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Abstract

This paper analyses the influence of the composition of the board of directors on the valuation of IPOs. The goal is to test whether the type of members of the board of directors affect the value of the IPOs. Considering other influences such as the auditor´s reputation, the underwriting reputation and the level of information asymmetry, the results of this paper show that the composition of the board of directors has no influence on the valuation because the number of shareholders´s representatives, the number of non-executive directors or the number of women have no effect on IPO value. However, other IPO and firm characteristics such as the level of solvency, the size of the company and the reputation of the underwriter in the initial offer are statistically significant for a sample of IPOs in the Spanish capital market during the period 1998-2013.

Keywords: Corporate Governance, Board of Directors, Codes of Good Practices, Proprietary Shareholder, Pricing, IPOs (Initial Public Offerings).

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1. INTRODUCTION

In the financial literature, studies on Initial Public Offerings (henceforth, IPOs) have reported a recurrent regularity at an international level, in the sense that firms that begin to quote on the capital market via an IPO offer high returns derived from a discount in the offering price. The financial literature has tried to find an explanation for this phenomenon via a considerable number of papers for different markets which, on the one hand, study the existence of such underpricing, while also attempting to build theoretical models to explain this price discount. A second anomaly or regularity resulting from the low long-term performance of these companies once they have gone public has likewise been found.

In general, attempts to explain the anomaly of underpricing in IPO prices have focused on information asymmetries in the market resulting from information asymmetry between the firm and investors with respect to the current value and risk of its future cash flows, as well as from the existence of asymmetric information between informed and uninformed investors.

The existing financial literature in this regard is extensive. Such studies, primarily those by Ritter (1984, 1991), opened the door to a large body of work aimed at analysing whether these anomalies or regularities typical of IPOs – both on the same day of going public and in the long term – are repeated in different markets. The financial literature has also explored the determinants of the decision to go public. A recent study in this respect is found in De Jong *et al.* (2012).

The present study has two main aims. The first is to analyse how the composition of the board of directors affects the valuation of firms that go public on the Spanish stock market. The goal is therefore to test whether these variables are relevant for evaluating the pricing of IPOs in the Spanish stock market. We choose this market because the degree of *ex-ante* uncertainty for IPOs in Spain is lower than in other countries due to its specific characteristics. We can therefore expect different results for this market than for other countries. Moreover, as far as we know this is the first paper to evaluate the effect of the composition of the board of directors, including the number of women, over the valuation of IPOs.

The second aim of this paper is to test how the main explanations found in the literature for the anomaly of underpricing are valid in the Spanish capital market: the asymmetry of information and the signalling hypothesis.

All the IPOs carried out on the Spanish market during the period of study have been employed. The database used includes the firms that went public over the period 1998-2013. Consistent with IPO theory, the asymmetry of information hypothesis is confirmed in the study. The results do not provide support for the hypothesis of the effect of the board of directors over the valuation of IPOs.

The remainder of the paper is structured in the following way. Section 2 presents the literary review and the hypotheses to be tested in the empirical study. Section 3 details the scope of the research, the data used and the model to be tested. The results of the estimations carried out are presented in detail in Sections 4 and 5, while the main conclusions of the paper are summarized in the final section.

2. LITERATURE REVIEW AND HYPOTHESES

The role of corporate governance in the valuation of IPOs has barely been analysed. IPO firms offer their stock to the public market for the first time when they move from private to public ownership. Empirical studies have documented that IPO pricing can be affected by agency conflicts associated with information asymmetries, or by differences in information between the different parties of the listing process (Ritter and Welch, 2002). These agency conflicts can be mitigated by the firm´s governance practices, such as the composition of the firm´s board (Cadbury, 2000).

Recent studies have explored the effect of research and managerial capabilities of technology-based firms on the capital guaranteed from their initial public offerings. Based on the dynamic capabilities perspective, patent value, technological diversity and functional diversity of top management teams are information signals to potential investors and positively influence the valuation of firms going public (Quintana *et al.*, 2013). Other studies examine the effects of non-executive board members, audit committee composition and financial expertise, and fees paid to audit firms on the value of IPOs (Chahine and Filatotchev, 2011). Empirical findings show that underpricing decreases in audit fees whereas it increases in non-audit fees.

