeholders. We analyze whether audit reports provide relevant evidences in order to infer client's financial distress, and to assess the likelihood of a financial failure. The results indicate that some external evidences, such as the accumulation of qualified reports and abnormally high auditor's rotation rates, may be used as reliable measures of credit risk and predictors of the likelihood that the company goes bankrupt. Model offers an up-to 87% hit rate.

KEYWORDS Financial failure forecast; External audit; Financial information quality.

* **Agradecimientos:** El presente trabajo se ha realizado al amparo y con financiación del Programa Sectorial de Investigación Aplicada de I+I+Suma, Programa Incite, Xunta de Galicia: Proyecto 10SEC100012PR: Determinación de un Modelo de Previsión del Fracaso e Insolvencia Empresarial de las Pymes Gallegas. Los autores, que agradecen los comentarios recibidos de dos revisores anónimos, pertenecen al Grupo de Investigación en Finanzas y Sistemas de Información (FYSIG) de la Universidad de A Coruña.
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Recibido 03-10-11 · Aceptado 11-06-12 · · ISSN: 0210-2412

1. INTRODUCCIÓN

En 2009 la tasa de mortalidad de las empresas españolas se situó en torno a un 10% del total; en el caso de las pymes y de los empresarios individuales la mortalidad superó ampliamente el 11%, sin embargo también las empresas de dimensión intermedia y grande, que suelen poseer una estabilidad financiera relativamente mayor, han acusado un rápido aumento de la morbilidad, que se ha duplicado desde 2005 (1). Sin perjuicio de los factores sistemáticos subyacentes en esta situación (Rose *et al.*, 1982; Liu, 2004), el fracaso financiero se relaciona con la exposición específica de la empresa y con sus políticas de gestión de riesgos. En este sentido el estudio del proceso evolutivo de las tensiones financieras internas (Gómez *et al.*, 2008; Labatut *et al.*, 2009) y el pronóstico del fracaso financiero siguen revistiendo un extraordinario interés tanto para la teoría como para la praxis en todo tipo de empresas, financieras o no.

Este trabajo explora la posibilidad de evaluar el riesgo de fallo a partir de indicios derivados objetivamente del proceso de auditoría externa. Existe una amplia evidencia empírica en cuanto a la conducta del auditor y a su relación con la empresa (Carcello y Palmrose, 1994; Krishnan y Krishnan, 1996; Ruiz y Gomez, 2001; Nelson, 2005; Arnedo *et al.*, 2008a; Chen et al., 2009); sin embargo el uso de estas evidencias en el seno de un modelo predictivo del fallo financiero es un camino en gran medida inexplorado. Aplicando métodos multivariables, construimos un modelo de pronóstico que combina un muy satisfactorio nivel de acierto con una extraordinaria simplicidad, incluso después de controlar variables potencialmente confundidoras; aportamos una estimación de la intensidad de su asociación con el evento de fallo, con base en la cual es posible obtener una estimación de la probabilidad de que la empresa se vea incursa en esta situación y analizar objetivamente los riesgos relativos de dos o más empresas. Ciertamente el modelo no expresa ni pretende formular relaciones de causalidad: los cambios de auditor o el contenido de los informes no *son causas directas* del fallo; sin embargo nuestros resultados demuestran que tienen una interpretación como signos verosímiles de la existencia de disfunciones financieras latentes, y que pueden ser utilizados para cuantificar el riesgo financiero de la empresa.

Nuestro trabajo, elaborado desde la óptica de la teoría financiera sobre el fallo empresarial, contribuye a cohesionar y estructurar el conocimiento en la materia estableciendo además nuevas relaciones con la literatura sobre auditoría y calidad de la información contable; aporta evidencia adicional útil para clarificar la naturaleza y la intensidad de las anomalías detectadas en la auditoría de las empresas financieramente desequilibradas. Proporciona un instrumento de detección independiente de la información contable primaria, y por tanto adicional al enfoque de pronóstico convencional, basado en ratios e indicadores financieros; esta complementariedad puede resultar trascendental en aquellos casos en los que la compulsión sobre el auditor sea eficaz y la empresa consiga por tanto que sus disfunciones permanezcan ocultas, o que su gravedad no pueda percibirse con claridad. Finalmente, nuestro trabajo contribuye a matizar y contextualizar las evidencias disponibles para la auditoría en países de tradición anglosajona, las cuales no son necesariamente extrapolables a la auditoría española debido a diferencias de tipo cultural y legislativo. En particular, aporta evidencias que ponen en duda la llamada

(1) Fuente: INE.

hipótesis de neutralidad, que sostiene que las salvedades no tienen interpretación en términos de riesgo de crédito.

El interés de las evidencias obtenidas y del modelo estimado se ve acrecentado por el hecho de referirse a una categoría de empresas, las pymes no cotizadas, que ha recibido muy poca atención en la literatura a pesar de representar el grueso del tejido empresarial, del empleo y de la actividad económica.

2. MARCO TEÓRICO E HIPÓTESIS

El estudio de los problemas de solvencia no es sin duda novedoso. Entronca con la tradición contable de análisis financiero, y se ha enriquecido con la adopción de metodologías progresivamente más sofisticadas. Tras la contribución de (Beaver, 1966) se ha generalizado el uso de métodos econométricos, concretamente de técnicas multivariables. Una línea de trabajo relevante en este sentido es la iniciada por Altman (1968) con la aplicación del análisis discriminante múltiple (MDA), que ha proporcionado un estándar para la evaluación de la solvencia —el *z-score* (Altman *et al.*, 1977)— y tiene todavía hoy plena vigencia (Altman, 2000; Altman *et al.*, 2007) a pesar de las dificultades derivadas de la dudosa verificación de las hipótesis de normalidad y homocedasticidad en muestras pequeñas. El principal competidor de MDA es la regresión logística (Ohlson, 1980) que no solo es menos exigente en términos hipotéticos sino que además resulta compatible con la especificación del fallo financiero como un fenómeno complejo, susceptible de gradación.

Más recientemente se han logrado prometedores avances con la aplicación de métodos heurísticos y de inteligencia artificial, en concreto redes de neuronas artificiales (Messier y Hansen, 1988; Bell *et al.*, 1990; Serrano y Martín del Brío, 1993; Koh y Tan, 1999; Brockett *et al.*, 2006) y máquinas de soporte vectorial (por ejemplo Kim y Sohn, 2010); pero también se han desarrollado herramientas heurísticas basadas en el trabajo cooperativo y en sistemas GDSS (Sun y Li, 2009), modelos basados en la teoría de conjuntos difusos y lógica difusa (Dubois y Prade, 1992; Slowinski y Zopounidis, 1995; McKee y Lensberg, 2002), de partición recursiva (Frydman *et al.*, 1985), y modelos de previsión basados en aprendizaje bayesiano (Sarkar y Siram, 2001).

En conjunto, se observa una extraordinaria dificultad para obtener resultados comparables y derivar conclusiones generalizables (Jiménez, 1996): los estimadores y los subconjuntos de variables explicativas difieren transversalmente, cuando los modelos se estiman con diferentes muestras y/o en diferentes países, y también existen inconsistencias temporales, materializadas en modelos adhocráticos para cada ventana temporal, y en la necesidad de *recalibrar* —en definitiva, reestimar— los modelos para mantener su capacidad predictiva.

Las causas de estas inconsistencias han recibido poca atención en la literatura. Se ha sugerido que los cambios en los subconjuntos de predictores reflejan el progresivo deterioro de la situación financiera de la empresa, lo que explicaría la ausencia de homogeneidad en los modelos estimados para diferentes ventanas temporales; sin embargo no puede obviarse la incidencia de la calidad de la información contable, en sus distintos aspectos externos.

Al margen de la deontología profesional de los profesionales contables, la auditoría de cuentas es la principal garantía de calidad de la información contable difundida por la

empresa. No obstante la capacidad de la auditoría de cuentas para revelar las dificultades e irregularidades financieras de las empresas es controvertida (Geiger *et al.*, 2002; McKee, 2002; Venuti, 2004; Huang y Hang, 2009). Los directivos de empresas que padecen anomalías financieras subyacentes tienen incentivos para servirse de las asimetrías informacionales e impedir que los usuarios externos conozcan, o valoren en toda su intensidad, esas disfunciones (Nelson, 2005); también, para diseñar estrategias que limiten la verosimilitud de una revelación por parte del auditor, basadas en la elección de auditores de *peor calidad* (de Angelo, 1981), en restricciones a su independencia e incluso en incumplimientos de las obligaciones de publicidad previstas en la normativa mercantil. De acuerdo con ello formulamos nuestra primera hipótesis de trabajo:

H1: La probabilidad de fallo se relaciona positivamente con la presencia de anomalías formales en el proceso de difusión de la información contable y del informe de auditoría.

La posibilidad de que la calidad de la auditoría se deteriore como consecuencia de alteraciones en la independencia del auditor es particularmente grave: algunos trabajos han hallado signos indicativos de asociación entre la cuantía de los ajustes discrecionales realizados por las empresas y la percepción de retribuciones por servicios complementarios (Frankel *et al.*, 2002; Larcker y Richardson, 2003), lo que podría ser indicativo de que al menos en ciertas condiciones pueden producirse procesos de «compra de opinión» (Simunic, 1984; Robinson, 2008).

Por otra parte, existe una importante evidencia indicativa de que la conducta del auditor está condicionada por el equilibrio de poder, la dependencia económica y las asimetrías informacionales existentes con la empresa auditada y con los propios destinatarios del informe (Simunic, 1984; Carcello y Palmrose, 1994; Schwartz y Soo, 1995; Ruiz y Gómez, 2001; Lam y Mensah, 2006; Robinson, 2008). En concreto, el proceso de formación de opinión y su materialización en el informe tienen una interpretación en forma de juego estratégico (Fellingham y Newman, 1985; Citron y Taffler, 1992; Teoh, 1992; Krishnan y Krishnan, 1996; Matsumura *et al.*, 1997; Tucker y Matsumura, 1998; Chen *et al.*, 2009). También es relevante la forma en la que se expresa el auditor, en la medida en que el contenido informacional del informe depende directamente de la estructura y de la configuración de sus enunciados: un informe flexible y abierto facilita una expresión más transparente y rigurosa del dictamen pero, también, ofrece más oportunidades para la ambigüedad y riesgos en cuanto a la calidad de la información contable (Carcello *et al.*, 2003). Los auditores parecen valorar el efecto de su dictamen en la reputación, la cotización, la capacidad de financiación externa de la empresa (Kida, 1980) y, tambiénen la continuidad de su relación contractual con la empresa (Blay, 2005); estas interacciones parecen ser más acusadas en el caso de empresas sometidas a tensiones financieras, las cuales tienden a negociar contratos de menor duración, a contratar con auditores individuales y de ámbito local, a priori más frágiles y de más baja calidad (de Angelo, 1981; Lennox *et al.*, 2010), y a cambiar con más frecuencia de auditor (Schwartz y Menon, 1985; Schwartz y Soo, 1995; Ruiz y Gómez, 2001).De acuerdo con ello, formulamos las siguientes hipótesis:

H2: La salud financiera de la empresa se relaciona positivamente con la tasa de rotación de los auditores.

H3: La calidad de la información contable y de la auditoría externa tiende a deteriorarse conforme se intensifican las tensiones financieras.

Como las tasas de rotación aparecen relacionadas de forma inversa con la proporción de informes con salvedades (Lennox, 2000), debería seguirse que las empresas que atraviesan dificultades financieras reciben informes no limpios con una frecuencia superior al promedio; en este sentido, Bushman y Collins (1998) concluyeron que las salvedades tienen una interpretación como indicador de la existencia de disfunciones financieras. El trabajo de Francis y Krishnan (1999) sugiere que, incluso enfrentados a incertidumbres en escenarios de información imperfecta, los auditores son capaces de utilizar la evidencia disponible para inferir diagnósticos racionales, lo que avala la relación intuida entre la salud financiera y el contenido de los informes de auditoría. Un segundo grupo de evidencias procede de trabajos que han estudiado de qué manera se reflejan en los informes de auditoría las estrategias de manipulación del resultado, materializadas en ajustes discrecionales: Francis y Krishnan (1999), Bartov *et al.* (2000) y Bradshaw et al. (1999) aportan evidencias que sugieren una relación entre los niveles de manipulación del resultado y la presencia de salvedades en los informes. Hay varias explicaciones plausibles para este hallazgo; la más evidente es que, al intensificarse sus dificultades financieras, las empresas tienden a poner en práctica estrategias agresivas de supervivencia que ocasionan ajustes discrecionales de signo negativo en el resultado y eventualmente la aparición de salvedades por incertidumbres o anomalías valorativas (Butler et al., 2004; Laitinen, 1994).Gómez et al. (2008) opinan que las prácticas de manipulación, destinadas a enmascarar las dificultades financieras, podrían explicar por qué los modelos de pronóstico de corte temporal parecen perder capacidad para identificar correctamente las empresas fallidas en los períodos inmediatamente anteriores a la insolvencia definitiva. Por otra parte, Francis y Krishnan (1999) sugieren que los auditores tienden a adoptar una actitud más conservadoraen empresas con altos niveles de ajuste, lo que se traduce en niveles de materialidad más exigentes y en una frecuencia mayor de salvedades; esta conducta parece relacionarse con la litigiosidad potencial, con el riesgo de incurrir en responsabilidades económicas (Cahany Zhang, 2006; Krishnan et al., 1997). Trabajos más recientes, como los deFrancis et al. (1999) y Francis y Yu (2009), comunican una asociación positiva entre el volumen potencial de ajustes y la calidad del auditor, que Francis et al. (1999) relacionan con el deseo de emitir al entorno señales de normalidad y confianza.

Otros trabajos arrojan dudas sobre la interpretación de las salvedades (McKee 2003; Venuti, 2004; Arnedo *et al.*, 2008a) y matizan la concordancia entre el volumen de ajustes, la calidad del auditor y la presencia de salvedades e incertidumbres(Lawrence et al., 2011; Bruynseels *et al.*, 2011). En los países de tradición anglosajona las salvedades suelen corresponderse mayoritariamente con incertidumbres acerca de la cuantificación de eventos (Nelson, 2005; Herbohn y Ragunathan, 2008) y no resulta excepcional que los auditores denuncien prematuramente sus contratos para evitar la emisión de un informe no limpio (Bradshaw *et al.*, 1999). Por otra parte la interpretación de las salvedades puede ser en sí misma problemática, si el auditor opta por expresarse de manera deliberadamente confusa para afrontar la presión de sus clientes, y minimizar al mismo tiempo el riesgo de incurrir en responsabilidades administrativas o penales, en definitiva el riesgo de litigiosidad (Gay *et al.*, 1998).

Las salvedades tienden a ser mucho más frecuentes y explícitas en el contexto español. Esta variedad conduce a que la información disponible sea muy *ruidosa* —la normativa técnica induce la presencia de salvedades poco o nada relacionadas con los procesos que desencadenan el fallo—, pero también potencialmente más rica y útil desde el punto de vista predictivo. Esto ofrece una oportunidad para superar el enfoque dominante en

la investigación, que identifica el «contenido del informe» con el «sentido de la opinión» (por ejemplo Nelson, 2005), y profundizar en la interpretación de estas excepciones desde el punto de vista del diagnóstico financiero. Incluso asumiendo que una parte de las salvedades tenga un sentido esencialmente formalista, o que los auditores puedan actuar conservadoramente para evitar litigios, no parece que la reiteración de excepciones pueda asumirse indiferente, no al menos con carácter general; por ello formulamos la siguiente hipótesis:

H4: La probabilidad de fallo se relaciona positivamente con la persistencia de salvedades en los informes de auditoría.

3. MUESTRA Y METODOLOGÍA

La población objeto de estudio son las *pymes* con forma societaria y sede social en Galicia; a efecto de eludir las disfunciones propias de las empresas de nueva creación y garantizar la representatividad de la información de auditoría, se han excluido las sociedades con una edad inferior a cinco años y/o que no se hubiesen auditado un mínimo de dos años.

El trabajo se basa en una muestra de naturaleza equilibrada, seleccionada mediante un muestreo aleatorio dirigido. El tamaño de la muestra, 202 observaciones, está condicionado por el número de empresas fallidas: solo hemos identificado 101 empresas que, habiendo incurrido en un fallo entre 1998 y 2008[(2)], cumpliesen los requisitos de información señalados más arriba.

Los datos precisos para el estudio se han obtenido de la base de datos SABI (Sistema de Análisis de Balances Ibéricos) y del Registro Mercantil. En cada caso, se han tabulado manualmente las referencias básicas de los informes de auditoría, y derivado a partir de ellas las variables que describimos a continuación.

3.1. Variable dependiente

El fallo financiero no es un evento aislado, sino la consecuencia de un cúmulo de tensiones concurrentes que deterioran progresivamente la situación financiera de la empresa y la conducen a lo largo de diversas formas de desequilibrio, sucesivamente más graves. Algunos diseños experimentales han tratado de reflejar la complejidad del concepto de fallo incorporando variables que expresan estadios intermedios de desequilibrio, frecuentemente a través del análisis de las morosidades temporales recogidas en registros públicos como RAI o BADEXCUG; sin embargo la interpretación de estas anotaciones es, en nuestra opinión, cuestionable, porque exigen realizar una inferencia sobre su trascendencia real en términos de riesgo financiero. Las anotaciones pueden tener causas realmente dispares, y la experiencia demuestra que el grueso de las empresas presentes en estos registros acaba sobreviviendo, lo que arroja dudas sobre su interpretación aisladamente de otras variables.

(2) Hemos descartado el año 2009 porque, al momento de realizar el muestreo básico de trabajo, la información correspondiente a este ejercicio no estaba en general disponible en SABI, por tanto implicaba una importante restricción sobre la población. La fecha de corte pretende asimismo evitar las distorsiones que previsiblemente se derivarían de la actual crisis económica.

En este trabajo empleamos una interpretación puramente jurídica del concepto de fracaso financiero, por tanto evaluamos el riesgo de que la empresa incurra en un fallo propiamente dicho. Como quiera que este evento consta en la hoja registral de la empresa, este planteamiento proporciona un criterio de clasificación riguroso y exhaustivo, que puede ser aplicado uniformemente a toda la muestra sin necesidad de establecer hipótesis adicional alguna.

3.2. Variables independientes

Las variables predictoras se han seleccionado atendiendo a dos criterios: *(i)* tener, plausiblemente, una interpretación desde el punto de vista del fallo empresarial a tenor de la literatura relevante, y *(ii)* ser derivables directamente de la información pública acerca de la auditoría de cuentas, de manera objetiva y transparente. Pretendemos identificar un subconjunto de variables explicativas que no requiera de juicios subjetivos acerca de la trascendencia financiera de cada salvedad ya que, en un contexto real de decisión, esta relevancia solo puede establecerse a posteriori; no parece haber otra posibilidad que desarrollar algoritmos de codificación semántica, que ayuden a *etiquetar* cada salvedad como paso previo a su inclusión en el modelo (Herbohn y Ragunathan, 2008):

— Número de cambios en la designación de auditor, en proporción al número de ejercicios auditados (*PROPCA*). Dado que las tasas anormales de rotación se relacionan con tensiones financieras latentes (Schwartz y Menon, 1985; Schwartz y Soo, 1995; Ruiz y Gómez, 2001), esta variable debería estar asociada a un estimador con signo positivo.

— En consonancia con lo expuesto, la duración media de los contratos de auditoría (*DURMED*) debería ser inferior en las empresas desequilibradas y aumentar conforme lo hace el riesgo de fallo, por tanto esta variable debería corresponderse con un estimador positivo.