In the Spanish regulatory frame two important laws have affected the composition of the board of directors in the recent period. The first one is the United Code of Good Corporate Governance of Listed Companies (CUGC) approved by the National Securities Market Commission (CNMV) in 2006 and the second one is the organic law 3/2007 for the Equality between Women and Men. The UCGC advises that the dominical and independent members should be the majority of the board of directors, being executive the least possible number of them while the equality law defends that

the number of women must increase in all areas of responsibility and power. In this paper, the idea is to test if these regulations could have a positive effect over the valuation of IPOs, helping to reduce the degree of underpricing.

Based on the former we propose the *Effect of the Board of Directors Hypothesis (H1): (H1): "The greater number of shareholder´s representatives and the greater number of non-executive directors, the lower the underpricing will be, while the number of women should have no effect on this level".*

The academic literature has proposed that the reputation of the external agent can help to reduce the ex–ante uncertainty about the company so that could help to reduce the level of underpricing. The greater the prestige of agents such as the auditor and the underwriter, the lower the uncertainty about the offer will be.

The selection of the external agents – investment bank and auditor – can be done separately (Titman and Trueman, 1986) or it is possible that the selection process of the second is not independent of the selection of the first one (Simunic and Stein, 1987 and Balvers *et al.* 1988) due to the fact that the prestige of the auditor can constitute a signal of the reputation of the underwriter. The relation between the reputation of both agents has been analyzed with the aim of giving a context in which it is possible to test the effect of the selection of the auditor on the IPOs. The result of the analysis has determined that the underwriters with the highest reputation cooperate mostly with the auditors of high prestige. In this context, the reputation of both agents contribute to signal the quality of the firm going public and to reduce the ex-ante uncertainty about its value and, therefore, the level of underpricing.

The evidence of how the reputation of the auditor is a signal of the quality of the firm that goes public is found in the papers by Carpenter and Strawser (1971), Titman and Trueman (1986), Datar *et al.* (1991), Feltham *et al.* (1991), Keasey and McGuinness

(1992) and Dark and Carter (1993) among others. This reputation can help to reduce the level of ex-ante uncertainty about the company and also the level of underpricing.

This gives rise to the *Auditor´s Signal Hypothesis (H2):*

(H2): "The greater the reputation of the auditor, the lower the underpricing will be".

The firm that goes public also uses the underwriter reputation to eliminate part of the ex-ante uncertainty that has not been solved by the IPO prospectus. This prestige serves as a guarantee of the quality of the shares and it is negatively correlated with the level of underpricing of the IPO. The underwriters with lower reputation underwrite issues with levels of *ex-ante* uncertainty relatively higher than those underwriters with higher prestige. McDonald and Fisher (1972), Neuberger and Hammond (1974), Block and Stanley (1980), Neuberger and LaChapelle (1983) and Johnson and Miller (1988) give evidence of this aspect. The underwriter with high reputation have incentives to value adequately all the issues because the repeated business with potential buyers allow them to develop a reputation and obtain high return with it (Carter and Manaster, 1990).

In this context, we pose the following hypothesis regarding the effect of the underwriter of the offer called the *Underwriter´s Signal Hypothesis (H3):*

(H3): "The greater the reputation of the underwriter, the lower the underpricing will be".

Many studies have documented the relation between the *ex-ante* uncertainty in IPOs and the level of underpricing for firms that go public.[1] Other studies explore the impact of investor sentiment on IPO pricing. For instance, Derrien (2005) uses a model in which the aftermarket price of IPO shares depends on the information about the intrinsic value

[1] See Ritter (1984), Beatty and Ritter (1986), Miller and Reilly (1987), James and Wier (1990), Slovin and Young (1990), Ritter (1991), Clarkson and Merkley (1994), Göppl and Sauer (1990), Wasserfallen and Wittleder (1994), Ljungqvist (1997) and Finn and Higham (1988), among others.

of the company and investor sentiment. Using a sample of French offerings, he shows that IPOs can be overpriced and still exhibit positive initial return. Similarly, Ljungqvist, Nanda and Singh (2006) model an IPO company's optimal response to the presence of sentiment investors. They develop a model of IPO pricing in hot issue markets that elucidates the connection between underpricing and long-run underperformance. Their model of the IPO process links some of the main empirical IPO "anomalies" – underpricing, hot issue markets, and long-run underperformance – and traces them to a common source: the presence of a class of irrationally exuberant investors.

In the Spanish case, there are differences in the market that justify specific analysis. This analysis can reveal the extent to which the characteristics of the Spanish stock market influence the valuation and production of information throughout the process of IPOs in this market. This implies taking into consideration the Spanish corporate system, characterized by a lesser separation between property and control and a pronounced presence of family and banking groups among shareholders. Within this context, the degree of *ex-ante* uncertainty regarding the value of the firm for IPOs is lower in Spain than in other countries, as should be the level of underpricing.

As the stock markets in Spain present a lesser degree of development than the British or North American markets, they therefore have less importance in company finance. This means that the majority of Spanish companies use bank financing much more than financing from capital markets. The first consequence of this is that the degree of information asymmetry between the issuer and the bank regarding the value of the company is lower. The second consequence is that Spanish companies depend too much on bank financing. In addition, the types of company that usually go public in Spain are mature companies which are very well-known both by the market itself and by financial

entities. This fact could provide an initial explanation of the lower levels of IPO underpricing that can be found in the Spanish market (Álvarez, 2001) in relation to those found in the numerous papers for the United States.

Furthermore, in contrast with the United States or Great Britain, financial entities in Spain not only represent the main source of financing for quoted companies, but also maintain solid positions as control shareholders. If debt holders maintain both a shareholding as well as a debt holding, the agency costs associated with equity-debt tradeoffs are not so prevalent in Spanish firms. If the shareholding is also a controlling one, then manager-shareholder agency costs will also be reduced. In this situation, the degree of underpricing we can anticipate should be lower as compared with other countries where this is not the practice.

The lesser development of Spanish stock markets also means that the property structure of companies presents a higher concentration index, being mainly in the hands of family groups, credit entities and companies of the same or other activity sectors.

Another aspect of the Spanish context is the greater amount of information previous to the IPO in terms of publicity about the company. This fact helps to reduce the asymmetry of information between the firm and the investors. This is a key difference in relation to other markets. In the US IPO market, there is “quite period” before an IPO and such a period does not exist in the Spanish market.

Companies often begin their preparations for becoming public companies well before they launch the IPO process. A typical IPO execution process can take about 6-12 months. Advance preparation is a key success factor. In the US IPO market, once a company reaches a preliminary understanding with its underwriters, the IPO process starts in full force, and a “quiet period” begins during which a company is subject to SEC guidelines regarding the publication of information outside the prospectus. The

opportunity to enhance awareness of a company, its name, products, and geographic markets will be limited, since any publicity that creates a favourable attitude toward the company´s securities could be considered illegal.

However, in the Spanish case this is not the situation about IPO publicity. According to the Spanish rule of publicity there are two moments to distinguish during the IPO process: before and after the registration of the IPO prospectus. Even before the registration of the IPO prospectus and during the preparation process, the company is allowed to promote the business to the markets and to the society. This period is thought to create expectations about the company. The only restriction that they have is to care about the information they give. This information cannot be confused with a public offer in itself. After the registration of the IPO prospectus, publicity about the company and the IPO process itself is allowed in Spain and in the US IPO market.

Our hypothesis is that this information previous to the IPO contributes to reduce the asymmetry of information between the firm and the investors and it is a positive characteristic of the Spanish IPO market.

Based upon the implications of the particular characteristics of the Spanish capital market set out previously, we put forward a hypotheses based on the information asymmetry. The underlying basis of this hypothesis is the argument concerning the validity of existing information with respect to the stock market valuation of shares. If such information is considered to be good information by its users, the level and volatility of IPO underpricing should be lower in Spain than in other countries. The higher level of information about the company in the Spanish IPO process due to the publicity allowed to the company before and after the registration of the IPO prospectus helps to reduce the asymmetry of information about the share´s value. For this reason, the *Asymmetry of Information Hypothesis (H4)* may thus be formulated as follows:

H4: "The level of Spanish IPO underpricing is lower than in other countries due to the lesser degree of ex-ante uncertainty about the company before going public in the Spanish capital market. Moreover, there is a direct relationship between ex-ante uncertainty and the level of initial underpricing".

The test of these four hypotheses will be carried out using the dataset and methodology as laid out in the following section.