— Número de accionistas (NUMAC), que interpretamos como una proxy expresiva del riesgo potencial de litigación. En una empresa con gran número de accionistas es más plausible que el auditor afronte demandas por daños y perjuicios, tanto por la propia dimensión del capital como por la posibilidad de que uno o más de estos accionistas adopten acciones legales a título individual, incluso en contra de la opinión mayoritaria del accionariado; la literatura sugiere que en estos casos el auditor tiende a actuar conservadoramente, aplicando pruebas sustantivas y niveles de materialidad más rigurosos (Laitinen, 1994; Butler *et al.*, 2004; Cahan y Zhang, 2006), porque este tipo de empresas tiene mayores dificultades para realizar sus activos y usualmente también afrontan incertidumbres de mayor entidad (Francis y Krishnan, 1999), en definitiva mayor riesgo de fallo. Estas manipulaciones aparecen repetidamente relacionadas con escenarios de desequilibrio financiero(Laitinen, 1994; Francis y Krishnan, 1999; Bradshaw *et al.*, 1999; Bartov *et al.*, 2000; Butler *et al.*, 2004), por tanto deberíamos hallar una relación negativa entre el número de accionistas y el riesgo de fallo. Obsérvese que el número de accionistas no prejuzga la dimensión de la empresa, en el sentido de que un accionariado más heterogéneo no implica necesariamente que la sociedad tenga mayor tamaño, medido por el volumen de recursos propios, el activo o la facturación.

— Proporción de informes con salvedades, cualquiera que sea su naturaleza (*PROPSA*). En la auditoría de tradición anglosajona las salvedades son relativamente excepcionales y tienden a referirse fundamentalmente a incertidumbres a la gestión continuada (Nelson, 2005; Herbohn y Ragunathan, 2008); de hecho la SEC no admite informes con salvedades causadas por incumplimientos de principios contables (Carcello y Palmrose, 1994), lo que reduce sustancialmente el número de observaciones viables para la estimación de modelos de pronóstico y puede explicar la falta de consistencia de las evidencias obtenidas. Sin embargo las salvedades suelen ser relativamente frecuentes y mucho más explícitas en la auditoría española; esto puede conferirles un contenido informacional útil de cara al pronóstico del fallo (Arnedo *et al.*, 2008b). La acumulación de salvedadesparece relacionarse con ajustes discrecionales introducidos en el contexto de estrategias extremas de supervivencia(Butler *et al.*, 2004; Laitinen, 1994) por empresas sometidas a fuertes tensiones financieras (Bushman y Collins, 1998), por tanto esta variable debería llevar asociado un estimador con signo positivo.

— Número de informes con salvedades emitidos por cada auditor (*SALVAU*). Esta variable pretende sintetizar el efecto conjunto de la tendencia a emitir informes con salvedades en empresas sanas, y la propensión de éstas a reducir la duración de los contratos. No es una predictora usual en la literatura, sin embargo cabría esperar que esta variable tuviese un estimador positivo, por tanto indicando que las empresas sometidas a tensiones financieras reciben informes con salvedades con una frecuencia superior al promedio, *incluso cuando se aplican prácticas de rotación*; la contrastación de esta variable y su signo proporcionaría evidencia favorable a la independencia de los auditores, y a la relevancia del contenido informacional de sus dictámenes.

— Proporción de informes con salvedades graves [PROPSG]. Siguiendo un esquema semántico similar al empleado por Herbohn y Ragunathan (2008), hemos aplicado una interpretación restrictiva del concepto de «salvedad grave», que en este caso incluye exclusivamente dos supuestos: salvedades que destaquen la existencia de incertidumbres relevantes acerca de la supervivencia de la empresa, e incumplimientos de los PNCGA [3] empíricamente relacionados con el riesgo financiero y con la verosimilitud de un fallo, entre ellos la activación irregular de gastos, pérdidas latentes no registradas, o revelación de situaciones de quiebra técnica. Cabría esperar que la presencia de este tipo de salvedades se relacione positivamente con la verosimilitud de fallo.

— Número de anomalías formales en el proceso de difusión de información contable (*ANOM*), que comprenden los retrasos o incumplimientos en la obligación de depositar las cuentas anuales en el Registro Mercantil, así como el incumplimiento del deber de auditarse. Dado que estas situaciones tienen una interpretación directa como obstáculos a la difusión de información contable de calidad (Nelson, 2005), deberíamos hallar una relación positiva con el riesgo de fallo.

— Evolución de la calidad de la información contable (*EVOLIC*), que estimamos a partir de la tendencia de cambio en el tipo de auditor comparando las características de los profesionales encargados al inicio (AUDIN) y final (AUDFIN) del período de estudio. Se emplea una variable categórica ordinal (1 = empeoramiento significati-

(3) Principios y normas de contabilidad generalmente aceptados.

vo; 2 = empeoramiento; 3 = sin cambios; 4 = mejora; 5 = mejora significativa), codificada en función del cambio observado a lo largo del período de estudio entre tres categorías: auditor individual, sociedad de auditores, y multinacional. Hemos dado a esta variable el tratamiento de un factor numérico ordinario (Moses *et al.*, 1984; Streiner y Norman, 1989). De acuerdo con las evidencias aportadas por estudios previos, se ha interpretado que la calidad de la información contable mejora cuando la empresa evoluciona de auditores individuales hacia auditores societarios, y de manera más acusada cuando contrata con una de las *cuatro grandes* (de Angelo, 1981; Lennox, 1999; Lennox *et al.*, 2010). Se sigue de ello que el estimador correspondiente debería ser negativo.

Las variables predictoras poseen cierto grado de correlación empírica, no obstante creemos que ello no tiene efectos relevantes sobre la estimación del modelo: de todas las correlaciones bivariadas existentes entre las ocho variables explicativas, solo siete resultan ser significativas, en todo caso con coeficientes moderados (tabla 1); de ellas, solo una afecta a variables presentes en el modelo final (ANOM y NUMAC), con una correlación empírica realmente pequeña (-0,19).

TABLA 1
CORRELACIONES SIGNIFICATIVAS ENTRE LAS VARIABLES PREDICTORAS

Variable 1	*Variable 2*	*Coeficiente*	*Significación*
durmed	propca	-0,41	0,00
anom	numac	-0,19	0,01
	durmed	-0,49	0,00
propsg	durmed	-0,19	0,01
	anom	0,20	0,01
	propsa	0,27	0,00
salvau	propsa	0,66	0,00

Como hemos señalado, el trabajo se basa en una muestra equilibrada; esto le confiere una cierta protección ex antefrente a los sesgos que podrían ocasionar eventuales variables confundentes. En este caso la confusión podría deberse a diferencias asociadas a atributos como la edad, el tipo de actividad o la dimensión de la empresa, así como al propio volumen de información disponible para cada observación; por tanto, como precaución adicional, hemos previsto la inclusión de las siguientes variables de control:

— Edad de la empresa (*EDAD*), calculada de acuerdo con la fecha de constitución que obra en el Registro Mercantil. Existe una amplia evidencia indicativa de tasas anormales de mortalidad en las empresas más jóvenes (Honjo, 2000; Holmes y Schmitz, 1995).

— Proporción de ejercicios auditados (*POPAU*). Como hemos visto todas las empresas analizadas se han auditado un mínimo de dos años; no obstante la interpretación de muchas de las variables predictoras —como la proporción de informes con salvedades, o de cambios de auditor— depende directamente el número de informes disponibles.

— Media aritmética de los valores contables del activo (*MEDAC*), de los recursos propios (*MEDRP*), de la facturación (*MEDFAC*), del resultado operativo (MEDBO), y del

número de empleados (*MEDEM*). No creemos que la dimensión sea una variable modificativa relevante en este caso, habida cuenta de que el estudio se centra precisamente en pymes; no obstante las empresas de menor dimensión suelen tener una exposición al fallo más acusada (Hudson, 1986; Honjo, 2000), lo que podría ser una fuente de confusión en nuestro modelo.

— Sector de actividad (*ACTIV*), codificada como variable categórica nominal en función de los grupos principales de la CNAE [4].De cara a su inclusión en el modelo logit, se ha convertido en catorce *dummies* dicotómicas.

3.2.1. Método

El modelo predictivo se ha construido mediante regresión logística: creemos que esta es la opción metodológica ideal, habida cuenta del carácter dicotómico de la variable dependiente, la naturaleza continua de las variables independientes, y la más que dudosa verificación de la hipótesis de normalidad multivariante para el conjunto de variables explicativas.

La regresión logística (*logit*) nos permite estimar la probabilidad de que una empresa padezca disfunciones financieras que acaben provocando un fallo financiero, en este caso un proceso concursal o de extinción, dadas ciertas características de su auditoría(número de informes, naturaleza y proporción de las salvedades, grado de cumplimiento de las obligaciones registrales, etc.). Denominando Y_j a la variable dependiente expresiva de la situación financiera de la empresa j-ésima y X_{hj} al atributo de auditoría h de la empresa j, la metodología logit ajusta el siguiente modelo:

$$p = P(Y_j = 1) = \frac{1}{1 + e^{-Z_j}}$$

siendo $z_j = \beta_0 + \beta_1 \cdot X_{1j} + \beta_2 \cdot X_{2j} + \ldots + \beta_n \cdot X_{nj}$. La variable dependiente Y_j tiene carácter binario: toma el valor cero si la empresa es empíricamente sana, y uno si se trata de una empresa fallida (incursa en concurso o en proceso de liquidación). El valor p resultante es la probabilidad estimada de que una observación *j*, cuyo perfil de auditoría viene dado por el vector $X_j = \{X_{1j}, X_{2j}, \ldots X_{nj}\}$, acabe sufriendo un fallo financiero.

Como el número de variables explicativas es relativamente pequeño y muy estructurado no hemos realizado un análisis factorial previo, como es acostumbrado parareducir la dimensión del problema; en su lugar combinamos un análisis exploratorio previo, que ofrece indicios acerca de las variables potencialmente significativas, con la estimación del modelo logitmediante un método de inclusión por pasos; esto nos permite seleccionar iterativamente las variables a incluir, atendiendo a su contribución relativa a la explicación de Y_j.

4. RESULTADOS

A efecto de verificar las hipótesis formuladas hemos estimado un modelo de regresión logística binaria, basado en las variables potencialmente predictoras presentadas más

(4) Las actividades D, E, P y Q tienen una muy escasa representación en la población objeto de estudio; hemos optado por agrupar D y E, por una parte, y P y Q por otra.

arriba. Previamente, hemos formulado pruebas de descomposición de la varianza (ANOVA) para clarificar el grado en que el proceso de auditoría es diferente en las empresas sanas y fallidas, e indagar cuáles de las variables planteadas podrían tener relevancia en el modelo predictivo, incluyendo el posible efecto de factores confundentes (Tabla 2).

El perfil general de la muestra es el de empresas maduras —con una edad media cercana a los 23 años— que se han auditado un promedio de seis de los diez últimos años; se detectan diferencias estadísticamente significativas en el número de accionistas, la proporción de años auditados, la proporción de cambios de auditor, la duración media de los contratos de auditoría, y el número de ejercicios con anomalías en el proceso de difusión de información contable; las evidencias en cuanto al tipo de auditor inicial son débiles.

En lo que respecta a las variables de control, ninguna de las magnitudes indicativas de la dimensión de la empresa difiere significativamente en las submuestras de empresas sanas y fallidas; tampoco se observan diferencias significativas asociadas al tipo de actividad. Empíricamente, la edad media de las empresas sanas es ligeramente superior a la de las fallidas; no obstante la evidencia disponible es débil y no permite concluir que esta diferencia sea realmente significativa.

TABLA 2

ESTADÍSTICOS DESCRIPTIVOS Y PRUEBAS DE IGUALDAD DE MEDIAS (ANOVA) PARA LA FRECUENCIA DEL EVENTO DE FALLO, EN FUNCIÓN DE LAS VARIABLES PREDICTORAS

Variable	*Media*			*Desviación típica*				
	Sanas	*Fallidas*	*Total*	*Sanas*	*Fallidas*	*Total*	*Levene*	*F*
NUMAC	4,38	0,76	2,57	8,04	1,66	6,06	10,63**	19,59**
PROPCA	0,06	0,13	0,09	0,09	0,17	0,14	27,92**	11,27**
DURMED	5,81	3,92	4,86	2,76	2,12	2,64	17,54**	29,87**
PROPSA	0,06	0,10	0,08	0,24	0,30	0,27	4,41*	1,08
PROPSG	0,03	0,07	0,05	0,15	0,19	0,17	5,60*	2,24
SALVAU	0,52	0,61	0,57	1,110	0,972	1,042	0,251	0,412
ANOM	0,55	2,94	1,75	1,45	2,26	2,24	33,41**	79,80**
AUDIN	2,16	2,36	2,26	0,77	0,66	0,72	1,62	3,86*
AUDFIN	2,07	2,25	2,16	0,78	0,73	0,76	0,00	2,83
EVOLIC	2,91	2,89	2,90	0,40	0,60	0,51	7,19**	0,08
EDAD	24,44	20,10	22,27	13,11	13,69	13,54	0,59	5,29*
PROPAU	0,755	0,543	0,649	0,259	0,258	0,279	0,281	34,16**
MEDAC	67.423,71	23.421,15	45.422,43	284.101,77	54.573,39	205.242,08	7,44**	2,34
MEDBO	3.963,00	1.093,59	2.528,29	25.434,70	6.192,45	18.520,23	2,87	1,21
MEDRP	31.200,38	8.628,27	19.914,33	142.788,66	27.310,40	103.163,29	7,08**	2,43
MEDEM	69,00	67,81	68,40	57,39	63,65	60,46	1,29	0,02
MEDFAC	23.931,92	19.950,06	21.940,99	33.051,51	29.224,63	31.183,04	1,30	0,82

(**) Significativo al 1%; (*) significativo al 5%

El modelo logit definitivo incluye cuatro variables independientes (tabla 4); tiene una lejanía [(5)] -2LL = 148,325 y logra una tasa de acierto en la clasificación superior al 87%

(5) Como se sabe el peor resultado posible para la distancia, en un modelo que asignase a todas las observaciones una probabilidad igual a 0,5 sería -2 · n · ln (0,5) = -2 · 202 · ln (0,5) = 280,03. Esto sugiere que nuestro modelo posee una buena capacidad para discriminar e identificar adecuadamente a las empresas sanas y fallidas.

- casi el 90% en la submuestra de sanas, y un 85% entre las fallidas[6]–; el estadígrafo de Hosmer y Lemeshow no es significativo al 99% y el R^2 de Nagelkerke asciende a 0,639. El área bajo la curva ROC del modelo es igual a 0,9185. Todo ello, unido a la inspección directa del gráfico y la tabla de clasificación (III), sugiere que el modelo ajusta adecuadamente los datos originales, y que posee en general una capacidad satisfactoria para asignar a cada empresa una probabilidad coherente con su riesgo real de que incurra en un evento de fallo.

Tabla 3

Contrastes de significación sobre el modelo logit

		Pronosticado		Tasa de acierto
		Sana	Fallida	
Observado	*Sana*	90	11	89,11%
	Fallida	15	86	85,15%
	Global			87,13%
-2LL		148,32		
R^2 de Cox y Snell		0,48		
R^2 de Nagelkerke		0,64		

De acuerdo con nuestros resultados, la variable más determinante en la evaluación de la verosimilitud de un fallo es la proporción de cambios de auditor (PROPCA; tabla 4).El estimadortiene signo positivo, como se esperaba, y el elevado valor de la *odds-ratio* ($e^{ß}$ = 49,33) indica que la sucesión de cambios eleva drásticamente la verosimilitud estimada de que la empresa sufra un evento de fallo [7]: una empresa que cambie anualmente de auditor tiene un riesgo de fallo cuarenta y nueve veces superior que otra que mantenga la misma designación. Es destacable que más de la mitad de las empresas (sesenta y dos sanas, y cincuenta y tres fallidas) no haya cambiado de auditor a lo largo del período objeto de estudio. No obstante el grupo de empresas fallidas exhibe una tasa media de rotación superior al promedio de la muestra. La proporción de ejercicios en los que se produce un cambio de auditor duplica la tasa en las empresas sanas, y eso ocurre porque la duración media de los contratos es unos dos años inferior; ambas diferencias son estadísticamente significativas (tabla 2). Estos resultados son coherentes con nuestra hipótesis experimental número dos, y concuerdan con la amplia evidencia mostrada por la literatura acerca de las estrategias empleadas por las empresas para condicionar la independencia del auditor y promover la emisión de opiniones más favorables, que en su caso eludan resaltar las disfunciones financieras que pueda estar sufriendo la

(6) Esta asimetría parece ser una característica común en los modelos de pronóstico de fallo basados en regresión logística (Ohlson, 1980; de Llano *et al*., 2011a; de Llano *et al*., 2011b).

(7) Permítasenos insistir en que no debe inferirse de ello una relación de causalidad: ciertamente, los cambios no ocasionan el fallo. Nuestro modelo indica que la rotación tiene una interpretación como signo de la presencia de los desequilibrios que preceden y causan ese evento.

empresa (Schwartz y Menon, 1985; Schwartz y Soo, 1995; Ruiz y Gómez, 2001). La significatividad del estimador es no obstante menos clara de lo que cabría esperar; creemos que es la consecuencia de un proceso externo de mayor entidad: los cambios de auditor se han hecho mucho más frecuentes a partir de 2007, tanto en empresas sanas como en empresas fallidas. Esto ha incrementado el ruido de la variable y difuminado en parte la delimitación que tan claramente se había observado en trabajos anteriores. Es posible que este cambio en la estrategia de contratación se deba al crecientemente adverso contexto económico, que habría llevado a las empresas a optar por auditores de menor calidad bien para reducir el coste del proceso de auditoría externa o bien para hacer posible la introducción de un volumen inusual de ajustes discrecionales en la información contable. La evidencia disponible indica que el número de cambios es significativamente superior en las empresas fallidas, y que la rotación se relaciona con un riesgo claramente superior de fallo, todo lo cual avala nuestra hipótesis número *H2*.

Tabla 4
Estimadores del modelo definitivo

	β	*Error típico*	*Estadístico de Wald*	*Signif.*	*Exp (β) [odds-ratio]*	*I.C. 95,0% para EXP (β)*		β*
						Inferior	*Superior*	
NUMAC	-0,6564	0,1363	23,1841	0,0000	0,5187	0,3971	0,6776	-0,672
PROPCA	3,8985	1,7476	4,9762	0,0257	49,3291	1,6052	1515,9595	3,984
ANOM	0,7645	0,1433	28,4778	0,0000	2,1479	1,6221	2,8442	0,686
SALVAU	0,5850	0,2225	6,9134	0,0086	1,7950	1,1606	2,7761	0,614
Constante	-0,5623	0,3695	2,3160	0,1280	0,5699			

El número de anomalías observadas en el proceso de difusión de la información contable (ANOM) parece tener también un papel relevante en la identificación de disfunciones financieras latentes. Permítasenos recordar que empleamos el concepto de *anomalía* para referirnos a retrasos en el depósito de cuentas en el Registro Mercantil, y a eventuales incumplimientos de la obligación legal de auditarse. Disponemos de un volumen de información significativamente inferior en el caso de las empresas fallidas; esta carencia se explica en parte porque estas empresas tienen una dimensión media inferior pero también porque exhiben una frecuencia anormalmente alta de anomalías en la difusión de la información contable. Es importante subrayar que estas irregularidades, tanto retrasos en el depósito de CC.AA. en el Registro mercantil como incumplimientos de la obligación de auditarse, no se refieren necesariamente al período en el que se produjo el evento de fallo: algunas omisiones ocurrieron varios años antes, lo que en nuestra opinión refuerza su interpretación como signos de disfunciones latentes e indicadores anticipantes de un fallo financiero futuro. El estimador correspondiente en el modelo logit es significativamente distinto de cero, y la OR indica que cada irregularidad adicional se corresponde con una verosimilitud doble de que la empresa incurra en un evento de fallo;su signo es positivo, lo que corrobora la presunción de que empresas sometidas a alteraciones financieras pueden poner en práctica intentos extremos para evitar que estas disfunciones trasciendan al entorno (Nelson, 2005).La acumulación de anomalías en el proceso de difusión y auditoría de la información contable de la empresa se relaciona con niveles más elevados de verosimilitud para el fallo, y es significativamente superior en las empresas empíricamente fallidas, lo que respalda nuestra hipótesis número *H1*.