3. DATABASE AND METHODOLOGY

The dataset used in this study comprises the firms that began trading on the Spanish capital market between 1998 and 2013. The database has considered IPOs carried out on the Continuous Market – Main Market – throughout the study period and also the companies that began trading on the Alternative Investment Market (henceforth, AIM). The AIM is an alternative to the Continuous Market and was promoted by the Spanish Stock Exchanges and Markets (BME) to facilitate the access of small and medium-sized enterprises to the securities markets. Its first year of effective operation was 2009. The analysed sample comprises 72 companies, 23 of which went public on the AIM and the other 49 on the Continuous Market. The distribution of the database is on Table I.

INSERT TABLE I

As to the number of observations, it should be noted that this consists of the entire available population of companies that went public on the Spanish markets during the studied period. The database was designed with the information contained in the prospectus for admission to the stock market drawn up by companies in their application to start trading on the market. This information was obtained from the

website of the CNMV (National Securities Market Commission). The economic-financial information and the information about corporate governance have been taken from the informative prospectus for the offering by the close of the year prior to the firm going public.

In order to evaluate the hypotheses proposed in the previous section, and on the basis of the variables for which significant differences in the results may be expected, the following cross sectional model is tested in this study:

[1]

$$\begin{aligned}\text{Ln}(1+IR) = {} & C + \alpha_1 \cdot \text{WOMEN} + \alpha_2 \cdot \text{DOM} + \alpha_3 \cdot \text{NONEXE} + \alpha_4.\text{PROPDIRE} + \alpha_5.\text{AUDITOR} + \\ & \alpha_6.\text{UREPUTATION} + \alpha_7.\text{SOLVENCY} + \alpha_8.\text{CURRENT} + \alpha_9.\text{INTERNET} + \alpha_{10}.\text{AGE} + \alpha_{11}.\text{SIZE} + \\ & \alpha_{12}.\text{PROCEEDS} + \alpha_{13}.\text{MKRETURN} + \alpha_{14}.\text{MKVOLAT} + \alpha_{15}.\text{BUBBLE} + \alpha_{16}.\text{AIM} + \\ & \alpha_{17}.\text{Industry dummies} + \alpha_{18}.\text{Year dummies} + \varepsilon\end{aligned}$$

In this model, our analysis focuses on underpricing measured by the first-day return. The variable IR is measured as the initial return on going public, estimated as the difference between the final price at the close of the first day of trading on the market and the offering price divided by the latter. Due to systematic skewness of the first-day return, empirical results use the natural logarithm of (1+IR) as a dependent variable. As the initial return is a permanent component of the stock price (at least over a horizon of a few months), it is very highly correlated with the returns over other short-term horizons. Initial returns are also highly visible and easily comparable. This idea is also supported by Kaustia and Knupfer (2008).

The independent variables have been selected in order to test the hypotheses proposed in the previous section. As for the *Effect of the Board of Directors Hypothesis (H1),* we have considered the following variables: WOMEN is the proportion of women in the board of directors. According to professional criteria to select the members of the board

of directors, gender is not a relevant characteristic so there should be no relationship between the number of women in the board of directors and the valuation of the IPOs. The variable DOM is the proportion of members which are large shareholder´s representatives. "Dominical" is the Spanish term for large shareholder´s representative. This fact should contribute to reduce the level of uncertainty in the valuation of the IPOs so the expected relationship is negative. For the same reason, also a negative relation is expected for NONEXE which is the proportion of non-executive directors. As for the variable PROPDIRE measured as the proportion of shares in the IPO that belongs to the members of the board of directors also a negative relation could appear because that means that the participation of the members of the board of directors in the public offer transmits confidence and helps to reduce the level of uncertainty. If there is a higher alignment of interest with outside shareholders, this is expected to create an increase in the firm´s value (George, Wiklund and Zahra, 2005).

As for the *Auditor´s Signal Hypothesis (H2),* we have included the variable AUDITOR. This is a dichotomous variable equal to 1 for a prestigious auditor, that is a pre-2002 Big Five (or post-2002 Fat Four) auditor and equal to zero otherwise. Prestigious auditors include the "Big Five" before 2002, and then the "Fat Four" following the failure of Arthur Andersen in 2002. Big Five auditors are KPMG Peat Markwick, Ernest & Young, Arthur Andersen, Deloitte & Touche and PriceWaterhouseCoopers. With this variable we want to test the effects of third party certifying agents on IPO pricing. Firms with a higher true value are more likely to choose more reputable auditing firms compared to firms with a lower true value (Titman and Trueman, 1986), so the expected sign for this variable is negative.