El *número* de accionistas (NUMAC) que, como hemos visto, interpretamos como una medida del riesgo de litigiosidad de la empresa, forma parte del modelo con un estimador igual a -0,656; el signo es el previsto inicialmente, y sugiere una asociación negativa con el riesgo de fallo, que es además relativamente intensa a la vista del *odds-ratio* (-0,519): cada accionista adicional se corresponde con una reducción a la mitad del riesgo de fallo. Existe una relación, bien documentada en la literatura, entre la percepción de litigiosidad por parte del auditor, el grado de exhaustividad de la auditoría, el volumen de ajustes discrecionales presentes en la información contable, y la salud financiera de la empresa (Butler *et al.*, 2004; Laitinen, 1994; Francis y Krishnan, 1999; Bartov *et al.*, 2000; Bradshaw *et al.*, 1999; Cahan y Zhang, 2006); estos antecedentes corresponden exclusivamente a grandes sociedades cotizadas, y nuestro trabajo aporta algunas matizaciones para el caso de las pymes. La introducción de ajustes discrecionales tiene sentido solo en situaciones en las que existe una asimetría informacional entre los directivos y los usuarios de la información contable; es el caso de las sociedades cuyas acciones y/o títulos de renta fija cotizan en mercados secundarios, que pueden sentirse impulsadas a alterar la información transmitida al entorno para manipular las cotizaciones y/o las calificaciones de solvencia (Bradshaw *et al.*, 2001; Sloan, 1996). Pero este argumento es cuestionable en el caso de las pymes, que poseen un contexto organizativo y financiero radicalmente diferente, y donde el velo que separa la gestión de la propiedad es más difuso. Creemos que un accionariado reducido pero diversificado puede ejercer un control más eficaz y directo sobre la empresa y sus finanzas; esto se traduce, desde el punto de vista de la auditoría, en un escenario de mayor litigiosidad potencial, en el que el auditor empleará pruebas y niveles de materialidad más rigurosos, y tendrá una predisposición más acusada a emitir informes con salvedades para eludir eventuales responsabilidades económicas (Carcello y Palmrose, 1994), desde luego en el supuesto de que detecte anomalías que potencialmente puedan conducir a la empresa a un fallo. De ahí que las oportunidades de supervivencia aparezcan relacionadas positivamente con el número de accionistas y con los incentivos para que la auditoría sea más exhaustiva, en definitiva con la calidad de los mecanismos de control interno y externo.

La última variable incluida en el modelo es el número medio de salvedades registradas por cada auditor diferente (SALVAU). Que el estimador sea significativamente diferente de cero, y la *odds-ratio* claramente superior a uno, indica que la acumulación de salvedades es más frecuente en empresas sometidas a tensiones financieras, y que tiene una interpretación como indicador del riesgo de fallo. La verificación de la capacidad explicativa de esta variable es una contribución de importancia, en varios sentidos. Se trata de un factor atípico en la literatura, pero que en nuestra opinión sintetiza muy eficazmente otras predictoras usuales como el número de auditores diferentes contratados por la empresa o el número de salvedades (Bushman y Collins, 1998; Francis y Krishnan, 1999; Bradshaw *et al.*, 1999; Bartov *et al.*, 2000). Por otra parte, el hecho de que el estimador difiera de cero supone un argumento a favor de calidad y significación de la información canalizada por los informes de auditoría y de la independencia de los auditores, y en contra de conjeturas como la hipótesis de la profecía autocumplida (Mutchler, 1984). Todo indica que los informes contienen evidencias suficientes para estimar una medida fiable de la verosimilitud de que la empresa incurra en un fallo, por tanto que no existen omisiones que puedan explicarse por conductas sistemáticas de reserva o discreción por parte de los auditores; también, que las estrategias diseñadas para minar la independencia de éstos y gestionar el contenido de los informes, tales como la

rotación de contratos, son relativamente ineficaces y no consiguen evitar la presencia de salvedades e incertidumbres.

Estos resultados avalan nuestra hipótesis número *H4*, por tanto rebatiendo la *hipótesis de neutralidad* que se ha ido asentando en la literatura, especialmente en la de origen anglosajón (Elliot, 1982; Dodd *et al.*, 1984; Bessell *et al.*, 2003), y que sostiene que las salvedades no tienen una traducción directa en términos de riesgo de fallo. Es preciso subrayar que esta *hipótesis* no se justifica por evidencias que corroboren positivamente la irrelevancia de las salvedades, sino más bien por el carácter inconcluyente de la evidencia disponible a favor de la hipótesis de no-neutralidad: *no es tanto que podamos afirmar que las salvedades son irrelevantes, como que no podemos afirmar que sean relevantes, y este es un matiz metodológico importante*. En la tradición de auditoría anglosajona las salvedades se refieren casi exclusivamente a excepciones al principio de empresa en funcionamiento (Nelson, 2005; Herbohn y Ragunathan, 2008), y se interpretan en ocasiones como el resultado de un proceso previo de negociación entre el auditor y su cliente (Bradshaw *et al.*, 1999); en otros casos, y concretamente en España, las salvedades se derivan de circunstancias extremadamente heterogéneas que pueden tener poca o ninguna relación con la salud financiera y la supervivencia de la empresa. A todo ello se añaden los sesgos interpretativos que se pueden derivar de la forma en que el auditor exprese las salvedades o incertidumbres (Carcello *et al.*, 2003)

Nuestro trabajo sugiere que el pronóstico del fallo depende no tanto de la presencia o no de salvedades en un informe en concreto, tampoco de la gravedad que aparentemente pueda tener esa mención, sino más bien de la *reiteración* de salvedades a lo largo del tiempo. La acumulación de salvedades, incluso de excepciones aparentemente formales, tiene una interpretación como signo de la existencia de tensiones financieras internas latentes, y como factor modificador de la probabilidad de que la empresa sufra dificultades de solvencia. La OR indica que cada salvedad adicional aumenta la verosimilitud de que la empresa incurra en un fallo, concretamente estima el riesgo adicional en un 79,5%.

Como se sabe, el recepcionamiento de la Directiva 2006/43/CE, a través de la Ley 12/2010 de 30 de junio, ha modificado el marco jurídico de la auditoría de cuentas: las incertidumbres ya no son una causa genérica para la emisión de dictámenes modificados por salvedades, y constarán en párrafos de énfasis a menos que dichas circunstancias no estén adecuadamente descritas en la Memoria de la empresa. Esta nueva interpretación tiene varios efectos importantes: muchas de las menciones que, de acuerdo con nuestro trabajo, tienen valor como signos anticipantes de un fallo financiero, no van a dar lugar a dictámenes modificados. Un informe limpio es perfectamente compatible con la existencia de todo tipo anomalías financieras, latentes o reveladas, y esto puede devenir en una fuente de confusión para los usuarios externos: precisamente porque las salvedades se relacionan con anomalías y riesgos financieros de todo tipo (Hopwood *et al.*, 1989), con riesgos latentes y ajustes discrecionales (Francis y Krishnan, 1999; Bartov *et al.*, 2000; Bradshaw *et al.*, 1999; Butler *et al.*, 2004), y con incumplimientos puros y simples de los PNCGA, los usuarios tienden a interpretar un dictamen favorable como un signo de buena salud financiera; el deterioro del contenido informacional es más acusado para todos aquellos usuarios que emplean de servicios de información y agregadores o sindicadores de contenido, los cuales usualmente reflejan solo el sentido general del dictamen y un breve resumen de las salvedades que, en su caso, haya incluido el auditor.

Por otra parte, que una incertidumbre relevante no se traduzca en una salvedad significa también que el auditor no está obligado a estimar su impacto financiero, de manera que los usuarios externos deben confiar necesariamente en la información que la empresa haya podido aportar en la Memoria. Es cierto que las Normas Técnicasde Auditoría instan al auditor a verificar que la situación está *adecuadamente descrita* en la Memoria, y que algunos trabajos indican que los auditores parecen ser capaces de verificar racionalmente el realismo de las estimaciones manejadas por los directivos (Francis y Krishnan, 1999). Sin embargo, tratándose de una incertidumbre que puede poner en duda la supervivencia de la empresa, esta exigencia parece demasiado genérica y laxa: la empresa puede evitar la difusión de datos esenciales argumentando razones de brevedad o concisión, o empleando un lenguaje deliberadamente confuso o evasivo (Lang *et al.*, 1996). Por otra parte la evidencia aportada por Francis y Krishnan (1999) parece ser incompatible con la tendencia de los auditores a desenvolverse de forma conservadora y anormalmente cautelosa a las situaciones de incertidumbre y alta litigiosidad potencial (Kinney y Nelson, 1996).

El modelo no ofrece resultados concluyentes acerca de la hipótesis número tres, que predice un deterioro de la calidad de la información contable paralelo a la intensificación de las dificultades financieras de la empresa (Schwartz y Menon, 1985; Schwartz y Soo, 1995; Ruiz y Gómez, 2001). La evidencia es inconcluyente y no permite corroborar que exista una relación sistemática entre el grado de vulnerabilidad del auditor, la calidad de la información contable, y la salud financiera de la empresa: las pruebas de descomposición de la varianza no permiten clarificar esta hipótesis (tabla 2), y ninguna de las predictoras relativas a la tipología del auditor y/o la calidad de la información contable forma parte del modelo final.

Se detecta una muy débil asociación positiva entre la salud financiera y la calidad del auditor al inicio del período objeto de estudio ($\alpha^* = 0{,}047$); por otra parte, el comportamiento de las sociedades fallidas a lo largo del período analizado apunta inequívocamente a una caída drástica en la calidad de sus auditorías (tabla 5), lo que en principio es compatible con nuestra hipótesis número *H3*.

Sin embargo esta evidencia resulta extremadamente frágil. Una proporción llamativamente elevada de empresas fallidas había contratado con auditores de alta calidad; y de hecho, más de la mitad de los clientes de estos auditores de alta calidad acabó fallando a lo largo de la siguiente década. Estos resultados son compatibles con las conclusiones de Francis *et al.* (1999) y Francis y Yu (2009), quesugieren que las empresas en crisis podrían recurrir a auditores de mayor calidad con la intención de transmitir al entorno señales de normalidad y estabilidad.

La evidencia en cuanto a esta hipotética relación está alterada por un proceso de mayor entidad: la tendencia generalizada a contratar auditores de peor calidad, que se intensifica a partir de 2007. Las *cuatro grandes* pierden un 10,6% de sus clientes, y esta caída es de hecho más abrupta en las empresas empíricamente sanas, las cuales han trasladado sus encargos a auditores societarios y en mayor medida a auditores individuales de ámbito local. El estudio de las causas de esta tendencia supera los objetivos de nuestro trabajo, no obstante hemos realizado algunas pruebas estadísticas para clarificarlas. Los resultados indican que se trata de un fenómeno generalizado en toda la muestra, independiente de la dimensión de la empresa, de su forma jurídica y de la naturaleza de su actividad; hemos hallado algunos indicios de que las empresas de mayor tamaño (medido por el activo contable) han mantenido sus encargos a las *cuatro grandes*, pero

la evidencia disponible no es concluyente [8]. A la vista de todo ello creemos que una explicación plausible puede ser la voluntad de reducir el valor económico de los encargos de auditoría, en un contexto de recesión y restricciones financieras que ha acrecentado las amenazas a la supervivencia de las pymes.

TABLA 5

NATURALEZA DE LOS AUDITORES AL INICIO Y AL FINAL DEL PERÍODO DE ESTUDIO, POR CATEGORÍAS DE SALUD FINANCIERA

	Inicial (AUDIN)			*Final (AUDFIN)*			*% variación*		
	Sana	*Fallida*	*Total*	*Sana*	*Fallida*	*Total*	*Sana*	*Fallida*	*Total*
Individual	23	10	33	27	17	44	17,4%	70,0%	33,3%
Sociedad	39	45	84	40	42	82	2,6%	-6,7%	-2,4%
Multinacional («cuatro grandes»)	39	46	85	34	42	76	-12,8%	-8,7%	-10,6%
	$\aleph^2 = 6{,}13^*$			$\aleph^2 = 3{,}164$					

Ninguna de las variables relativas a la dimensión de la empresa resulta ser significativa en el modelo, confirmando por tanto los indicios aportados por las pruebas de descomposición de la varianza (tabla 2): al menos dentro de la población estudiada en este trabajo —sociedades con 250 empleados o menos— los eventos de fallo se distribuyen de forma aproximadamente homogénea y no existen diferencias sistemáticas relevantes asociadas al volumen de facturación, a la cifra de recursos propios, al valor contable del activo, ni al resultado operativo antes de impuestos (BOAT). Tampoco resulta significativa ninguna de las variables *dummies* empleadas para incorporar al modelo la variable predictora *actividad*, que como anticipamos en su momento hemos codificado como categórica en función de los grupos principales (A – R) de la CNAE. Todo ello corrobora que ninguna de estas variables actúa como confundente en la relación principal analizada, y refuerza la fiabilidad y relevancia de nuestros resultados. En cualquier caso, siguiendo la práctica habitual en estos casos, hemos reestimado el modelo sin variables de control: el conjunto de predictivas no se modifica, y los valores de los estimadores lo hacen en proporciones aceptables, en todo caso no superiores al 10%, lo que avala nuestros resultados [9].

5. CONCLUSIONES

Nuestro trabajo aporta un modelo de pronóstico del fallo empresarial basado en indicadores relativos al proceso de auditoría externa, y a su contexto contractual; asimismo proporciona evidencias acerca del comportamiento de los auditores de las pequeñas y medianas empresas. Hay cuatro razones por las que creemos que este estudio es relevante: por una parte, aporta evidencia adicional útil para clarificar la naturaleza y la intensidad de las anomalías detectadas en la auditoría de las empresas financieramente desequilibradas; por otra, proporciona un instrumento de detección que puede resultar trascendental en aquellos casos en los que la compulsión sobre el auditor sea eficaz y la empresa consiga por tanto que sus disfunciones permanezcan ocultas, o que su grave-

(8) $F = 3{,}464$; $\alpha^* = 0{,}033$. Esta asociación no solo es estadísticamente débil, sino que no se verifica cuando medimos la dimensión a través de la cifra contable de recursos propios, el volumen de facturación o el número de empleados; todo ello nos lleva a suponer, prudentemente, que la tendencia a contratar auditores individuales es generalizada en toda la muestra.

(9) Los estimadores del modelo sin variables de control se muestran bajo el encabezado β^*, en la columna derecha de la IV.

dad no pueda percibirse con claridad; se ocupa de un grupo de empresas, las pymes, al que la investigación tiende a relegar a un segundo plano y cuya dinámica de auditoría no ha sido estudiada con el detalle que merece habida cuenta de su importancia en el tejido empresarial, la actividad económica y el empleo; finalmente, porque contribuye a matizar y contextualizar las evidencias disponibles para la auditoría en países de tradición anglosajona, las cuales no son necesariamente generalizables a la auditoría española debido a diferencias de tipo cultural y legislativo.

El análisis estadístico preliminar y el modelo de pronóstico indican que la presencia de anomalías en el proceso de auditoría, tanto irregularidades en la difusión de la información contable como salvedades e incertidumbres destacadas por los auditores, se relacionan con la existencia de procesos subyacentes de tensión financiera; relaciona la acumulación de estas anomalías se relaciona con un riesgo financiero más acusado, y nuestro modelo traduce ese riesgo en una más alta verosimilitud de que la empresa incurra en un fallo. Las empresas sanas tienden a contratar a sus auditores por períodos de tiempo más prolongados, exhiben tasas de rotación claramente inferiores y reciben dictámenes con salvedades con una frecuencia sustancialmente inferior al promedio; aunque no hemos hallado diferencias significativas en cuanto a la dimensión, se auditan con mayor frecuencia y sus incumplimientos en materia registral son excepcionales. Estos resultados desvirtúan la suposición de que las salvedades son neutrales desde el punto de vista del pronóstico del fracaso empresarial, que es asumida con cierta generalidad en el caso de la auditoría en países de corte anglosajón, pero que podría no ser extensible a la auditoría en España; sugieren también que la conducta de los auditores no está, al menos con carácter general, condicionada por presunciones en cuanto al impacto de su dictamen en las probabilidades de supervivencia de la empresa (la *hipótesis de la profecía autocumplida*) ni tampoco por prácticas que, como la rotación de contratos o la elección de auditores teóricamente más vulnerables, aparecen relacionados en la literatura con la «compra de opinión».

El modelo de pronóstico resulta extremadamente eficiente: con solo cuatro regresores significativos logra una tasa de acierto medio del 87%, que en el caso de las empresas sanas se eleva al 89%. Una forma de mejorar su capacidad predictiva es calibrar adecuadamente la probabilidad de corte (p) a través de técnicas de simulación; de esta forma se pueden lograr diferentes combinaciones de sensibilidad (la proporción de empresas fallidas correctamente identificadas) y especificidad (proporción de falsos positivos) que redundan en una mejora de la capacidad predictiva global. Por supuesto este cambio no altera la estructura del modelo ni el valor de los estimadores.

En conjunto, los resultados del análisis estadístico preliminar y del modelo de pronóstico corroboran que la información transmitida a través del informe de auditoría posee gran calidad, en lo que respecta al diagnóstico financiero y el análisis del riesgo de crédito.

Un aspecto mejorable del modelo es el hecho de que, a pesar de basarse en observaciones de corte temporal, no permita en su especificación actual la estimación de probabilidades intertemporales de fallo ni valorar en qué medida esa probabilidad de fallo ha ido cambiando en el tiempo, y se materializa en un riesgo inminente o en una posibilidad potencial a medio y largo plazo; esta es una distinción importante, desde el punto de vista tanto de los directivos y propietarios como de los acreedores y prestamistas. Pretendemos en principio aplicar un planteamiento similar al que usualmente se emplea cuando se estiman modelos de pronóstico MDA y logit con ratios financieras (Gómez *et al.*, 2008): si las probabilidades de fallo poseen una estructura temporal de-

finida, podríamos extraer patrones sistemáticos susceptibles de modelización. También, profundizar en la codificación de las salvedades e incertidumbres atendiendo a su trascendencia financiera, recurriendo a modelos semánticos.

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Determinantes de la discrecionalidad directiva en la elección del método contable de las participaciones en negocios conjuntos *

Determinants of the managerial discretion in the accounting choice for investments in joint ventures

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RESUMEN Este trabajo analiza los motivos que subyacen a la elección contable para registrar las participaciones en un tipo concreto de negocio conjunto: la sociedad multigrupo. Dadas las características de los métodos alternativos, integración proporcional *vs.* puesta en equivalencia, la elección contable no afecta al resultado sino a la cantidad de información y con ello a los ratios financieros. El análisis se refiere a cincuenta y una empresas españolas cotizadas que llevaron a cabo 893 elecciones en el periodo de vigencia de las NFCAC (1991-2004). Estas normas daban libertad para elegir un procedimiento u otro sin exigir consistencia. Los resultados del análisis logístico evidencian que los factores interdependencia entre las actividades del partícipe y la SM y especificidad de los activos, así como tamaño influyen de forma positiva en la adopción de la integración proporcional; mientras que el endeudamiento tiene el impacto contrario en la decisión. Por su parte la estructura accionarial guarda una relación no lineal con la elección contable.

PALABRAS CLAVE Elección contable; Consolidación contable; Integración proporcional; Puesta en equivalencia; Sociedad multigrupo; Negocio conjunto.

ABSTACT This paper analyses the reasons behind the accounting choice to account for investments in a type of joint venture: the jointly controlled entity. The two alternative accounting methods are proportionate consolidation and equity method. Although this accounting choice does not affect the reported profit in the consolidated accounts, it has an impact on the amount of information disclosed, as well as on the financial ratios. The analysis is referred to 51 Spanish listed companies that made 893 accounting choices in the period of application of the Spanish rules for consolidation (1991-2004). These rules gave discretion about the method to be adopted, and did not require consistency. The results of the logit analyses support that the interdependence of the activities between the co-venturer and the joint venture, assets specificity, as well as size are positively associated with the adoption of the proportionate consolidation method, while leverage is negatively associated. As for the ownership structure the influence is not linear.

KEYWORDS Accounting choice; Consolidation; Proportionate consolidation; Equity method; Jointly controlled entity; Joint venture.