Prior research also suggests that more prestigious underwriters certify the quality of IPO firms, which reduces underpricing (Beatty and Ritter, 1986). Since there is no

commonly used underwriter ranking in the Spanish market, we have calculated our own reputation variable based on the market share of underwriters using all IPOs during the analysed period. For the *Underwriter´s Signal Hypothesis (H3),* the variable UREPUTATION is a dichotomous variable equal to 1 if the underwriter belongs to the group of underwriters with the highest market share in the IPO market and zero otherwise and the expected sign for this variable in relation to the level of underpricing is negative.

As for the *Asymmetry of Information Hypothesis (H4),* we have considered the following variables related to firm characteristics: SOLVENCY is the Debt/EBITDA (Earnings Before Interests, Taxes, Depreciations and Amortizations) ratio in the latest period prior to the IPO date. This ratio indicates that when the level is reduced (optimal situation under value 1), the degree of *ex-ante* uncertainty for these companies is supposed to be lower so the expected sign is positive. The variable CURRENT is the proportion of current assets measured as the current assets over the total assets ratio in the latest period prior to the IPO date. According to Myers and Rajan (1998), firms with a higher current asset ratio are better able to take advantage of growth opportunities, so we expect a negative association between current assets and underpricing. The analysis also includes the variable INTERNET, dichotomous variable equal to 1 if the IPO firm has an internet-related firm and zero otherwise. This is expected to positively affect underpricing (Chahine and Goergen, 2011). AGE is the number of years since the firm was founded at the time of the IPO. It is expected that younger firms have risk and are likely to have a higher underpricing (Mishra et al. 2001). In relation to this variable, we state that there is likely to be more uncertainty regarding the secondary-market pricing of the stocks of young firms.

We include the variable SIZE, which is the total asset value in the latest period prior to the IPO date. Larger firms are expected to have a lower underpricing (Mishra, Randy and Jensen, 2001). PROCEEDS is equal to the natural logarithm of the gross proceeds of the IPO. This is the amount raised by issuers at the time of IPO and is expected to negatively affect underpricing (Habib and Ljungqvist, 2001).

As control variables we have considered different market-related factors that may affect IPO performance. For all of them the expected sign in relation to the level of underpricing is positive. The variable MKRETURN is calculated as the buy-and-hold return of the IGBM Index over a one month period prior to the IPO date. The variable MKVOLAT is included to measure the volatility of the market as the standard deviation of the daily return of the IGBM Index over a one month period prior to the IPO date. To control for the positive effect of the hot issue period on underpricing, the variable BUBBLE is a dichotomous variable equal to 1 for IPOs during the bubble period (1998-1999) and zero otherwise. The differentiation between "hot" and "cold" periods as regards IPOs is considered in the financial literature for its possible influence on the level of IPO underpricing (Ritter, 1984). The definition of the "bubble" period depends on the market. Coakley *et al.* (2006) and Hoque (2011) – both for the UK IPO market – respectively define the bubble period 1999-2000 and 1998-2000 in their papers.

In addition to this variable, we further include year dummies to control for time-specific factors occurring across the sample period. We also considered an AIM market dummy, which is a dichotomous variable equal to 1 for IPOs in the AIM (Alternative Investment Market), and zero if it is in the MAIN market. This variable controls for the market of listing effects because AIM firms are, as a rule, younger and smaller than their counterparts on the Main market, so the expected underpricing should be relatively higher. In this sense, the AIM is an alternative to the Continuous Market and was

promoted to facilitate the access of small and medium-sized enterprises to the securities markets. The degree of *ex-ante* uncertainty for these companies is supposed to be higher than for companies that go public in the Continuous Market, which are usually bigger and older companies.

We have also considered year dummies and industry dummies. The model estimates are likewise enhanced via the inclusion of dichotomous variables representing years and industry sectors – not only high-tech industries – in order to analyse the possible influence of the firm's activity sector on its level of initial underpricing.[2] In addition empirical tests control for Industries dummies. Finally, TECH is a dichotomous variable that takes the value 1 if the firm is in a high-tech industry (chemical, mechanical, electronic or communications), and zero otherwise. The value of technology firms (TECH) tends to be much harder to estimate because it depends on growth options. The degree of *ex-ante* uncertainty for these companies is supposed to be higher than for companies that go public in the Continuous Market, which are usually bigger and older companies.