* **Agradecimientos:** Begoña Giner está en la Universitat de València y Carmen Verón está en la Universidad Nacional de Rosario, y ha sido profesora invitada en la Universitat de València en diversas ocasiones. Las autoras agradecen los comentarios recibidos a una versión previa del trabajo presentada en el VII Workshop de investigación empírica en Contabilidad Financiera (Cartagena, 2009) y en particular los de Cristina Ferrer que actuó como contraponente. El trabajo forma parte del proyecto de investigación ECO2008-06238-C02-01, financiado por el Ministerio de Ciencia e Innovación y fondos FEDER.

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Recibido 21-06-11 · Aceptado 22-06-12 · · ISSN: 0210-2412

1. INTRODUCCIÓN

El objetivo de este trabajo es determinar las razones que explican la discrecionalidad directiva en la decisión sobre el método contable para registrar las participaciones en un tipo concreto de negocio conjunto (NC): la sociedad multigrupo (SM). Los estudios de elección contable parten de la base de que las empresas son sujetos racionales y la información contable produce efectos económicos, por lo que los directivos no son indiferentes al método de contabilización. Además si bien los problemas de información e incentivos impiden la eficiente asignación de recursos, mediante la divulgación de información se pueden mitigar estos problemas.

Las empresas al agruparse persiguen fines de subordinación o de cooperación, lo que supone distintos efectos sobre la información consolidada. Si bien para los grupos de subordinación se impone la integración global, para los de coordinación, a los que se refiere este estudio, se permiten distintas alternativas. En este trabajo se analizan las motivaciones de las sociedades españolas para contabilizar sus participaciones en SM de acuerdo con las Normas para la Formulación de Cuentas Anuales Consolidadas (NFCAC) vigentes en el período 1991-2004. Estas normas permitían al partícipe, esto es a la empresa matriz, utilizar puesta en equivalencia (PE) e integración proporcional (IP), sin exigir consistencia en la aplicación del método. Se trata de un escenario idóneo para analizar la elección contable porque el grado de discrecionalidad es máximo. La utilización de un método u otro no sólo supone dar más o menos información, sino que ciertos ratios, como el endeudamiento o la rentabilidad resultan afectados, lo que puede tener importantes efectos en las decisiones de los usuarios. Por otra parte sólo a través de la IP puede el partícipe incorporar los activos resultantes de la actividad generada gracias a los activos específicos que se transfieren al NC. Todo ello sugiere que la empresa partícipe no es indiferente a la decisión contable.

Nuestros resultados son consistentes con los obtenidos por la abundante literatura sobre presentación voluntaria de información consolidada y uso de PE en lugar de coste para las asociadas, en los que el tamaño y el endeudamiento se configuran como aspectos determinantes. En cuanto al uso de IP vs. PE para los NC tan solo hay dos trabajos referidos al ámbito anglosajón. Whittred y Zimmer (1994) confirman el papel del endeudamiento, mientras que Lourenço y Curto (2010) destacan la importancia de los aspectos económicos del NC. Profundizando en esta línea confirmamos la incidencia en la decisión de factores estratégicos referidos a la interdependencia entre la actividad del partícipe y el NC. Además destacamos el papel de los activos específicos, que no sólo son clave en la decisión de formar un NC sino que influyen en la decisión contable. También confirmamos la influencia de la estructura accionarial a pesar de que los resultados de los trabajos previos son contradictorios.

En concreto nuestros resultados confirman que las empresas con más activos específicos, mayor interdependencia y mayor demanda externa de información optan por la IP, mientras que las más endeudadas prefieren la PE. Por su parte la estructura accionarial guarda una relación no lineal; cuando se da una concentración no estructurada en torno a accionistas dominantes se opta por el método IP.

Ni estos resultados, ni los de los trabajos que analizan la relevancia y utilidad de los dos métodos alternativos (PE *vs.* IP) y concluyen que la información proporcionada por el partícipe que emplea la IP es más útil para predecir la rentabilidad financiera futura y las magnitudes bursátiles (Graham *et al.,* 2003; Kothavala, 2003; Soonawalla, 2006; Lourenço *et al.*, 2012), apoyan la decisión del International Accounting Standard Board (IASB) de imponer la PE para la contabilización de las participaciones en NC [(1)]. Según parece la consistencia con el marco conceptual ha primado sobre cualquier otra razón en la decisión del IASB, al margen de que la información proporcionada por el partícipe capte o no la sustancia económica del NC y sea más o menos relevante para el mercado.

Los resultados que presentamos contribuyen al avance de la investigación contable por distintas razones. Proporcionan nueva evidencia sobre los motivos que explican la elección contable con respecto a una problemática en la que no abunda este tipo de investigación, pero que tiene un gran interés dada la importancia de este tipo de alianzas. Se han obtenido en un contexto que no había sido antes analizado pese a ofrecer gran discrecionalidad, lo que otorga mayor relevancia a los resultados obtenidos. Por otra parte, estos resultados pueden contribuir a entender la oposición de las empresas a la postura del IASB, y pueden tener interés para el regulador nacional en la medida que aún se contempla el uso de la IP.

Luego de esta introducción, en donde se expone el objetivo y contexto del trabajo, en el apartado 2 presentamos la revisión de la literatura junto con las hipótesis de la investigación. En el apartado 3 planteamos el trabajo empírico, y exponemos la muestra, la metodología de análisis y las variables. En el apartado 4 presentamos los resultados, y por último dedicamos el apartado 5 a exponer las conclusiones.

2. REVISIÓN DE LA LITERATURA E HIPÓTESIS EXPLICATIVAS

2.1. Negocios conjuntos: perspectiva económica, organizacional y contable

Hasta mediados de los ochenta, el NC ha sido una de las formas de cooperación empresarial más utilizada como alternativa a la inversión extranjera directa. Sin embargo, posteriormente la utilización de este tipo de alianza empresarial se ha justificado principalmente por considerarse una estructura que responde a los cambios requeridos por el nuevo entorno económico. En efecto el NC es la respuesta a la ineficiencia de los mercados de *inputs,* de competencias o recursos específicos (*knowledge* o *know-how*), que no pueden ser transferidos ni internalizados mediante la propiedad plena u otras formas de cooperación. En la medida que el NC permite la puesta en común de esos recursos complementarios, se considera una estructura eficiente que minimiza los costes de transacciones que involucran activos específicos (Hennart, 1988).

(1) La modificación de la Norma Internacional de Contabilidad (NIC) 28 y la emisión de la Norma Internacional de Información Financiera (NIIF) 11 que sustituye a la NIC 31, tuvo lugar en mayo de 2011. Estos cambios son aplicables a partir de enero de 2013. Disponible en http://eifrs.ifrs.org

Si bien desde la perspectiva económica el NC es una realidad identificable, desde la perspectiva jurídica no resulta fácil identificar esta figura. En el ordenamiento jurídico español el NC puede adoptar diversas figuras: Unión Temporal de Empresas (UTE), Agrupación de Interés Económico (AIE) y Sociedad de Capital. En lo que se refiere a esta última figura, dada la ausencia de un tipo societario particular para instrumentar al NC, los partícipes se organizan mediante sociedades de capital: Sociedad Anónima y Sociedad de Responsabilidad Limitada. La incorporación en los estatutos de cláusulas adicionales, la celebración de acuerdos parasocietarios y la representación proporcional en el órgano de administración son los mecanismos que permiten garantizar el control conjunto en estos tipos societarios.

Este aspecto organizacional, que caracteriza al NC, se encuentra expresamente recogido en las NFCAC vigentes en el periodo objeto de este estudio. Así en su sección 2.º, artículo 4, se define a las SM como aquéllas que no están incluidas como sociedades dependientes, que son gestionadas por una o varias sociedades del grupo, las cuales participan de su capital social conjuntamente con otra u otras ajenas al mismo (punto 1). La gestión conjunta sobre otra sociedad existe cuando, además de participar en el capital, se dan las siguientes circunstancias (punto 2): en los estatutos sociales se establece la gestión conjunta; o existen pactos o acuerdos que permiten a los socios el ejercicio del derecho de voto en la toma de decisiones sociales. El artículo 12 admite la posibilidad de utilizar el método IP para la contabilización de la participación en una SM, pero el artículo 14 permite también la aplicación del método PE, sin que se requiera utilizar el mismo método a todos los NC. Esto es una particularidad de las NFCAC, ya que tanto la NIC 31 «Participaciones en Negocios Conjuntos», como las normas de consolidación españolas aprobadas en 2010 establecen la obligatoriedad de usar el método de forma consistente.

En el método IP se combinan los activos, pasivos y resultados del NC con los del partícipe, de forma que prácticamente todas las magnitudes del balance y cuenta de resultados del grupo resultan afectadas. Sin embargo, cuando se utiliza el método PE se informa en los estados financieros del partícipe de la participación proporcional neta en el patrimonio y en los resultados del NC. Ciertos ratios son especialmente dependientes del método utilizado, como el endeudamiento o la rentabilidad económica (aunque no la rentabilidad financiera, dado que el resultado y el neto del grupo no dependen del método empleado), lo que puede influir en la decisión contable.

2.2. Hipótesis explicativas de la elección contable

La elección contable que se analiza tiene dos vertientes. Por una parte la divulgación de más o menos información, equivalente al caso de la información voluntaria, y por otra el uso de un método u otro conlleva un efecto directo en los ratios. Ello nos lleva a considerar diversos enfoques para justificar las hipótesis.

Las empresas poseen información completa sobre su actividad y el reconocimiento de que esta información es relevante para la toma de decisiones de los usuarios externos explica la obligación de divulgar información. Sin embargo, en ocasiones las normas contables dan cierta libertad sobre su estructura y contenido, por lo que tanto esto como

la divulgación de información voluntaria pueden considerarse herramientas al servicio de la dirección para lograr objetivos empresariales. La búsqueda de los factores explicativos de la discrecionalidad directiva es un área de investigación de gran interés [(2)]. Básicamente el argumento que se ha utilizado es que cuanto mayor sea la demanda de información más empeño pondrá la empresa en la transparencia, por lo que divulgará más información. La fundamentación teórica para esta estrategia empresarial se cimenta en la teoría económica de la información, en particular las teorías de la señal y de los costes propietarios.

La teoría de la señal se basa en las consecuencias adversas que pueden producir las asimetrías informativas en los participantes del mercado, es decir entre las empresas y los inversores. Así sostiene que éstas pueden reducirse si la parte mejor informada señala o indica su condición, transformando información privada en pública. Esto supone que las empresas de mayor calidad proporcionarán señales creíbles que, sin embargo, las de peor calidad no estarán dispuestas a facilitar. Por otra parte, cabe considerar los costes propietarios, esto es los costes de preparación y divulgación de la propia información, así como las desventajas competitivas que ésta puede generar. Ambas teorías sugieren que las empresas proporcionarán información para evitar la selección adversa y su impacto negativo en el precio de las acciones, siempre y cuando los costes propietarios no excedan a los beneficios de la información (Verrecchia, 1983).

Por su parte la teoría del proceso político sugiere que las empresas de mayor tamaño son más visibles y son objeto de mayor seguimiento por parte de reguladores o entes gubernamentales, y por lo tanto más sensibles a los costes políticos (Watts y Zimmerman, 1986). Al brindar más información procuran evitar la intervención de la Administración.

De igual modo, a través de la provisión voluntaria de información, los directivos pueden mitigar los costes de la relación de agencia (Jensen y Meckling, 1976); en efecto en estas relaciones el principal ha de establecer mecanismos de control que suponen costes y que el agente puede reducir si voluntariamente acepta facilitar información. En definitiva la divulgación de información es un mecanismo clave para la eficiente asignación de recursos en la economía (Healy y Palepu, 2001).También la teoría positiva de la contabilidad ha proporcionado explicaciones basadas en la teoría de la agencia para explicar la elección contable ante la existencia de deudas (Watts y Zimmerman, 1986). Así se sostiene que las empresas más endeudadas tienden a elegir métodos contables que eviten incumplir posibles restricciones contractuales, es decir prefieren reconocer menos deudas, más activos y más resultados.

Junto a los planteamientos anteriores, cabe considerar la literatura sobre organización que proporciona nuevas explicaciones, las cuales han sido poco exploradas en la investigación en contabilidad. En este trabajo consideramos dos aspectos: la existencia de activos específicos y la estructura organizativa.

(2) Pueden verse las revisiones de Ball y Foster (1982), Holthausen y Leftwich (1983), Watts y Zimmerman (1990), Fields *et al.* (2001).

En el contexto de una economía globalizada, las teorías de los costes de transacción (Williamson, 1985 y 1991) y de las empresas transnacionales, en particular la teoría de la internalización y el paradigma ecléctico (Dunning, 1995), consideran que la calidad de los activos específicos hace que el NC sea la estructura eficiente que minimiza los costes de las transacciones que involucran a estos activos. La especificidad de los activos se refiere al grado de transferencia que tiene un bien entre usuarios y usos o destinos alternativos, sin perder su valor productivo; la diferencia entre el coste y el valor del mejor uso alternativo indica el grado de especificidad, menor cuanto mayor es esta característica. La literatura reconoce diversos tipos: especificidad del sitio, especificidad de los activos físicos, especificidad de los activos humanos y de otros activos inseparables. Aunque no todos los activos específicos son intangibles, normalmente se asocian ambas nociones, ya que una gran mayoría lo son y con frecuencia las inversiones en investigación y desarrollo (I+D) se materializan en este tipo de activos (Balakrishnan y Fox, 1993; Bah y Dumontier, 2001).

La generación de estos activos puede tener lugar dentro o fuera de la empresa, pero para su explotación no se requiere la propiedad sino el acceso o control de su uso. La existencia de activos específicos que no pueden adquirirse en el mercado, tales como el *know-how* de determinados procesos productivos, o redes de distribución, produce elevados costes de apropiación y coordinación, que mediante la propiedad y gestión compartida del NC se pueden minimizar (Chen y Chen, 2003). Entendemos que este aspecto es un determinante clave de la decisión sobre el método contable a utilizar, porque sólo a través de la IP puede el partícipe incorporar los activos resultantes de la actividad generada gracias a los activos específicos que se transfieren al NC.

Por otra parte resulta relevante el análisis de Hennart (1988) sobre la estructura organizacional de los NC, y la clasificación en dos tipos: *scale* y *link*. Los primeros se llevan a cabo entre partícipes que tienen actividades homogéneas. Mediante el NC internalizan una parte de su proceso productivo, remplazando al mercado y evitando los elevados costes de transacción que éste conlleva; se trata de realizar actividades auxiliares o complementarias a las de los partícipes de forma más eficiente. Por el contrario en los negocios tipo link, los partícipes pertenecen a distintos sectores y mediante el NC tratan de minimizar los riesgos de realizar una actividad que no podrían desarrollar en forma individual, por carecer de los recursos necesarios (activos específicos) o de la capacidad de servicio demandada. En este caso, los beneficios de la actividad son un resultado más para los partícipes, pues a través del NC desarrollan parte de su actividad principal. Si bien la clasificación *link-scale* se basa en la similitud de las actividades de los partícipes, se puede asociar a la idea de interdependencia entre el partícipe y la inversión de Mian y Smith (1990). En efecto en los negocios tipo *link* se da una mayor interdependencia con la actividad del partícipe que en los tipo *scale*.

Los planteamientos teóricos expuestos nos llevan a formular cinco hipótesis referidas a la elección de IP *vs.* PE para la contabilización de participaciones en SM. Estas hipótesis se corresponden con tres tipos de motivaciones: estratégicas, contractuales e informativas.

Motivaciones estratégicas

La incidencia de la estructura organizacional en la divulgación de información consolidada es analizada por Mian y Smith (1990). Estos autores analizan los incentivos de las empresas matrices para incorporar sus subsidiarias en el período anterior al *Statement of Financial Accounting Standard* (SFAS) noventa y cuatro en Estados Unidos. Sus resultados revelan que la decisión está determinada por la interdependencia de las actividades. Así las subsidiarias que desarrollan actividades similares a las que lleva a cabo la matriz se incluyen en la información consolidada, mientras que aquéllas cuyas actividades se asemejan a las que se subcontratan no son consolidadas. En definitiva sostienen que si un método es más útil para propósitos internos debería ser también empleado para propósitos externos, ya que utilizar distintos métodos supone mayores costes, no solo de control sino políticos.

En cuanto a la decisión IP *vs.* PE, cuanto mayor es la interdependencia más información se requiere para mejorar la eficiencia. La mayor información que proporciona el método IP hace que sea el preferido para fines de control interno, por lo que resulta también adecuado para informar a terceros. Este fue precisamente el argumento esgrimido mayoritariamente por las empresas de la Unión Europea que respondieron al IASB en el periodo de consulta del ED 9 *Joint Arrangements* (IASB 2007) previo a la NIIF 11. Así las empresas argumentaron que el método IP constituye una herramienta muy útil para el control, seguimiento y preparación de información contable de uso interno. Por ello su eliminación no implicaría su supresión, pero sí generaría mayores costes por la necesidad de re-elaborar la información para los estados financieros públicos.

Lourenço y Curto (2010) concluyen que la estructura organizacional influye en la decisión sobre el método aplicado a los NC, de forma que los *link* son más propensos a usar IP que los *scale*. Si bien la decisión investigada es análoga a la de este trabajo, el contexto normativo es muy distinto, y ello conlleva diferencias en las actitudes de las empresas y en el diseño de la investigación. Los autores analizan la elección del método aplicado por las empresas británicas cuando utilizaron las NIIF por primera vez. Hasta el año 2004 los partícipes en NC debían contabilizar sus participaciones mediante el método bruto de la puesta en equivalencia [(3)], pero a partir de 2005 pudieron optar entre IP y PE, aunque de forma consistente. Por ello cada matriz deviene en una única observación, que se clasifica como *scale* o *link* en función de que el número de NC sea mayoritariamente de un tipo u otro. A tal efecto consideran las actividades de los partícipes en lugar de la interdependencia entre un partícipe y cada NC como se hace en este trabajo.

Lo anterior nos lleva a formular la siguiente hipótesis en forma alternativa:

H1. Las empresas con mayor interdependencia entre sus actividades y las de la SM utilizan el método IP para contabilizar sus participaciones en SM.

Por otra parte, una vez tomada la decisión de invertir en un NC, a través de la información pública se puede dar visibilidad a los activos específicos, y de ahí la relevancia de

(3) Según este método la información que suministra la PE (participación en el neto patrimonial y en los beneficios) es ampliada en el balance y en el estado de resultados.

la elección del método contable: IP vs. PE. Si bien en las cuentas del partícipe los activos específicos no están reconocidos dada su especificidad y autogeneración, sí pueden ser captados al incorporar la SM mediante el método IP, ya que su actividad será reflejada de manera más completa que a través del método PE.

Aunque no hay trabajos que contemplen de manera explícita la influencia de los activos específicos en esta elección, como hemos indicado los negocios tipo *link* se caracterizan por la existencia de activos específicos, y los resultados de Lourenço y Curto (2010) son consistentes con la siguiente hipótesis alternativa:

H2. Las empresas con mayor especificidad de activos utilizan el método IP para contabilizar sus participaciones en SM.

Motivaciones contractuales

En el marco de la relación de agencia entre los directivos-accionistas y los acreedores la relación entre el endeudamiento y la divulgación de información no es unívoca. Por una parte se puede sostener que las empresas más endeudadas son proclives a presentar más información para facilitar el control por los acreedores y reducir la incertidumbre y con ello los costes del endeudamiento (Watson *et al.*, 2002; Giner *et al.*, 2003; Prencipe, 2004; Chavent *et al.,* 2006; Bravo *et al.*, 2010). En un sentido opuesto puede considerarse que las empresas más endeudadas divulgan menos información para dificultar detectar el incumplimiento de las condiciones establecidas en los contratos de deuda (Meek *et al.*, 1995). Sin embargo la dificultad para conocer los contratos, y valorar la proximidad del incumplimiento, hace difícil una contrastación precisa de esta hipótesis, y ello puede explicar que en algunos trabajos no sea significativa (Chow y Wong-Boren 1987; Wallace *et al.*, 1994; Hossain *et al.*, 1994; Giner 1997).