The summarized hypotheses and variables with the expected sign in relation to the dependent variable are included in Table II.

INSERT TABLE II

On the other hand, the characteristics of the companies and the main parameters of the IPOs are listed in Table III. The statistics in Table III refer to the 72 firms that went public through an IPO during the period 1998-2013.

[2] For the sake of brevity, these variables have finally not been included in the results of the estimates presented in the next section due to not being statistically significant.

INSERT TABLE III

The level of underpricing, the adjusted initial return and the proportion of shares in the IPO that belongs to the members of non-executive directors are expressed in percentages. Proceeds, current assets and total assets are expressed in thousands of euros and the age is expressed in years. In order to monitor the effect of inflation on these figures, all the amounts are expressed in 2013 purchasing power.

On average, the level of underpricing for the companies in the sample under analysis is 7.56 % for the period 1998-2013. This level of underpricing is lower to that obtained by Álvarez and Fernández (2003), who reported an initial return of 11.63 % for the period 1985-1997. It would therefore appear that this anomaly or regularity persists in the Spanish stock market but presenting average values lower than in the past, for the entire period.

In this respect, the mean underpricing in the case of the Spanish stock market is lower than the US market based on data provided by Ritter (2008), who reports an average initial return of 22.3 % for the period 1990-2008. However, significant fluctuations exist in the US market, throughout the said period of study for the level of initial return, ranging from 70.9 % in 1999 to 6 % in 2008. A cooling of the market is also seen in the latter year in terms of the number of IPOs: only 19, compared to 675 for the year 1996 or with average numbers of IPOs of between 100 and 300 for the majority of the years in the study period in this market. More recent studies for the US market like Lowry *et al.* (2010) report an average initial return of 22% for the period 1965-2005. This fact demonstrates that underpricing in Spain is approximately half the underpricing found for the US market, regardless of the period considered. This is a first result, with this new period of study, in favour of the *Asymmetry of Information Hypothesis (H4).* The

greater amount of information about the company due to the publicity allowed before the IPO process helps to reduce the asymmetry of information between the firm and the investors in the Spanish IPO market in comparison with the US IPO market.

The composition of the board of directors of firms going public during the period of study (1998-2013) show that the proportion of women is 0.07, the proportion of members which are large shareholder´s representatives is 0.35 and the proportion of non-executive directors is 0.73. Moreover, the proportion of shares in the IPO that belongs to the members of the board of directors is 22.59%.

The level of solvency of the Spanish firms going public is 9.06, measured as the relation between the volume of total debt over the EBITDA (earnings before interests, taxes, depreciations and amortizations). This ratio reflects a high level of debt for the companies going public in the Spanish capital market. The current assets, total assets and the proceeds of the offer are also shown in the table.

The firms that went public during this period of study (1998-2013) have an average age of 20.16 years, although there is considerable variability in this factor (maximum of 102 years and minimum of 0.50). In general, the companies that began trading on the Spanish stock market were usually well-established firms. However, in the most recent period, the majority of the companies were younger, not exceeding 20 years, which supposes a reduction in the average age with respect to the type of business that traditionally decided to take the step of going public.

INSERT FIGURES 1 to 9 HERE

As regards the average number of members in the board of directors per IPO year it is shown in Figure 1. The data for 2008 are only for one company.

The average number of "dominical" members, independent members and women per IPO year are shown in Figures 2, 3 and 4 respectively. On the other hand, the percentage of "dominical" members, independent members and the percentage of women in the board of directors per IPO year are reflected on Figures 5, 6 and 7 respectively.

Comparing the distribution of member in the Continuous Market with those of the Alternative Investment Market (AIM) we can see that the proportion of "dominical" members in the board of directors for firms going public in the Main Market is higher than in the AIM (40.11% versus 36.50%); the same happens with the proportion of women (26.88% in the Main Market higher than the 18.75% in the AIM). However, the proportion of independent members seems to have an opposite relation in both markets.

The next sections 4 and 5 present the results of the proposed model, followed by the conclusions to be drawn from these results regarding the hypotheses set out in Section 2 of this paper.

4. RESULTS (I)

The Table IV presents the correlation matrix for the variables included in the model proposed in the previous section.