Esta hipótesis ha sido frecuentemente considerada en los trabajos sobre elección del método contable para las asociadas, PE en lugar de coste (Mazay *et al.*, 1993; Zimmer, 1994; Morris y Gordon, 2006; Bohren y Haug, 2006). En todos ellos, a excepción de Mazay *et al.* (1993), el endeudamiento es un aspecto clave en la decisión. En efecto mediante el método PE se consigue mejorar los ratios de cobertura de interés, así como la relación entre las deudas y los activos. Whittred (1987) analiza la divulgación de información consolidada en Australia y concluye que la existencia de garantías cruzadas entre la matriz y la subsidiaria influye en la decisión. Por su parte Mora y Rees (1996 y 1998) concluyen que el endeudamiento afecta negativamente a la decisión de presentar voluntariamente información consolidada por parte de las matrices españolas, ya que en este caso al agregar las deudas se produce un aumento de dicho ratio.

Whittred y Zimmer (1994) analizan la decisión de las empresas australianas para reflejar su participación en *unincorporated joint ventures* [4] del sector extractivo dedicadas a las actividades de exploración *vs.* producción. Sostienen que las condiciones de los

(4) La diferencia entre la *unincorporated joint venture* y la *joint venture* estriba en que sólo en este segundo caso se crea una empresa conjunta, sea jurídicamente independiente o no. Si bien Whittred y Zimmer (1994) se refieren al primer tipo, entendemos que sus conclusiones son aplicables a cualquier caso.

contratos de deuda que financian los NC dependen de los activos involucrados en el NC (prácticamente inexistentes en la actividad de exploración), así como de la capacidad de endeudamiento y del papel del partícipe en dichos contratos. Así mismo consideran que estos aspectos determinan la elección de IP *vs.* PE, de forma que el partícipe es más proclive a utilizar IP para contabilizar sus participaciones en el NC cuando ha garantizado la deuda, pues le interesa reflejar el activo relacionado con el endeudamiento asumido. Los resultados confirman la hipótesis planteada.

Los trabajos de contenido informativo han proporcionado resultados contradictorios sobre las ventajas del método IP frente al PE. Si bien Kothavala (2003) concluye que el método PE se asocia mejor a las medidas de riesgo, Bauman (2007) evidencia que el IP proporciona información más relevante. En consistencia con Whittred y Zimmer (1994), Stolzfus y Epps (2005) concluyen que sólo si se analiza separadamente a los partícipes que garantizan las deudas de los NC se aprecian las ventajas de la información de IP sobre PE.

La elección contable que nos ocupa afecta a los ratios financieros, en concreto a los de solvencia y endeudamiento. En efecto el método PE permite aumentar el activo (sin alterar al pasivo), mientras que el método IP conlleva un aumento del activo y del pasivo en las cuentas consolidadas. Por ello, al igual que en Lourenzo y Curto (2010), formulamos la siguiente hipótesis alternativa:

H3. Las empresas con menor endeudamiento utilizan el método de IP para contabilizar sus participaciones en SM.

Motivaciones informativas

La mayor parte de trabajos confirman una relación positiva entre la dispersión accionarial y la información (Hossain *et al.*, 1994; Chau y Gray, 2002; Prencipe, 2004; Rodríguez, 2004; Babio y Muiño, 2005; Lim *et al.*, 2007), pero algunos obtienen resultados opuestos (Hannifa y Cooke, 2002; Luo *et al.*, 2006). Por su parte, Raffournier (1995), Giner *et al.* (2003) y Cahan *et al.* (2005) no detectan influencia.

Como apuntan García-Meca y Sánchez (2010), la falta de resultados consistentes puede ser debida a las diversas formas de medir la dispersión accionarial, o su complementario la concentración (porcentajes de tenencia de accionistas externos, porcentajes de tenencia de los principales accionistas, o índice de Herfindahl). En efecto, si los subrogados captan distintos tipos de control, pueden tener distintas relaciones con la política informativa. Pero, además, la concentración accionarial puede no ser suficiente para captar esa relación. Así aun habiendo el mismo grado de concentración, puede haber distintas actitudes ante la presencia o no de accionistas dominantes.

Dos hipótesis contradictorias explican los distintos comportamientos: el control eficiente de los directivos y la alineación de intereses de los accionistas dominantes con los directivos (Jiang, 2009). La primera sostiene que la mayor capacidad y experiencia para controlar al directivo por parte de estos accionistas conlleva mayor transparencia, lo que reduce los costes de agencia y aumenta el valor de la empresa. La segunda argumenta que los accionistas dominantes actúan en interés propio y en perjuicio de los minoritarios lo que sugiere que son propensos a retener información (Makhija y Patton,

2004). En definitiva la estructura accionarial actúa como un mecanismo de gobierno corporativo que influye en la relación accionistas-directivos y con ello en el valor de la empresa (Harris y Raviv, 1988; Schleifer y Vishny, 1997).

En lo que se refiere a la divulgación de información voluntaria, dependiendo de qué hipótesis domine, la empresa se decantará por dar más o menos información. La relación entre la estructura accionarial y la decisión contable IP *vs.* PE no ha sido investigada con anterioridad y dada la existencia de hipótesis en conflicto formulamos la siguiente hipótesis no direccional:

H4. La estructura accionarial del partícipe influye en la elección del método para contabilizar sus participaciones en la SM.

Nuestra última hipótesis, también derivada de las motivaciones informativas se refiere al tamaño. La relación positiva entre tamaño y transparencia ha sido confirmada por numerosos estudios referidos a índices de información realizados en España (García Benau y Monterrey, 1993; Giner, 1997; Archel, 2003; Giner *et a*l., 2003; Rodríguez, 2004; Babio y Muiño, 2005; Gómez Sala *et al.*, 2005; Bravo *et al.*, 2010) y en otros países (Chow y Wong-Boren, 1987; Cooke, 1989 y 1992; Wallace *et al.*, 1994; Jaggi y Low, 2000; Watson *et al.*, 2002; Lim *et al.*, 2007; Webb *et al.*, 2008). Mora y Rees (1996 y 1998) confirman que el tamaño influye de forma positiva en la decisión de preparar información consolidada [(5)]. En ese caso la decisión adquiere una dimensión diferente porque la incorporación de las empresas del grupo no sólo afecta a las magnitudes del balance (y con ello a los ratios financieros), sino que conlleva la determinación de una nueva cifra de resultados. Sin embargo Lourenço y Curto (2010) no detectan que el tamaño influya en la decisión de adoptar IP *vs.* PE.

Los estudios de contenido informativo referidos a la decisión IP *vs.* PE sugieren una relación positiva entre tamaño y método IP [(6)]. Así, Soonawalla (2006) evidencia que la agregación de información conlleva una pérdida de información que, sin embargo, es relevante para el mercado y útil para predecir resultados. Graham *et al.* (2003) también concluyen que la IP tiene mayor poder explicativo del ROE (Return On Equity), y Kothavala (2003) confirma que los datos contables según IP están más asociados con la volatilidad de los precios que los que se obtienen al emplear PE. Por su parte Lourenço et al. (2012) confirman que los inversores perciben los activos y obligaciones de los NC como si fueran de la matriz. Ello sugiere que el método IP es más relevante porque capta mejor lo que el mercado interpreta sobre los negocios conjuntos. Puesto que las empresas de mayor dimensión tienen más preocupación por la transparencia, preferirán procedimientos contables con mayor contenido informativo.

Lo anterior nos lleva a formular la siguiente hipótesis en forma alternativa:

H5. Las empresas de mayor tamaño utilizan el método IP para contabilizar sus participaciones en SM.

(5) Mediante la técnica del meta-análisis Ahmed y Courtis (1999) y García-Meca y Sánchez (2006) proporcionan una visión integral de los trabajos que examinan los factores explicativos de la transparencia. Ambos apoyan los argumentos de tipo informativo, y en particular el efecto tamaño.

(6) Agradecemos a un evaluador anónimo la sugerencia de incorporar esta literatura para justificar la elección contable.

3. ANÁLISIS EMPÍRICO

3.1. Muestra

Las empresas cotizadas españolas no financieras y matrices de grupos empresariales son la población de estudio. El periodo de análisis abarca los años de aplicación de las NFCAC: 1991-2004 [7]. Las empresas admitidas a cotización están obligadas a proporcionar anualmente cuentas individuales y consolidadas a la Comisión Nacional del Mercado de Valores (CNMV); mediante esta información se pueden identificar las empresas que participan en el NC objeto de análisis: la SM. En otras palabras no hay un registro de NC, donde se pueda acudir para conocer la población a estudiar. Es importante tener en cuenta que la existencia de NC no viene determinada por la propiedad compartida, aunque en la mayor parte de los casos sea así, sino que es la gestión compartida la que confiere el carácter de NC a la participación. Como ya se ha expuesto en el apartado 2, las NFCAC exigen que se dé esta situación para poder considerar una sociedad participada como SM.

En la muestra inicial se incluyeron las 156 empresas que en julio de 2005 figuraban en el Sistema de Interconexión Bursátil Español (SIBE), conocido como "mercado continuo". Adicionalmente se incorporaron otras quince empresas que negociaban sus títulos valores en al menos dos bolsas de valores españolas, por su similitud de negociación con el SIBE. Se descartaron diez empresas por no presentar cuentas consolidadas y nueve por no haber publicado cuentas anuales. Así la muestra quedó conformada por 152 empresas (véase la tabla 1).

Tabla 1

Descripción de la muestra de empresas partícipes

Empresas no financieras que son matrices de grupo	
Negociando títulos valores en el SIBE	110
Sin valores admitidos a negociación [1]	28
Excluidas de la negociación [2]	18
– *Empresas registradas en el SIBE*	156
Negociando en dos o más bolsas españolas	15
– *Muestra inicial*	171
Descartadas por presentar sólo cuentas individuales	(10)
Descartadas por no publicar cuentas	(9)
Empresas seleccionadas	152
Descartadas por no tener negocios conjuntos instrumentados como SM	(98)
Descartadas por falta de información	(3)
Empresas partícipes utilizadas en el análisis	51

(1) Empresas que en julio de 2005 contaban con la autorización de la CNMV para negociar sus títulos valores y cumplían con todos sus deberes de información tales como la publicación de sus cuentas anuales individuales y consolidadas

(2) Empresas excluidas de la negociación en julio de 2005, pero que hasta la fecha de su exclusión habían publicado sus cuentas anuales individuales y consolidadas.

(7) Las NFCAC se emitieron mediante el Real Decreto 1815/1991, y fueron de aplicación en 1991; desde 2005 las empresas cotizadas presentan sus cuentas consolidadas de acuerdo con las NIIF.

Las cuentas anuales individuales y consolidadas de estas empresas para el período 1991-1997 se obtuvieron de las «Auditorías de la Sociedades Emisoras» de la CNMV editadas en CDRom, y las del período 1998-2004 de la página web de la CNMV. Dado que algunas empresas iniciaron o discontinuaron la negociación de sus títulos durante el periodo, el número de cuentas anuales disponibles fue 1510, mediante las que se identificaron 54 empresas partícipes en NC instrumentados como SM. Se descartaron tres empresas (Bayer Aktiengesellschaft S.A., Volkswagen S.A. y NH Hoteles S.A.) por carecer en sus memorias anuales consolidadas de suficiente información para el estudio. De esta forma la muestra final quedó integrada por 51 empresas.

De la lectura detallada de las cuentas concluimos que estas 51 empresas participaron en un total de 2913 negocios conjuntos instrumentados como SM. En este cómputo cada SM aparece el número de años que cada partícipe la informa en sus cuentas anuales. Sin embargo puesto que el objetivo de nuestro estudio es la identificación de los factores que inciden en la elección del método en el año en que se toma la decisión, descartamos las observaciones correspondientes a una misma SM posteriores a esa fecha, por tratarse de casos «repetidos» a estos efectos (no se trata de una elección contable realmente). Así el análisis se circunscribe a 988 observaciones, de las que se descartaron 95 por la falta de datos para la contrastación de las hipótesis planteadas. Como se observa en la tabla 2 la muestra final de elecciones contables es de 893 observaciones empresa-año, de las que 818 optaron por el método IP y 75 por PE. Estos datos son coherentes con lo manifestado por las empresas que respondieron al ED 9.

TABLA 2

DESCRIPCIÓN DE LA MUESTRA DE ELECCIONES CONTABLES

Observaciones empresa-año				2.913
Observaciones empresa-año correspondiente al año de elección contable				988
Observaciones descartadas por falta de datos (1)				(95)
Elecciones contables empresa/año				893
Media: 5,35	Mínimo: 1	Máximo: 70	Desviación Std: 8,379	
Integración Proporcional (IP)				818
Puesta en Equivalencia (PE)				75

(1) La falta de datos se refiere a: *a)* tenencia de acciones de la empresa que superen el 10% (cuarenta y tres observaciones); *b)* gastos de I+D (seis observaciones), y *c)* importe del pasivo (cuarenta y seis observaciones).

En esta muestra hay empresas partícipes que aparecen varios años (como *Fomento, Construcciones y Contratas S.A.* que ha realizado elecciones contables en 9 de los 14 años analizados), mientras que hay 13 empresas que sólo aparecen un año. Además como se expone en la tabla 2 la participación en SM es muy variada, entre 1 (en 108 observaciones) y 70 (en observación) en un mismo año; el número medio y por tanto de elecciones contables por año es cinco.

Como ya se ha indicado las empresas españolas pudieron optar por IP o PE para cada una de las SM, por lo que cada decisión contable es una observación, y de hecho se observa que efectivamente las empresas no emplearon de forma consistente el método

contable. Por ejemplo *Repsol* en 1999 participó en 25 SM, utilizó para 1 el método PE y para 24 el método IP.

Las variables independientes se refieren a la empresa partícipe, a excepción de la que capta la interdependencia entre la actividad del partícipe y la SM (que puede ser igual o distinta). Con esta excepción, para todas las elecciones de un partícipe de un mismo año las variables explicativas adoptan los mismos valores. Por ello si el mismo método se aplica a dos SM, tanto si tienen la misma actividad que el partícipe, como si es distinta, todos los valores correspondientes a esas dos observaciones son idénticos. Así Repsol utilizó el método IP para ocho SM con distinta actividad y para dieciseis con la misma actividad (mientras que a otra también con la misma actividad le aplicó PE). Ante esta situación consideramos la posibilidad de reducir las observaciones idénticas a 1 única (lo que hubiera supuesto dejar *Repsol* con tres observaciones en 1999: una de PE y dos de IP una con una SM con la misma actividad y otra con distinta), pero optamos por no hacerlo dado que entendemos que la consistencia en el método es un aspecto importante. No obstante lo dicho, repetimos el análisis con una muestra reducida, tal y como se expone en el análisis de sensibilidad.

3.2. Metodología

Las regresiones *logit* y *probit* son técnicas de análisis multivariante aplicables a variables dependientes dicotómicas. Por ello, son idóneas para discriminar entre grupos de empresas que eligen entre dos procedimientos contables alternativos (Whittred, 1987; Mora y Rees, 1998; Giner y Pardo, 2004; Lourenço y Curto, 2010). La regresión *logit* utiliza una función de distribución logística (no lineal) para transformar las variables independientes, mientras que la regresión *probit* emplea una distribución normal. Dada la mayor flexibilidad en la interpretación de los resultados que ofrece el modelo *logit*, nos decantamos por esta metodología.

El modelo de regresión logística, que se presenta a continuación, permite predecir la probabilidad estimada de que la variable dependiente (METCON) presente uno de los dos valores posibles (1 = IP ó 0 = PE) en función de los diferentes valores que adopte el conjunto de variables independientes que captan las hipótesis expuestas.

$$METCONsm_{ijt} = \propto + \beta_1\, INTERDEPENDENCIA_{it} + \beta_2\, ESPECIFICIDAD\ ACTIVOS_{it} + \beta_3\, ENDEUDAMIENTO_{it} + \beta_4\, ESTRUCTURA\ ACCIONARIAL_{it} + \beta_5\, TAMAÑO_{it} + e_{it} \quad (1)$$

Con la finalidad de captar la influencia de una estructura de propiedad con accionistas dominantes, introducimos una variable indicador que adopta el valor 1 ó 0 según haya o no accionistas que ostenten un control dominante sobre la empresa partícipe. Al igual que Makhija y Patton (2004) multiplicamos esta variable por la original que capta la estructura accionarial, de esta forma se capta el efecto incremental sobre la decisión contable derivada de la existencia de control dominante. Esperamos que su signo sea negativo si domina la hipótesis de alineación de intereses de éstos con los directivos. El modelo ampliado (2) es:

$$METCONsm_{ijt} = \propto + \beta_1\ INTERDEPENDENCIA_{it} + \beta_2\ ESPECIFICIDAD\ ACTIVOS_{it} + \beta_3\ ENDEUDAMIENTO_{it} + \beta_4\ ESTRUCTURA\ ACCIONARIAL_{it} + \beta_5\ ESTRUCTURA\ ACCIONARIAL * ACCIONISTAS\ DOMINANTES_{it} + \beta_6\ TAMAÑO_{it} + e \quad (2)$$

En ambas especificaciones (1) y (2) $METCONsm_{ijt}$ es la probabilidad de que la empresa *i* partícipe en la SM *j* aplique en el año *t* el método IP y las variables independientes referidas al año *t* se definen en la sección siguiente.

3.3. Variables

La variable dependiente indica la elección contable de la empresa partícipe en la SM en el momento de contabilizar su participación. De esta forma la variable METCON, cualitativa y nominal, toma el valor 1 si el partícipe aplica IP y 0 si aplica PE. Seguidamente exponemos las variables explicativas.

En la línea de Mian y Smith (1990), para contemplar la interdependencia entre la actividad del partícipe y la SM definimos la variable indicador ACTNC que toma el valor 1 si ambas sociedades tienen la misma actividad y 0 en caso contrario. A tal efecto consideramos la clasificación sectorial bursátil.

Para contrastar la hipótesis de los activos específicos nos basamos en Oxley (1997) y Gulati y Singh (1998). Estos autores sostienen que las empresas intensivas en I+D prefieren crear un NC frente a otros acuerdos de cooperación por considerar que esta estructura es más eficiente. Por otra parte, Balakrishnan y Fox (1993) y Bah y Dumontier (2001) concluyen que la existencia de I+D conlleva frecuentemente la obtención de activos específicos. Missonier-Piera (2004) utiliza también los I+D como subrogado de los activos específicos que influyen en las elecciones contables que afectan a la cifra de resultados. Así pues definimos la variable indicador ESAC que toma el valor 1 si la empresa partícipe incluye Gastos de I+D en su balance y 0 en caso contrario. La misma variable ha sido empleada como subrogado del riesgo empresarial (Cassar 2009) y de igual forma sugiere una relación positiva entre su valor y el uso del método IP.

Para la hipótesis referida al endeudamiento hemos considerado los subrogados utilizados en la literatura (Mora y Rees, 1996 y 1998; Prencipe, 2004; Bravo *et al.*, 2010). Así, definimos la variable ENDEU que es el cociente entre la deuda financiera y el total del activo. Esta variable es un subrogado de la proximidad de incumplimientos de las restricciones impuestas en los contratos de deuda, dada la imposibilidad de observar en forma directa estos contratos.

Al igual que en Makhija y Patton (2004) y Jiang (2009), para la hipótesis de la estructura accionarial definimos la variable continua HACC como el índice de Herfindahl calculado a través de las participaciones iguales o superiores al 10%. Este índice mide el grado de concentración accionarial mediante el sumatorio de los cuadrados de las participaciones significativas, variando entre 0 y 1, por lo que a diferencia del simple sumatorio de las participaciones distingue entre concentración en uno o varios accionistas. Para su construcción se han considerado las participaciones informadas en las cuentas anuales de las empresas partícipes (de acuerdo con las NFCAC se debe informar sobre los

accionistas que poseen más del 10% de las acciones ordinarias). En aquellos casos en los que no había información en las cuentas, se obtuvo de la página web de la CNMV (Participaciones significativas y autocartera). En los casos de participaciones inferiores al 10% el índice toma el valor 0.

Por último para el tamaño definimos la variable continua LNTAMIN como el logaritmo neperiano del total del activo (Prencipe, 2004; Babio y Muiño, 2005; Lim *et al.*, 2007). Tanto esta variable como la que capta el endeudamiento se ha medido con los datos de las cuentas individuales del partícipe; de esta manera se evita que la decisión investigada, IP *vs.* PE, influya en los datos utilizados como explicativos. Alternativamente se podrían haber empleado las cuentas consolidadas del año anterior a la elección, pero esto supondría un desfase temporal con la decisión que entendemos se toma a fin de año.

4. RESULTADOS

4.1. Analisis Univariante

La tabla 3 presenta un resumen de los estadísticos descriptivos para las variables independientes obtenidos con el panel completo de 893 observaciones; para facilitar la interpretación de los datos se incluye también el total del activo (TAMIN). Observamos que las empresas partícipes en SM muestran una interdependencia moderada, una baja especificidad de activos involucrados en la SM, un bajo endeudamiento, cierta propensión a una estructura accionarial concentrada y son de gran tamaño.

Tabla 3
Estadísticos descriptivos de las variables independientes

	Media	*Mínimo*	*Máximo*	*Mediana*	*Desviación típica*	*c25*	*c75*
ACTNC	0,5778			1,0000	0,4942	0,0000	1,0000
ESAC	0,3964			0,0000	0,4894	0,0000	1,0000
ENDEU	0,1518	0,0001	0,9196	0,0893	0,1520	0,0302	0,2653
HACC	0,1496	0,0000	1,0000	0,0583	0,1754	0,0103	0,2754
LNTAMIN	14,8228	10,4510	17,7805	14,4885	1,6242	13,7650	16,7038
TAMIN	8.403.232	34.580	52.721.650	1.960.148	12.023.858	950.704	17.962.820

ACTNC: interdependencia entre las actividades del partícipe y la sociedad multigrupo (1 = igual, 0 = distinta); *ESAC*: especificidad de los activos (1 = gastos I+D en balance, 0 = no); *ENDEU*: endeudamiento (deuda financiera/activo total); *HACC*: estructura accionarial (índice de Herfindahl de participaciones iguales o superiores al 10%); *LNTAMIN*: tamaño (ln activo total); *TAMIN*: tamaño (activo total), en miles de euros.

Con anterioridad al análisis multivariante se ha llevado a cabo un análisis univariante, que permite identificar si existe un efecto significativo en la relación de cada variable independiente con la dependiente. Para las variables continuas (ENDEU, HACC y LNTAMIN) se ha utilizado el test no paramétrico de rangos U de Mann-Whitney, dado que el test de Kolmogorov-Smirnov confirmó que no se distribuían normalmente. Para las variables indicador (ACTNC y ESAC) empleamos el test de diferencia de proporciones.

Los resultados del test de U-Mann Whittney revelan que las variables explicativas continuas propuestas son significativas y mantienen el sentido esperado; la concentración del accionariado (HACC) es significativa y muestra una influencia positiva. Por su parte el test de diferencia de proporciones no da resultados significativos. Así las empresas de mayor (menor) tamaño, con un accionariado concentrado (disperso) y con un menor (mayor) nivel de endeudamiento aplican la IP (PE) para contabilizar sus participaciones en SM.

TABLA 4
RESULTADOS DEL ANÁLISIS UNIVARIANTE

Panel A: variables continuas

Variables	*Hipótesis*	*Rango promedio*	*Estadístico U*[a]
ENDEU	IP < PE	441,25 < 509,76	25968,00 **
HACC	IP < ó > PE	452,74 > 384,40	25980,00 **
LNTAMIN	IP > PE	456,85 > 339,52	22614,00 ***

Panel B: variables indicador

Variables		*Hipótesis*	*IP*		*PE*		*Total*
			N	*%*	*N*	*%*	
ACTNC	Igual = 1	IP > PE	454_b	87,98%	62_c	12,02	516
	Distinta = 0		364_b	96,55%	13_c	3,45%	377
ESAC	Especificidad = 1	IP > PE	308_b	87,00%	46_c	12,99%	354
	No especificidad = 0		510_b	94,62%	29_c	5,38%	539

ACTNC: interdependencia entre las actividades del partícipe y la sociedad multigrupo (1 = igual, 0 = distinta); *ESAC*: especificidad de los activos (1 = gastos I+D en balance, 0 = no); *ENDEU*: endeudamiento (deuda financiera/activo total); *HACC*: estructura accionarial (índice de Herfindahl de participaciones iguales o superiores al 10%); *LNTAMIN*: tamaño (ln activo total).

a Nivel de significación para el contraste unilateral.

*** Significativo al 0,01.

** Significativo al 0,05.

b Subconjunto de IP categorías cuyas proporciones no difieren significativamente entre sí. Nivel de significación 0,05.

c Subconjunto de PE categorías cuyas proporciones no difieren significativamente entre sí. Nivel de significación 0,05.

A fin de detectar la posible existencia de multicolinealidad, se ha llevado a cabo un análisis de correlación no paramétrica de Kendall. Como muestra la tabla 5 a excepción de las relaciones entre las variables LNTAMIN y ACTNC, hay una cierta correlación entre las variables, siendo las más elevadas la de LNTAMIN y ESAC (0,430) y la de ESAC y ACTNC (0,340), con un nivel de significación del 1%. Sin embargo, en este tipo de estudios de tipo no experimental es inevitable una cierta correlación, por lo que no consideramos necesario excluir ninguna en el análisis mutivariante.

4.2. ANALISIS MULTIVARIANTE

En la tabla 6 se presentan los valores estimados para los coeficientes de las variables explicativas a través de la función propuesta, comparando la relación predicha y la estimada para las especificaciones (1) y (2) del modelo. Los resultados son consistentes en ambos y muestran que todas las variables explicativas son significativas, aunque a distintos niveles, y presentan la relación esperada. Con respecto a la variable estructura accionarial (HACC)

Tabla 5

Coeficientes de correlación entre las variables independientes

Variables	*ACTNC*	*ESAC*	*ENDEU*	*HACC*	*LNTAMIN*
ACTNC	1,000				
ESAC	0,340 ***	1,000			
ENDEU	0,008	-0,169 ***	1,000		
HACC	-0,060 **	-0,155 ***	-0,160 ***	1,000	
LNTAMIN	-0,011	0,250 ***	0,111 ***	0,430 **	1,000

ACTNC: interdependencia entre las actividades del partícipe y la sociedad multigrupo (1 = igual, 0 = distinta); *ESAC*: especificidad de los activos (1 = gastos I+D en balance, 0 = no); *ENDEU*: endeudamiento (deuda financiera/activo total); *HACC*: estructura accionarial (índice de Herfindahl de participaciones iguales o superiores al 10%); *LNTAMIN*: tamaño (ln activo total).

*** Significativo al 0,01 (bilateral).

** Significativo al 0,05 (bilateral).

Tabla 6

Resultados del logit multivariante

$$METCONsm_{ijt} = \propto + \beta_1 ACTNC_{it} + \beta_2 ESAC_{it} + \beta_3 ENDEU_{it} + \beta_4 HACC_{it} + \beta_5 HACC_{it} * DOM + \beta_6 LNTAMIN_{it} + e$$

Variables	*Hº*	*(1)*	*(2)*
ACTNC	(+)	0,751 ** (0,028)	0,736 ** (0,032)
ESAC	(+)	1,555 *** (0,000)	2,061 *** (0,000)
ENDEU	(-)	-2,199 *** (0,007)	-1,839 ** (0,025)
HACC	¿?	3,548 *** (0,001)	7,336 *** (0,000)
*HACC * DOM*	(-)		-5,519 *** (0,000)
LNTAMIN	(+)	0,537 *** (0,000)	0,677 *** (0,000)
R^2_{logit}		0,1396	0,1675
Estadístico de la razón de verosimilitudes [a]		71,884 ***	86,278 ***
% de clasificaciones correctas		91,60%	91,80%
N		893	893

METCON: método contable (1 = IP, 0 = PE); *ACTNC*: interdependencia entre las actividades del partícipe y la sociedad multigrupo (1 = igual, 0 = distinta); *ESAC*: especificidad de los activos (1 = gastos I+D en balance, 0 = no); *ENDEU*: endeudamiento (deuda financiera/activo total); *HACC*: estructura accionarial (índice de Herfindahl de participaciones iguales o superiores al 10%); *HACC * DOM*: estructura accionarial con accionistas dominantes (*HACC*: índice de Herfindahl de participaciones iguales o superiores al 10%. *DOM*, 1 = accionista dominante, 0 = no accionista dominante); *LNTAMIN*: tamaño (ln activo total).

a Se distribuye como una Chi-cuadrado con cinco grados de libertad (número de variables en el modelo).

*** Significativo al 0,01.

** Significativo al 0,05.

* Significativo al 0,10.

los resultados confirman la influencia positiva en la divulgación de información (IP), detectada en el análisis univariante. Por su parte, la variable interacción (HACC * DOM) que se incluye en la especificación (2) capta el efecto incremental de la existencia de accionistas dominantes y resulta significativa y con el signo negativo esperado [8].

La interdependencia de actividades tiene el signo esperado, y es significativa con un nivel de confianza del 5%. Este resultado sugiere que una mayor interdependencia entre el partícipe y la SM influye positivamente en la elección del método IP, tal y como establece la hipótesis *H1*, y es consistente con los resultados de Mian y Smith (1990).

La especificidad de los activos es significativa con un nivel de confianza del 1%. Ello sugiere que las características de los activos involucrados en las SM, concretamente la existencia de I+D en el partícipe, incide positivamente en su decisión de elegir el método IP, como plantea la hipótesis *H2*.

También el nivel de endeudamiento es significativo, con el signo esperado y con un nivel de confianza del 1% y 5% en las especificaciones (1) y (2) respectivamente. Estos resultados permiten confirmar la hipótesis *H3*, que las empresas con mayor endeudamiento son menos proclives a utilizar IP. Estos resultados son consistentes con los de Mora y Rees (1996 y 1998), Morris y Gordon (2006) y Bohren y Haug (2006).

La concentración del accionariado es significativa, y revela una relación positiva con la divulgación de información, con un nivel de confianza del 1%. Así las empresas con una estructura accionarial concentrada son más proclives a utilizar el método IP lo que resulta consistente con la hipótesis del control eficiente. El signo negativo de la variable interacción que capta la existencia de accionistas dominantes, confirma la hipótesis de expropiación. Este resultado sugiere que la estructura accionarial tiene un impacto no lineal en la divulgación, y en concreto en la preferencia de IP vs. PE. La concentración, sin control dominante, actúa en forma eficiente sobre los directivos, y fomenta las prácticas orientadas a mayor transparencia, mientras que el control dominante repercute en forma negativa.

La variable tamaño es significativa con un nivel de confianza del 1%. Tal y como se propone en la hipótesis *H5*, las empresas de mayor tamaño son proclives a divulgar más información por lo que prefieren el método IP. Este resultado es consistente con los de los trabajos sobre divulgación de información y en particular en relación con la presentación voluntaria de información consolidada (Mora y Rees 1996 y 1998). Como se observa en la tabla 6 el R^2_{logit} del modelo es bajo pues presenta unos valores de 0,1396 y 0,1675 en las especificaciones (1) y (2) respectivamente, si bien la incorporación de la variable interacción incrementa la bondad de ajuste. Sin embargo, de acuerdo con lo manifestado por Christie (1990), en este tipo de estudios los R^2 bajos no restan poder explicativo a una teoría, sino que simplemente indican que se encuentra incompleta, siendo relevante la significación estadística de las variables explicativas.

(8) Consideremos dos empresas: la A que tiene dos accionistas que poseen cada uno el 40% del capital y la B que tiene sólo un accionista con el 51% del capital. La medida de concentración accionarial para A es de 0,32 y para B de 0,26, ciertamente la empresa B tiene una estructura de propiedad menos concentrada pero tiene un accionista dominante, aspecto que no es captado por el índice de Herfindahl. A través de la variable interacción (accionista dominante) del modelo ampliado captamos esta circunstancia.

Por otra parte en los modelos de regresión logística también se puede evaluar la bondad de ajuste mediante otras pruebas. La prueba de Hosmer-Lemeshow verifica la hipótesis nula de que entre los valores observados y los pronosticados no existen diferencias, y las tablas de clasificación entre valores observados y valores pronosticados evalúan la sensibilidad y especificidad del modelo (Uriel y Aldás, 2005). Sin embargo los resultados obtenidos continúan sugiriendo una bondad baja, lo que nos llevó a plantear un análisis adicional que se expone en el apartado siguiente. Así la prueba de Hosmer-Lemeshow resultó significativa (0,000), lo que implica que entre los valores observados y pronosticados existen diferencias significativa (se distribuye como una Chi-cuadrado con 8 grados de libertad). Con respecto a las tablas de clasificación, la sensibilidad (relación de positivos pronosticados y positivos observados) arrojó un valor de 99,51% (814/818) y la especificidad (relación entre negativos pronosticados y negativos observados) de 8% (6/75); estos valores también evidencian que la sensibilidad del modelo al momento de discriminar es baja, aun cuando el porcentaje global de clasificación sea del 91,80%.

4.3. Analisis Adicionales

Con la finalidad de confirmar que los resultados no son sensibles a la existencia de observaciones «idénticas», se ha repetido el análisis con una muestra reducida de 627 observaciones, de las que 567 son IP y 60 PE. A tal efecto se han eliminado las elecciones contables de los tres últimos percentiles de la distribución de frecuencias. Esta eliminación equivale a descartar las empresas partícipes que tienen más de quince elecciones idénticas en el año, entendiendo como tales aquéllas en las que el partícipe ha utilizado el mismo método para más de una SM con la misma, o distinta actividad [(9)]. Los resultados son consistentes con los anteriores, si bien la variable ENDEU deja de ser significativa, y los modelos siguen teniendo una bondad de ajuste baja.

Respecto a la baja bondad de ajuste, consideramos varias explicaciones: *a)* la existencia de observaciones atípicas, y *b)* el desequilibrio en la cantidad de observaciones empresa-año para cada tipo de elección contable analizada. Estas consideraciones nos llevaron a plantear varios análisis complementarios sobre el modelo ampliado.

En primer lugar se identificaron los valores atípicos utilizando la técnica multivariante a través de los residuos estandarizados del modelo, y considerando observaciones atípicas aquellos residuos con valores mayores a 2,5. Así se eliminaron dieciseis observaciones empresa-año de forma que quedaron 567 IP y 44 PE, y volvimos a correr el modelo *logit*. Resultados no tabulados evidencian que todas las variables son significativas y tienen el signo esperado. La prueba de Hosmer-Lemeshow arrojó un valor de Chi-cuadrado bajo, lo cual se asocia a valores de significación estadística elevados, cuya interpretación evidencia que el modelo tiene una bondad de ajuste adecuada, lo cual también es

(9) En concreto se eliminan las observaciones de las siguientes cinco empresas partícipes/año: *Sociedad Financiera y Minera S.A.*/1991, 70 elecciones (de las que 61 corresponden a SM con la misma actividad que el partícipe y se registran por IP); *Repsol S.A.*/1999, 25 elecciones (de las que para 16 SM con la misma actividad se emplea IP), Repsol/2002, 54 elecciones (de las que para 26 con igual actividad se emplea IP y para 24 con distinta se usa PE) y Repsol/2004, 34 elecciones (de las que para 23 con igual actividad se usa IP y para 11 con distinta se emplea PE); *ACS S.A.*/2003, 34 elecciones (de las que para 22 con igual actividad se utiliza IP y para 12 con distinta se emplea PE); *Telefónica S.A.*/2003, 28 elecciones (de las que a 26 con igual actividad se usa IP) y *Soc. Gral. Aguas de Barcelona S.A.*/2004, 21 elecciones (todas ellas se registran por IP y tienen distinta actividad).

confirmado por el R^2_{logit} de 0,4204. Por su parte, resultados no tabulados nos permiten afirmar que la capacidad para discriminar del modelo tiene una sensibilidad de 98,23%, una especificidad de 34,09% y un porcentaje global de clasificación del 93,60%.

A los efectos de evaluar si los resultados obtenidos están influidos por el marcado desequilibrio de las observaciones año-empresa luego de efectuar las eliminaciones indicadas, procedimos a extraer tres muestras aleatorias de las observaciones correspondientes a las 567 elecciones IP. El criterio utilizado para extraer estas muestras fue que estuviesen integradas por aproximadamente el 10% del total de observaciones empresa-año para las elecciones de IP. En cuanto a las observaciones de elecciones PE se mantuvieron las cuarenta y cuatro observaciones en las tres submuestras. De esta forma construimos tres submuestras:

– *Submuestra A:* 106 observaciones empresa-año (62 observaciones IP-44 observaciones PE),
– *Submuestra B:* 107 observaciones empresa-año (63 observaciones IP-44 observaciones PE), y
– *Submuestra C:* 108 observaciones empresa-año (64 observaciones IP-44 observaciones PE).

En los resultados no tabulados, obtenidos al correr nuevamente el modelo con cada una de las submuestras, todas las variables explicativas mantuvieron su significatividad y signo. El resultado de la prueba de Hosmer-Lemeshow arroja para las tres submuestras valores de Chi-cuadrado bajos asociados a valores de significación estadística elevados, cuya interpretación evidencia que el modelo tiene una bondad de ajuste adecuada. Por su parte la capacidad para discriminar del modelo mejora en todas las submuestras, de forma que la sensibilidad y la especificidad adquieren valores superiores al 80%, manteniendo un porcentaje global de clasificación elevado (superior al 85%).

En definitiva estos análisis complementarios confirman que todas las variables contempladas en el trabajo explican la elección contable del método IP *vs.* PE y son consistentes con las hipótesis planteadas.

5. CONCLUSIONES

Este trabajo analiza los factores que inciden en la elección del método para la contabilización de las participaciones en SM por parte de las empresas españolas durante el periodo de vigencia de las NFCAC: 1991 a 2004. Estas normas permitían total discrecionalidad para elegir IP o PE, y no requerían consistencia en la aplicación del método. Se trata de un escenario idóneo para la analizar la decisión contable. Hemos partido de una muestra de 152 empresas admitidas a cotización de las que 51 participaron en 2913 negocios conjuntos. Nuestro análisis se ha limitado al momento en el que se tomó la decisión contable. Tras diversas eliminaciones hemos contado con un panel completo de 893 observaciones, de las que 818 optaron por el método IP y 75 por el PE.

Los resultados nos permiten concluir que los factores interdependencia de las actividades, especificidad de los activos, endeudamiento, concentración del accionariado y ta-

maño, influyen en la elección del método contable para contabilizar las participaciones en SM y se corresponden con las cinco hipótesis planteadas. Así, tanto el análisis inicial como los adicionales nos permiten afirmar que los determinantes relacionados con los factores estratégicos: interdependencia entre las actividades del partícipe y la SM y especificidad de los activos tienen una incidencia positiva en la elección del método IP sobre el PE para contabilizar estas participaciones, por lo que contribuyen a aumentar la información disponible. Así mismo los relacionados con la demanda externa de información: concentración accionarial y tamaño, propician una mayor transparencia informativa. Sin embargo, el endeudamiento tiene una incidencia contraria en la decisión. En relación con la estructura accionarial tenemos que matizar que la relación es no lineal, ya que la existencia de accionistas dominantes modera la influencia de la variable; así se confirma la hipótesis del control eficiente por parte de accionistas con participaciones significativas, así como la de expropiación ante la presencia de accionistas dominantes.

En definitiva estos resultados sugieren que la elección contable del método IP *vs.* PE se justifica por aspectos estratégicos, contractuales y externos referidos al partícipe y al negocio conjunto. Si bien no pretendemos enjuiciar la decisión tomada por el IASB de eliminar el método IP, lo cierto es que parece que la consistencia con el marco conceptual ha primado sobre cualquier otra razón. No tenemos constancia de que algún trabajo previo haya abordado esta problemática en un escenario como el español caracterizado por una gran discrecionalidad, que sin embargo resulta muy relevante de cara a entender las motivaciones de la elección contable en un área tan importante como es la divulgación de información a través de las cuentas anuales.