INSERT TABLE IV

The results of the estimation of the model by Ordinary Least Squares are shown in Table V.

INSERT TABLE V

The results in column one exclude the variable PROCEEDS due to the correlation with SIZE; all the variables are considered in the second column while the third column excludes the AIM variable, so we can conclude that the significance of the results are not affected by correlation problems at all. The results in the fourth column include year and industry dummies. [3]

The results show that none of the variables related with the composition of the board of directors is statistically significant. This result allows us to reject the first hypotheses of the effect of the board of directors over the valuation of IPOs.

According to this result, the United Code of Good Corporate Governance of Listed Companies (CUGC) approved by the National Securities Market Commission (CNMV) in 2006 and the organic law 3/2007 for the Equality between Women and Men have no real effect on the valuation of IPOs, in order to help to reduce the level of underpricing. The UCGC advises that the dominical and independent members should be the majority of the board of directors, being executive the least possible number of them while the equality law defends that the number of women must increase in all areas of responsibility and power. In this context, none of these variables result statistically significant so it can be concluded that the number of dominical and the number of women are not useful in the anomaly of underpricing for companies going public or improving the valuation of IPOs in any aspect.

In relation to the other hypotheses, the variable AUDITOR is not statistically significant in none of the estimations. This result brings us to reject the hypothesis of the auditor´s signal. That means that the reputation of the auditor does not seem to influence the

[3] In year dummies those included in the BUBBLE variable have been excluded, in order to avoid colinearity.

value of the IPO firms in the Spanish capital market. This result contradicts hypothesis *H2*.

On the other hand, the variable UREPUTATION has a positive and statistically significant sign which is opposite to the expected sign according to the underwriter´s signal hypothesis (*H3*). This sign could be indicating that good underwriters want to underprice the initial offer in order to leave a good taste in investor´s mouth for future equity issues.

As for the variables included in the model to test the *Asymmetry of Information Hypothesis (H4),* the SOLVENCY is statistically significant as well as the INTERNET dummy and the SIZE of the company. The coefficients for these variables are statistically significant and with the expected sign. The Debt/EBITDA (Earnings Before Interests, Taxes, Depreciations and Amortizations) ratio indicates that when the level is reduced, the degree of *ex-ante* uncertainty for these companies is supposed to be lower so the expected sign is positive. This result has been confirmed in our estimations. The result obtained for the variable INTERNET, dichotomous variable equal to 1 if the IPO firm has an internet-related firm and zero otherwise, indicates that this factor positively affects underpricing (Chahine and Goergen, 2011). For the variable SIZE, which is the total asset value in the latest period prior to the IPO date, larger firms are expected to have a lower underpricing (Mishra, Randy and Jensen, 2001) and the negative and statistically significant sign has been confirmed. All these results are in favor of the idea of asymmetry of information on IPOs and give support to the *Asymmetry of Information Hypothesis (H4).*

In relation to the control variables, the market return and the bubble show a significant relationship with the underpricing. These results are robust controlling for correlation problems and considering industry and year dummies. The positive effect of the hot

issue period on underpricing is confirmed by the positive and statistically significant coefficient for the variable BUBBLE, which is a dichotomous variable equal to 1 for IPOs during the bubble period (1998-1999) and zero otherwise.

5. RESULTS (II)

In order to evaluate the hypothesis of the *Effect of the Board of Directors (H1)* proposed in the previous section and due to the lack of significance of the variables considered to test this hypothesis, we used another methodology in order to check the robustness of the results. On the basis of the variables for which significant differences in the results may be expected, the following model is tested to contrast this hypothesis:

[2]

$$\mathrm{Ln}\,(1+\mathrm{IR}) = \mathrm{C} + \alpha_1 \cdot \mathrm{WOMEN} + \alpha_2 \cdot \mathrm{DOM} + \alpha_3 \cdot \mathrm{NONEXE} + \alpha_4 . \mathrm{PROPDIRE} + \alpha_5 . \mathrm{SIZE} + \varepsilon$$

[3]

$$LogVar(\varepsilon) = \mathrm{C} + \beta_1 \cdot \mathrm{WOMEN} + \beta_2 \cdot \mathrm{DOM} + \beta_3 \cdot \mathrm{NONEXE} + \beta_4 . PROPDIRE + \beta_5 . SIZE$$

The variance of the error from the regression model in [2] is assumed to be related to the same variables that are posited to affect the level of initial returns. Following Greene (1993, pp. 405-407), we assume that the log of the variance of the regression error follows the model shown in [3]. The Maximum Likelihood Estimation (MLE) of [2] and [3] is essentially the weighted least squares estimation of [2] using the standard deviations of the error as weights.