Como es habitual las conclusiones están sujetas a limitaciones. Hubiera sido deseable haber dispuesto de las cuentas individuales de las SM para evaluar el impacto de la aplicación de los métodos de contabilización mediante la reformulación de las cuentas consolidadas. Ello hubiera permitido medir las magnitudes derivadas de aplicar el método de contabilización y conocer cómo hubiera afectado a las cuentas consolidadas. Así mismo hubiera sido deseable disponer de información más detallada sobre la estructura de propiedad de los partícipes a fin de matizar la influencia de los distintos mecanismos de gobierno corporativo. No obstante entendemos que estas limitaciones no restan validez al trabajo, pues constituyen un punto de partida para continuar el análisis de la discrecionalidad directiva en los métodos de contabilización de participaciones en empresas que integran el perímetro de consolidación de la matriz.

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Discussion

on

Bias, Accuracy and Explainability of the Ohlson (1995) Valuation Model vs. the Traditional Dividend, Free Cash Flow and Abnormal Earnings Models: Evidence from Spanish Firms

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1. INTRODUCTION

From a theoretical point of view, Abnormal Earnings models and Cash Flow models are considered equivalent, however, empirical applications can generate different values (Penman, 1998). Apart from some debate about the results generated by the models (Lundholm and O'Keefe, 2001 *vs.* Penman 2001), the origin of the differences between models can be identified and hence the assumptions can be made coherent in order to reconcile the resulting values (Courteau *et al.*, 2001; Fernández, 2002; Velez-Pareja and Tahm, 2003; Hess *et al.*, 2009; among others). The main difficulty lies in the projection of future flows and other variables used as inputs of the models. Given the uncertainty affecting the firms and the considerable bias that deviations in predictions about flows and these other variables —such as the discount rate— can transfer to the resulting values, a better performance of those models in which a lower proportion of the final value depends on the subjective estimations of the analysts would be expected.

Certainly Iñiguez and Reverte's (2011) paper extends previous evidence in this line and provides useful insights in the way that accrual accounting contributes to the estimation of future cash flows. Still, a balanced view of its contribution needs to consider the validity of the assumptions attendant to their approaches. In my discussion of their paper I focus on two questions of interest in the line of research that examines different valuation models in a «horse race». The first one concerns the role of the functioning of the market when the hypotheses to be tested are established. Different assumptions derive if the efficient market hypothesis is implied or not in those studies that investigate the ability of valuation models to obtain reasonable estimates of market values. The second consideration refers

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Recibido xx-xx-xx · Aceptado xx-xx-xx · · ISSN: 0210-2412

to the discount rates used in the models, as costs of capital or expected rates of return used as discount rates in valuation models can cause a considerable bias in the result of the valuation process.

2. THE ROLE OF THE MARKET FUNCTIONING: THE EFFICIENT MARKET HYPOTHESIS

According to the methodology used by the authors, which is similar to the one used by previous related studies, one model is better if it has:

(1) Lower biases. Bias is defined as: $Bias_t = \frac{(P_t - V_t)}{P_t}$

(2) Better accuracy. Definition: $Accuracy_t = \frac{|P_t - V_t|}{P_t}$

(3) Better explanatory power than other models; where Explanatoy Power$_t$ = $R^2 \rightarrow P_{it} = \beta V_{it} + e_{it}$

(4) V/P ratios and the corresponding portfolios that allow the identification of overvalued and undervalued equity. This would permit earning future abnormal stock returns.

But the natural question arising from this framework concerns the initial assumption of the Efficient Market Hypothesis (EMH). This hypothesis assumes that prices follow a «random walk». The logic behind the random walk idea is that if the flow of information is immediately reflected in stock prices, price changes will only reflect changes in news and they will be independent of price changes in previous periods. But news is by definition unpredictable, and, thus, resulting price changes must be unpredictable and random. As a result, prices will fully reflect all known information.

In the first three types of tests, Market Efficiency is implied because contemporaneous market prices are the benchmark of value estimates. The case for the equality of price and value is based on an assumption of Market Efficiency and insignificant arbitrage costs. Although «true values» (V) are not observable, the standard view of EMH is that prices are formed based on expectations about the future firm performance, discounted with the appropriate rate of return. When new information about the future performance of the associate risks comes, prices change. If news arrives to the market in a random way, prices follow a random walk, hence, in a particular moment a firm's stock price (P) is the best available empirical proxy for V.

Notice that EMH assumes that the stock price is equivalent to the present value of expected future dividends/cash flows/abnormal earnings… Therefore, if this is the case, then V ≡ P. Under this assumption, all changes in prices imply revisions in the market expectations about future D/FCF/AE… or discount rates. Bias, accuracy and explanatory power represent differences in the inputs of the models, or differences in the results of the models. Controlling by the inputs, it is possible to isolate differences in the results

generated by the models. In theory, we can get to a reasonable identification of a «horse race» winner.

In this setting, the fourth test (V/P) is more problematic. Thirty years ago, the intellectual dominance of the Efficient Market Hypothesis was questioned. Many financial economists and statisticians began to believe that stock prices were at least partially predictable. A new wave of economists emphasized psychological and behavioral elements of stock-price determination, and they came to believe that future stock prices were somewhat predictable on the basis of past stock price patterns as well as certain «fundamental» valuation metrics. At this point, part of Market-Based Accounting Research, mainly focused on Fundamental Analysis, found some anomalies (an excellent review can be found in Richardson *et al.*, 2010). Many of these researchers even made the far more controversial claim that these predictable patterns enabled investors to earn excess risk adjusted rates of return.

The results of V/P tests open the door to «abnormal stock returns» with important implications on the results and conclusions of the study. If V/P ratios are used to identify overvalued and undervalued equity, then it is being admitted that V and P are not equal. With portfolios based on V/P ratios, the authors find some apparent inefficiencies. But if these results are not spurious, what do the first three tests mean? Given this discussion, I think that when both types of tests are performed in the same work, the authors should state the assumption they adopt as standpoint and then they should have to specify in what conditions the other type of tests imply a contribution to the study. In this case, given that Ohlson (1995)-type models are the best in terms of the first three attributes (Market Efficiency), what are the implications of the same models performing better in terms of the fourth attribute (Market Inefficiency)?

A potential way of reconciling the fourth attribute with the EMH comes from the use of CAPM without additional controls to compute abnormal stock returns, which leaves these abnormal returns open to alternative explanations. Fama (1970) argues that EMH tests suffer from a problem of joint hypotheses. This issue emerges because market efficiency must be tested jointly with a model for expected (normal) returns. The problem is that all models for expected returns are incomplete descriptions of the systematic patterns in average returns during any sample period. As a result, in terms of Fama (1998), tests of efficiency are always contaminated by a «bad-model problem» that involves two consequences:

First, any asset pricing model is just a model and, consequently, it does not completely describe expected returns (e.g. the CAPM does not describe expected returns on small stocks). Therefore, risk adjustments (for example, with the CAPM) may produce spurious abnormal stock returns. Iñiguez and Reverte apply the CAPM to compute abnormal stock returns. However, the shortcomings of the CAPM are well known. Fama and French (1993) show that their three-factor model does not even provide a full explanation of average returns on portfolios formed on size and Book-to-Market, the dimensions of average returns that the model's risk factors are designed to capture. Although there are attempts to improve the models (i.e. Carhart, 1997), the truth is that we are still unable

to understand the true risks behind discount rates in valuation models. The question is: would abnormal returns' scores be just normal returns if real risk could be measured?

Second, even if there was a «true model» to obtain an accurate measure of risk, any sample period would produce deviations from the model's predictions of returns, that is, there would be sample-specific patterns in average returns due to chance. Thus, a spurious anomaly can arise through the random elements of the returns.

Even if we are able to solve risk considerations, differences between values and prices still remain problematic. To understand this point, we can think about the difference between «estimated values» (the output of a valuation model) and market prices in the following terms:

$$VE - P = VE - P + V - V = (V - P) + (VE - V)$$

Where,

VE = estimated value.

P = market price.

V = "True" intrinsic value (unobservable).

This expression states that the difference between a valuation estimate and the prevailing market price is, by definition, equal to the sum of two components. The first component *(V – P)* is the true mispricing, that is, the difference between the true but unobservable intrinsic value *V* and the observed market price *P* (this difference would contribute to the potential abnormal stock return as it implies inefficiency). The second component *(VE – V)* is the difference between the valuation estimate and the true but unobservable intrinsic value. This error in the estimate of the intrinsic value is independent of the EMH. It is also called «Model Error» and «noise» in a broad sense (Black, 1986).

From my point of view, the literature should try to understand both components of errors, and, as I previously indicated, assume one position in EMH and try to understand other attributes [(1)].

3. THE EFFECT OF THE DISCOUNT RATES

Discount rates should reflect the risks associated to the flows being discounted (Fernandez, 2005). When valuations are based on Equity Cash Flows, discount rates should be the required return to equity (cost of equity); when they are based on Free Cash Flows, discount rates should be the Weighted Average Cost of Capital (WACC); and when they are based on Capital Cash Flows, discount rates should be WACC before taxes. Within this framework posed by the standard research and the financial textbooks, when the authors propose a different measure, it would be required further considerations on their adequacy. This

(1) For example, Frankel and Lee (1998) build a proxy of «analyst optimism» (OP):

$$OP = (Vf - Vh) / |Vh|$$

where *OP* measures the extent to which equity values based on analyst forecasts (*Vf*) deviate from similar valuations based on historical earnings (*Vh*).

is the case in the study of Iñiguez and Reverte when they use WACC to discount the cash flows from operations (CF).

A second point concerns the maturity of the assets taken as reference of the risk free rate. In any case, the cost of equity can be split into two parts: the opportunity cost (risk free rate) and the risk premium associated to the firm. Taking apart risk premiums, to compute the risk free rate standard textbooks advocate the use of long-term government bond yields when cash flows or dividends are discounted. When valuing a firm, ideally, each cash flow should be discounted using a government bond with similar maturity, as a reference of the opportunity cost. This is quite similar to the valuation of fixed income securities: each coupon (flow) should be discounted by using the interest rate of similar maturity [(2)] assets. Thus, fixed income valuation applies the «term structure» of interest rates (yield curve) plus a risk consideration. The shape of the yield curve reflects the market's future expectation for interest rates and the conditions of the economy. Usually, longer term interest rates are higher than shorter term interest rates. This is called a «normal yield curve» and it is thought to reflect the higher «inflation-risk premium» that investors demand for longer term bonds.

With stock valuation in mind, the flow measure (cash flow, dividend, abnormal earnings, …) expected to be generated 3 years ahead should be discounted by a cost of capital derived from a 3-year zero coupon government bond, and similarly with all flows. However, as in stock valuation an infinite stream of flows is assumed, it is necessary to find a proxy for the term structure of long term flows. In practice, the most common proxy is the 10-year government bond (in some countries longer-dated bonds such as the 30-year Treasury or 50-year Treasury exist, but their illiquidity can cause inaccurate prices and yield premiums).

This is the reason why textbooks recommend the use of the 10-year government bond as the risk free rate, no matter if we are discounting cash flows, dividends or abnormal earnings, because cost of equity for a long period is required (e.g. financial textbooks: Koller *et al.*, 2005; Fernandez, 2005, Damodaran, 2006; and accounting textbooks: Palepu *et al.*, 2000; Lundholm and Sloan, 2007). As Koller *et al.* (2005) state: «If you are valuing a company or long-term project, do not use a short term Treasury bill to determine the risk-free rate (…) Thus, the short-term bond rate misestimates the opportunity cost of investment for longer-term projects». In the accounting literature there is little consensus on how this discount rate should be determined but more than one year risk free rates are predominant, as we can see in table 1.

(2) That is, year 2 coupons should be discounted with government zero-coupon interest rates from 0 to 2 and a premium risk; year 3 coupons with government zero-coupon interest rates from 0 to 3 and a premium risk, and so on.

TABLE 1
RISK FREE RATES USED IN PRIOR LITERATURE

PAPER	*AE/OH MODELS?*	*DISCOUNT RATE COMPUTATION*
Kaplan and Ruback (1995) JF	NO	**Risk-Free rate:** long-term (approximately 20 years to maturity) treasury bond yield
Penman and Sougiannis (1998) CAR	YES	**Risk-Free rate:** three-year T-Bond rate.
Dechow, Hutton and Sloan (1999) JAE	YES	Apply a 12% fixed as equity cost of capital without risk free rates considerations. [*notice that if we assume CAPM with beta=1 and a risk premium of 5%, the implied risk free rate should be 7%, closer to long-term than to short term interest rates*]
Frankel and Lee (1998) JAE	YES	Apply different proxies to compute cost of equity: a constant discount rate (11%, 12%, 13%), and two industry-based discount rates.
Lee, Myers and Swaminathan (1999) JF	YES	**Risk-Free rate:** two measures, short-term and a long-term risk-free rate.
Francis, Olsson, Oswald (2000) JAR	YES	**Risk-Free rate:** intermediate-term treasury bond yield minus the historical premium on Treasury bonds over Treasury bills.
Courteu *et al.* (2001) CAR	YES	**Risk-Free rate:** five-year treasury constant maturity rates at the beginning of the forecast month.
Baginski and Wahlen (2003) AR	YES	**Risk-Free rate:** ten-year government bonds
Hess, Homburg, Lorenz and Sievers (2009) WP	YES	**Risk-Free rate:** annualized one-year treasury bill rate [and then adding Fama and French's (1997) industry-specific risk premiums to compute cost of capital]
Jorgensen, Lee and Yoo (2011) JBFA	YES	**Risk-Free rate:** ten-year T-B rate.

In this sense, though Iñiguez and Reverte use a short term asset as reference of risk free rate, they perform a sensitivity analysis of their results by controlling by the 10-year government bond rate. The inclusion of these empirical results and a brief interpretation of the differences would have been an interesting additional contribution of the study.

4. CONCLUSIONS

From my point of view, one position should be assumed regarding the Efficient Market Hypothesis because it determines the tests that could be used to assess what valuation model is better. While efficient markets let us compare the methods in terms of bias, accuracy and explanatory power, inefficient markets give the investor the opportunity to earn future abnormal stock returns and hence, let us compare the methods in terms of a

better identification of overvalued or undervalued stocks. Though it is important to make clear what does the term "efficiency" means as financial markets do not allow investors to earn above-average returns without accepting above-average risks. The problem is that financial economists and accountants are unable to provide a clear measure of risk and this is the reason why I believe the "predictable patterns" documented in the literature should be taken cautiously. Apart from risk considerations, differences between values and prices still remain problematic because models use expected variables as inputs, and that is the reason why the best performers of those "horse races" should be taken as winners with some reserves.

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29TH EAA DOCTORAL COLLOQUIUM

Saclay, France

June 2-5, 2013

The **29th EAA Doctoral Colloquium** in Accounting will be held in Saclay (20 km near to Paris) on 2-5 May 2013. It will be co-chaired by Prof. Will Rees (University of Edimburg Business School) and Prof. Keith Robson (Cardiff University Business School).

For the 29th consecutive year a Colloquium for Doctoral Students in Accounting will be organised in conjunction with the Annual Congress of the European Accounting Association. The 2013 Colloquium will take place on 2-5 May immediately before the EAA Annual Congress.

The event will start on the evening of Thursday 2nd May, and will finish on Sunday 5th May at lunchtime. All participating students are required to attend the EAA Congress that will commence on Monday 6th May, 2013.

The aim of the Colloquium is to provide an opportunity for European doctoral students in accounting to present and discuss their research with a distinguished international faculty. Overviews of the current state of the accounting research will also be included in the programme of the Colloquium, as will social events which will provide an opportunity for students to interact informally both with each other and the faculty.

The core faculty proposed for the Colloquium will be composed of leading researchers in the field.

Students selected to participate in the Colloquium will be offered hotel accommodation for the duration of the Colloquium (Thursday, Friday and Saturday evenings). Moreover, they will not have to pay the registration fee for the Congress of the European Accounting Association that will be held immediately after the Colloquium on 6-8 May, 2013 (courtesy of the Congress organisers). Participants are expected to meet their own travel costs and accommodation expenses for the duration of the Congress (Sunday through Wednesday).

The deadline for applications was on 15 November 2011. More information would be obtained at the Internet address: [**http://www.eiasm.org/frontoffice/event_announcement.asp?event_id=932**].

36TH ANNUAL CONGRESS OF THE EUROPEAN ACCOUNTING ASSOCIATION (EAA)

Paris, France

May 6-8, 2013

Call for papers and registration

Improving the review process. With the aim to improve the academic profile of the EAA annual congresses, the SSC has been implementing new changes during the last few years. These range from the requirement of full papers only to the introduction of discussants for papers of particular interest. The review process has also been improved. Not only has the SC gradually been increased up to 120 members, including the SSC members, but the scoring methodology has also been refined and included on this website (see below). Moreover, the submission categories have been gradually revised to obtain a clearer picture of the topics and research methods. In our view this will not only improve the review process but also the organisation of the sessions.

Submission categories. In order to increase the dialogue amongst various research perspectives, and to avoid the creation of dogmatic paradigms, the SSC has introduced a new submission procedure that captures both the topic and method of a submitted paper. In this way, sessions could be organised according to topics but each author/paper will carry a 'key' identifying the research method/perspective adopted. This has implied that some categories (e.g. Analytical/Modelling, History, Interdisciplinary/Critical Perspective, Market based) are now considered methodological rather than topical categories. This will facilitate the work of the SSC in preparing sessions and will make it possible to combine in a session papers in different

ways (e.g. keeping homogeneity of methods or mixing them as they deal with the same topic). The result will hopefully be interesting as comparison of approaches is now possible.

Consequently authors are invited to submit papers to any of the categories indicated below:

A) Subject/Topic of the paper submitted:

AU = Auditing
Submissions in the area of auditing and assurance.

ED = Accounting Education
Submissions dealing with any educational aspects of accounting, for example related to professional accountants, students, and pupils, but also institutions of education.

FA = Financial Analysis
Submissions in the area of financial accounting which focus on the users; it uses a set of methods to extract information from financial statements and other sources information and relate it to value of equity and debt investment and to interests of other stakeholders.

FR = Financial Reporting
Submission in the area of financial accounting which focus on the preparers; it analyses the choices and methods concerning the preparation of financial statements, taking into account firm characteristics, accounting standards, as well as institutions.

GV = Accounting and Governance
Submissions which relate to the interface between corporate governance and accounting.

IS = Accounting and Information Systems
Submissions in the area of the interface between accounting, information technology and systems.

MA = Management Accounting
Submissions in the area of management accounting and control systems.

PS = Public Sector Accounting
Submissions on accounting in the public and voluntary sectors.

SE = Social and Environmental Accounting
Submissions dealing with all aspects of social and environmental accounting.

TX = Taxation
Submissions on the subject of taxation.

B) Methodology/Perspective of the paper submitted:

AM = Analytical/Modelling
Submissions which discuss the definitions of and relationships among concepts; economic modelling is often used.

CF = Case/Field Study
Submissions which utilise the case study method or conduct field study research through various methodologies (e.g. ethnographies).

EA = Empirical Archival
Submissions which involve the testing of a statistical hypothesis to answer the research question (s); a data base is normally used.

EX = Experimental
Submissions which utilise an experimental design to address the research question(s).

HI = History
Submissions which adopt an historical perspective, and investigate historical issues of accounting thought and practices.

IC = Interdisciplinary/Critical
Submissions that draw on more than one discipline, ideally exploring their interrelations, or that draw on any of the various strands of critical theory.

MB = Market Based
Submissions which examine the relation between financial statement and other information and capital markets, including equity and debt markets.

SU = Survey
Submissions which utilise a survey methodology to address the research question(s).

Types of sessions. Regarding the 2013 conference, there will be three types of sessions:

1. **Parallel Session with Discussant** (PSD), where selected relevant papers will be individually discussed by experts in the area (2 papers in each session);
2. **Parallel Session** (PS), that will include 3 papers in a normal session; and,
3. **Research Forum Session** (RF), where 5 less-developed papers will be briefly presented in each session.

The decision to be included in each of these sessions will be made by the SSC taking into account the scores obtained in the review process. If your paper is accepted for a PSD session, you are expected to be a discussant for another paper.

Submission rules. Authors who want to submit a paper must be **EAA members** in the year of the congress for which they submit. If you are not a member, you will be asked to subscribe for membership 2013 before being allowed to submit.

As a consolidated EAA policy, each individual is limited to one personal appearance on the programme as a presenting author. This policy precludes acceptance of papers for more than one presentation. In other words, **an author can *submit* and *present* only one paper**. However a presenter can always be a non-presenting co-author on additional papers.

Authors are invited to submit full papers. The deadline for the submission of papers is **1 December 2012, 23:59 GMT.**

A full paper is a complete scholarly research report that could reasonably be submitted for publication in a public working paper data base such as SSRN.

Papers will be subject to a **double-blind review process by the Scientific Committee**. So please do NOT include neither a cover page with your submission, nor any type of information that can identify you (*no name, no address, no e-mail address, no acknowledgments or thanks*). Information typically provided on a cover page should only be entered on the on-line submission form.

Papers can only be submitted **electronically** via this website (please see the page "submission" and follow the instructions on the on-line submission pages). Abstracts will be included in the congress book, so they should not exceed 1.500 characters.

Papers received by postal mail, fax or in writing will not be considered.

Papers should be submitted in **English**.

Confirmation of acceptance or rejection by the SSC will be given after 10 February 2013 and mailed to the corresponding e-mail address of the presenting author, together with instructions for PSD, PS or RF.

The presenters of an accepted paper must **register** as a participant for the congress before 28 February 2013.

Please take into account that once a paper is included in the programme, the author should present it the conference or officially notify the organizers of its withdrawal.

By submitting, the authors accept the release of their paper online.

Review instructions. To 'anchor' the grading of the papers to be presented at the congress, the following assumption will be made: be ready for submission to a journal like European Accounting Review (EAR). If so they will score a 4 in the scoring system outlined below. As the 4 is the reference level we now give more information on what 4 would represent for papers submitted, but first keep in mind the definition of full papers provided above.

To achieve a **4**, a full paper defined submitted should:

a) present a coherent argument;
b) address a topic of research interest and importance;
c) display awareness of previous work in the area;
d) outline a valid research approach;
e) include evidence and/or arguments which, although possibly incomplete, appear reliable, and
f) indicate awareness of the work which may still be required.

Based on the 'anchor', the scoring system is:

6 → The paper has very good chances in the review process of a good accounting journal (e.g. EAR).
5 → The paper has good chances in the review process of a good accounting journal (e.g. EAR).
4 → The paper could reasonably be submitted to a journal like EAR.
3 → Not yet ready for submission.
2 → Represents initial work on a potentially viable project, but is not likely to be ready for submission for some time.
1 → The submitted work does not, as yet, provide evidence of a viable research project.

The reviewers' comments, when available, will be systematically released to the authors. However, comments from the reviewers will not be compulsory and authors should not expect the same type of comments made when submitting to a journal.

More information about the Congress (venue, registration, other information) could be obtained visiting the official web at:[**http://www.eaa2013.org/r/home**].

III INTERNATIONAL CONFERENCE ON LUCA PACIOLI IN ACCOUNTING HISTORY

Istanbul, Turkey

June 19-22, 2013

Event organized jointly with *the III Balkans and Middle East Countries on Accounting and Accounting History*, and sponsored in common by the AECA and the Association of Accounting and Financial History Researchers. The Co-Convenors of the event are Prof. Oktay Güvemli and Prof. Esteban Hernández Esteve.

More information about the call for papers and registration at the Web of AECA, in the Internet address: [**http://www.aeca.es/temporales2012/iii-iclpah.pdf**].

40TH ANNUAL CONFERENCE EUROPEAN FINANCE ASSOCIATION (EFA)

Cambrige, UK

28-31 August 2013

The EFA is now recognised as one of the world's leading conferences on Finance, larger than the American Finance Association and more ambitious than the Western Finance Association meetings. In 2013, the 40th Annual Conference will be held at Cambridge Judge Business School on 28-31 August. More information on papers submission, registration is available at [**http://www.efa2013.org/**].

In connection with the EFA 2013 Annual Meeting, a one-day EFA Doctoral Tutorial will be organised on Wednesday 28 August 2013, by co-chairs Loriana Pelizzon (Universita Ca'Foscari, Venice), and Frans de Roon (Tilburg University), with the generous support of the NASDAQ-OMX Education Foundation, the Chicago Quantitative Alliance (CQA), and the European Institute for Advanced Studies in Management (EIASM). The complete information is at [**http://www.eiasm.org/frontoffice/event_announcement.asp?event_id=899**].

REVISTA ESPAÑOLA DE FINANCIACIÓN Y CONTABILIDAD

LÍNEA EDITORIAL Y NORMAS PARA LA REMISIÓN DE TRABAJOS

LÍNEA EDITORIAL

La Revista Española de Financiación y Contabilidad (REFC) es una publicación trimestral fundada en 1972 con el objetivo de apoyar el desarrollo científico de dichas materias, a través de la publicación en sus páginas de trabajos e investigaciones de calidad. La *REFC* considera para su divulgación análisis teóricos o empíricos relacionados con mercados financieros e instituciones, microestructura de mercado, gobierno corporativo, contabilidad interna y de gestión y un amplio espectro de temas relacionados con las finanzas y la información financiera, incluyendo la auditoría y la contabilidad pública. Ha sido reconocida como una de las publicaciones periódicas de investigación contable y finanzas de mayor prestigio en España. Está editada por **AECA** y los socios disfrutan de un descuento del **50% sobre la tarifa de suscripción**.

La Revista admite originales con contribuciones tanto teóricas como empíricas, preferentemente investigaciones teóricas que aborden temas novedosos con implicaciones contrastables, así como trabajos empíricos bien motivados desde un punto de vista teórico. La *REFC* no admite trabajos con matemática abstracta ni originales sin una motivación teórica adecuada. Los *editores* darán preferencia a aquellos trabajos que emplean métodos empíricos econométricos u otros métodos de investigación empírica como puede ser el método del caso. si este resulta adecuado. No se admiten revisiones de la literatura sin una contribución clara ni artículos de mera opinión.

Todos los manuscritos que cumplan las condiciones mencionadas serán revisados anónimamente por dos evaluadores, además de los editores.

La *REFC* organiza periódicamente una jornada de investigación para la que el consejo editorial selecciona una serie de artículos que están en proceso de revisión para su publicación en la *REFC* y que serán presentados públicamente por los autores y discutidos por contraponentes con el fin de incrementar la calidad de los trabajos publicados en la revista. Estos artículos seleccionados serán potencialmente publicables en la Revista con una mención especial.

La Revista da la bienvenida a cualquier contribución relacionada con réplicas o contraponencias sobre artículos publicados o aceptados, que podrán publicarse, bajo la consideración de los editores, incluyendo eventualmente una contestación de los autores del artículo objeto de comentario.

Además de los *artículos doctrinales* la Revista puede aceptar *contribuciones* especiales, con el nombre de notas técnicas, relacionadas con aspectos técnicos o institucionales acerca de mercados financieros, organismos reguladores, normas contables u otros aspectos puntuales que puedan ser de interés para académicos, profesionales o instituciones. La Revista tiene además otras secciones como noticias, sección doctoral o reseñas bibliográficas.

En la página web de la Revista (www.aeca.es/pub/refc/htm) puede encontrarse más información sobre los números anteriores de la misma, incluyendo el texto completo de los artículos publicados desde 1972, así como un buscador que permite localizarlos utilizando nombres, fecha de publicación y palabras clave.

REMISIÓN DE TRABAJOS

Los trabajos deberán ser **inéditos**, y no estarán sometidos a proceso de aceptación o publicación en otro medio. Los trabajos podrán redactarse en inglés o en español.

Los originales deberán ser enviados en versión digital a través del portal www.picca.es siguiendo las instrucciones indicadas en el mismo. Todas las comunicaciones con los autores se establecerán por vía electrónica desde dicho portal. Los trabajos recibidos serán sometidos a un proceso de doble evaluación anónima. Se garantiza a los autores que en un máximo de tres meses (3) tendrán en su poder la evaluación de los originales enviados.

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Aparte de las secciones de artículos principales y notas técnicas, la Revista tiene una sección especial para las tesis doctorales y otra para reseñas bibliográficas. Esta clase de trabajos deben ser enviados completando un formulario disponible en la web de la Revista.

Los trabajos de discusión de artículos o los comentarios sobre artículos publicados o aceptados para su publicación, así como las notas técnicas deben enviarse a los editores vía correo electrónico a la dirección: *refc@uv.es*

REGLAS DE PRESENTACIÓN Y ESTILO

Manuscritos

Los originales remitidos no deberán sobrepasar la extensión de 12.000 palabras, incluidas las referencias bibliográficas. El original aceptado incluirá una primera página donde se hará constar únicamente el nombre y afiliación del autor o autores, así como el título del trabajo y los agradecimientos. Estos nombres no aparecerán en otras páginas posteriores. Asimismo, al comienzo del texto se incluirá un resumen en castellano e inglés de los planteamientos, metodología y conclusiones, de 150 palabras como máximo en cada idioma, así como las palabras clave (con un máximo de seis) para facilitar la catalogación y búsqueda bibliográfica posterior.

Las fórmulas deben ser identificadas con números, situados entre corchetes en la parte derecha, para su cita posterior. Las tablas con datos numéricos y los gráficos deben ser originales o indicar la fuente de procedencia, además deben llevar siempre un número de orden (por ejemplo, Tabla IV o Gráfico 2) y si es posible un título, al objeto de poder ser localizados o servir para referencias en el texto.

Las notas deberán colocarse a pie de página, numeradas correlativamente en números arábigos. La misión de las notas, que deberán evitarse en la medida que sea posible al objeto de facilitar la lectura, no es la de proporcionar citas bibliográficas suplementarias, sino la de extender una determinada idea o razonamiento que no cabe de forma natural en el texto y se desea presentar para ayudar al lector en la comprensión del trabajo o sus consecuencias.

Cada trabajo ira estructurado en epígrafes, subepígrafes y otras divisiones más pequeñas dentro de los mismos. A efectos de racionalizar la presentación y facilitar la lectura se sugiere encarecidamente que nunca falte, en el cuerpo principal del trabajo, un epígrafe inicial de Introducción, donde se expliquen los antecedentes y el propósito del trabajo, y uno final de Conclusiones, donde se resuman muy brevemente el proceso seguido y los resultados obtenidos. Tras el mismo se colocará el material de referencia y consulta, ya sea la Bibliografía y los Apéndices que se deseen introducir.

Las divisiones se estructurarán de la manera que se muestra a continuación, colocando los mismos a principio de la línea, sin sangrar en ningún caso el texto que vaya a continuación:

1. EPÍGRAFES EN LETRAS MAYUSCULAS

1.1. Subepígrafes en letras versales (o mayúsculas pequeñas)

1.1.1. *Apartados en letras cursivas o itálicas*

1.1.1.1. Subapartados en letras normales

REFERENCIAS BIBLIOGRÁFICAS

La estandarización de las referencias bibliográficas permite la comprensión y uso más provechoso de las mismas. Para las referencias bibliográficas se utiliza, en la REFC, el sistema Harvard, basado en la cita de autor y la fecha en el texto y una lista alfabética de referencias al final **(véase www.bournemouth.ac.uk/library/citing_references/docs/Citing_Refs.pdf)**.

Cuando aparece el nombre de un autor en el texto la fecha se inserta ente paréntesis inmediatamente después del nombre. Por ejemplo: Olshon (1994), o bien si son dos autores: Corredor y Santamaría (2002). Cuando los autores son más de dos puede recurrirse a la abreviatura de sus nombres mediante la cita del primero y la indicación de que son más, por ejemplo: Joos *et al.* (1994).

La cita de las páginas es imprescindible cuando se hace referencia a frases, ideas o conjuntos de datos concretos. En tal caso se debe poner la página o páginas después del año de publicación, pero no es necesario incluir abreviaturas tales como p. o pp.: Peiró (1994: 563).

Los originales deben incluir una lista de referencias bibliográficas al final del texto, cuyo formato debe ser el de los siguientes ejemplos:

Artículo:

Ohlson, J. A. 1995. Earnings, book values and dividends in equity valuation. *Contemporary Accounting Research* 11(2): 661-687.

Libro:

Watts, R. L., y Zimmerman, J. L. 1986. Positive Accounting Theory. Englewood Cliffs, NJ: Prentice-Hall.

Capítulo de libro:

Amat, O., y Crespo, P. 2004. Provisiones y retribuciones a los empleados, en: Cañibano, L., y Gonzalo, J. A., (eds.): *Monografías sobre las Normas Internacionales de Información Financiera,* Tomo IV: 175-332. Madrid: AECA/Expansión.

Documento en Internet:

Peasnell, K. V.; Pope, P. F., y Young, S. 2000a. *Board monitoring and earnings management: do outside directors influence abnormal accruals?,* Working Paper, Lancaster University. Disponible en **http://papers.ssrn.com/sol3/papers.cfn?abstract_id=249557** [consultado el 8 de octubre de 2007].

Informe:

Comisión Nacional del Mercado de Valores. 2006. *Informe anual.* Madrid.

Trabajos no publicados:

Coppens, L.; Buijink, W., y Peek, E. 2002. Asymmetric Reversal of Accounting Earnings Changes: Evidence for listed and non-listed firms in the European Union. *25th Annual Congress of the European Accounting Association,* Abril, Copenhagen.

ACEPTACIÓN DE LAS NORMAS Y PROPIEDAD INTELECTUAL

La remisión de trabajos a la dirección de la Revista supone explícitamente la aceptación de las presentes bases de selección y evaluación, así como los resultados de la misma.

Los artículos publicados quedan en propiedad de la Asociación Española de Contabilidad y Administración de Empresas (AECA), que administra los derechos de reproducción y copia de los mismos.

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— Título: Revista Española de Financiación y Contabilidad. Spanish Journal of Accounting and Finance (REFC).
— ISSN: 0210-2412.
— Años comienzo publicación: 1972.
— Periodicidad: Trimestral. **La revista se envía a los suscriptores dentro del mes siguiente al periodo trimestral correspondiente**.
— Editor: Asociación Española de Contabilidad y Administración de Empresas (AECA).
— Dirección postal Editor: Rafael Bergamín 16 B, 28043 Madrid.
— Bases de datos que la indexan: IN-RECS, MIAR, ISOC-Economía, Latindex. Esta publicación (título del artículo, autores y resumen) se incluye en el *Social Sciences Citation Index* (SSCI) y el *Social Scisearch* (SS) de Thomson Reuters. Además, las citas se computan en The Journal Citation Reports/Social Sciences Edition.

— Desde 2010 está también incluida en la base de datos SCOPUS (Elsevier Publishing).
— Clasificación Unesco: 530300 Contabilidad Económica.
— Clasificación Decimal Universal: 657,336
— Área de conocimiento: Economía Financiera y Contabilidad.
— Página web: http://www.aeca.es/pub/refc/refc.htm.

EDITORIAL POLICY AND PROCEDURES FOR SUBMISSION OF PAPERS

EDITORIAL POLICY

The **Spanish Journal of Finance and Accounting (REFC)** is a quarterly academic journal which was founded in 1972. Its aim is the publication of high quality research papers in accounting and finance. The scope of the REFC covers theoretical and empirical analysis relating to financial markets and institutions, corporate finance, market microstructure, corporate governance, internal and management accounting and a wide spectrum of financial performance and financial reporting, including auditing and public sectoraccounting.

The Journal welcomes both theoretical and empirical contributions, mainly theoretical papers containing new testable implications and empirical papers that are theoretically well motivated. The Journal is not suitable outlet for highly abstract mathematical papers or empirical papers with inadequate theoretical motivations. The **editors** welcome contributions which employ econometric empirical methods as well as other alternative empirical research methods, such a case studies when these are appropriate. Literature reviews without a clear contribution or opinion articles won't be admitted.

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BIBLIOGRAPHIC IDENTITY

— Título: Revista Española de Financiación y Contabilidad-Spanish Journal of Accounting and Finance (REFC).
— ISSN: 0210-2412.
— Starting date of publication: 1972.
— Frequency: Quarterly **(the issue is delivered within the following month to the corresponding period)**.
— Publisher: Asociación Española de Contabilidad y Administración de Empresas (AECA).
— Address: Rafael Bergamín 16 B, 28043 Madrid (info@aeca.es).
— Included in the following indexes: IN-RECS, MIAR, ISOC-Economía, Dialnet, Latindex e ICALI. This publication is indexed and abstracted in Social Sciences Citation Index (SSCI) and Social Scisearch (SS), from Thomson Reuters Services. The citations are registered in the Journal Citation Reports/Social Sciences Edition.
— UNESCO Classification: 530300 Contabilidad Económica.
— Universal Decimal Classification: 657,336.
— Field of Knowledge: Accounting and Financial Economics.
— Web page: http://www.aeca.es/pub/refc/refc.htm (access to papers published since 1972 to date).
— From 2010 the journal has been included in the database SCOPUS (Elsevier Publishing).

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Información Integrada - 'Integrated Reporting'. El Cuadro Integrado de Indicadores (CII-FESG) y su taxonomía XBRL

Serie: Documentos

Comisión de Responsabilidad Social Corporativa
Comisión de Nuevas Tecnologías y Contabilidad
Comisión de Principios y Normas de Contabilidad
Ponentes del Documento:
Francisco Flores, José Luis Lizcano, María Mora y Manuel Rejón

Sobre la base de la investigación desarrollada por AECA acerca de la normalización de la información no financiera en materia ambiental, social y de gobierno corporativo y su aplicación a través de herramientas de tratamiento y divulgación de la información, este Documento propone un nuevo avance hacia la denominada «Información Integrada'», en línea con las nuevas tendencias en reporte corporativo.

Las Taxonomías XBRL realizadas en anteriores Documentos para los indicadores clave formulados (*Key Performance Indicators*), presentados a través del Cuadro General de Indicadores (CGIRSC) y del Cuadro Central de Indicadores (CCI-RSC), son la base de la nueva Taxonomía propuesta para el Cuadro Integrado de Indicadores (CII-FESG), y representan el formato digital que permite el correcto aprovechamiento de la información corporativa integrada. En este nuevo Cuadro Integrado de Indicadores clave, la dimensión financiera se une a las otras tres dimensiones: ambiental, social y gobierno corporativo (*Financial, Environmental, Social and Governance* o FESG), para ofrecer una visión de conjunto del comportamiento empresarial. Los indicadores se presentan interrelacionados a distintos niveles con los objetivos estratégicos y los riesgos relevantes.

El lenguaje XBRL y las aplicaciones en internet, a través del repositorio de informes integrados, permitirán que cualquier tipo de empresa u organización pueda elaborar y publicar sus informes integrados de indicadores clave y que los usuarios o grupos de interés puedan tener libre acceso a una información fiable, que les permita adquirir, en mayor o menor medida, un compromiso con la organización (*engagement stakeholders*).

El presente Documento propone también unas líneas de actuación para facilitar la introducción progresiva de una información integrada en los documentos legales de las compañías, como, por ejemplo, en el Informe de Gestión de las sociedades cotizadas.

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Revista Española de Financiación y Contabilidad

Spanish Journal of Finance and Accounting

Indexed and abstracted in the Social Sciences Citation Index (SSCI)

Creada en 1972. Trimestral

ISSN: 0210-2412

www.aeca.es/pub/refc/refc.htm

Revista AECA

4 números al año

Creada en 1972. Trimestral

ISSN: 1577-2403

www.aeca.es/pub/refc/refc.htm

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Coeditada con la Asociación Interamericana de Contabilidad (AIC)

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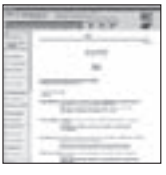

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Revista electrónica

ISSN: 1989-1725

www.revistainternacionalpyme.org

Educade. Revista de Educación en Contabilidad, Finanzas y Administración de Empresas

1 volumen al año. Digital

ISSN: 2173-478X

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Agrupación Joven Iberoamericana de Contabilidad y Administración de Empresas (AJOICA)

2 números al año. Digital

ISSN 1988-9011

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