This methodology has important advantages. The main advantage of this approach is that it allows the estimation of the influence of each variable on both the level and the

uncertainty of firm-level initial returns. The MLE affects the efficiency of the estimations. The idea is to obtain minimum variance estimators whenever they are unbiased. It constitutes a strategy of robustness to check the efficiency of the results.

The results of the estimation of the model proposed in [2] and [3] are given in Table VI.

INSERT TABLE VI

The results shown in this table confirm the lack of significance of the variables related with the composition of the board of directors in the valuation of firms going public in the Spanish capital market. According to these results we can confirm that what the market value more is the result of the governance of the companies that go public in the Spanish capital market and the composition of the board of directors seems to be not so important.

6. CONCLUSIONS

This paper analyses the influence of the composition of the board of directors on the valuation of IPOs. The goal is to test whether the members of the board of directors affect the value of the IPOs. Considering other influences such as the auditor´s reputation, the underwriting reputation and the level of information asymmetry, the results of this paper show that the composition of the board of directors has no influence on the valuation because the number of shareholders´s representatives, the number of non-executive directors or the number of women have no effect on IPO value. However, the level of solvency, the size of the company and the reputation of the underwriter of the initial offer are statistically significant for a sample of IPOs in the Spanish capital market during the period 1998-2013.

According to these results we can confirm that what the market value more is the result of the governance of the companies that go public in the Spanish capital market and the composition of the board of directors seems to be not so important. The number of dominical and the number of women do not help to reduce underpricing of companies going public or affect the valuation of IPOs in any aspect.

In relation to the other hypotheses, the variable AUDITOR is not statistically significant in none of the estimations. This result brings us to reject the hypothesis of the auditor´s signal. That means that the reputation of the auditor does not seem to influence the value of the IPO firms in the Spanish capital market. This result contradicts hypothesis *H2*. On the other hand, the variable UREPUTATION has a positive and statistically significant sign which is opposite to the expected sign according to the underwriter´s signal hypothesis (*H3*). This sign could be indicating that good underwriters want to underprice the initial offer in order to leave a good taste in investor´s mouth for future equity issues.

Finally, the results obtained in this research for the variables measuring the level of information´s asymmetry on IPOs allow us to give support to the *Asymmetry of Information Hypothesis (H4).*

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Table I Database

Panel A – Studied IPOs per Market*	
Main Market	23
Alternative Investment Market	49
Panel B – Studied IPOs per Year*	
Year	***Number***
1998	6
1999	9
2000	3
2001	2
2002	1
2004	3
2005	1
2006	9
2007	10
2008	1
2009	2
2010	11
2011	7
2012	5
2013	2

*The total number of cases is 72.

Table II Hypotheses and Variables

	Variable	***Definition***	***Code***	***Prediction***
Dependent Variable	Underpricing	The first day return at the time of IPOs. It is equal to the difference between the offer price and the closing price (in relation to the offer price) at the end of the first day of trading	IR	–
Hypothesis 1: Effect of the Board of Directors				
	Women Ratio	Proportion of women in the Board of Directors.	WOMEN	No relationship
	"Dominical" Ratio	Proportion of members which are large shareholder´s representatives; ("dominical" is the Spanish term for large shareholder´s representative).	DOM	Negative
	Non-Executive Ratio	Proportion of non-executive directors used as a proxy for board independence.	NONEXE	Negative
	Directors in the IPO	Proportion of shares in the IPO that belongs to the members of the Board of Directors	PROPDIRE	Negative
Hypothesis 2: Auditor´s Signal				
	Auditor Dummy	Dichotomous variable equal to 1 for a pre-2002 Big Five (or post-2002 Fat Four) auditor (zero otherwise).	AUDITOR	Negative
Hypothesis 3: Underwriter´s Signal				
	Underwriter Reputation	Dichotomous variable equal to 1 if the underwriter belongs to the group of underwriters with the highest market share in the IPO market (zero otherwise).	UREPUTATION	Negative
Hypothesis 4: Information Asymmetry				
	Solvency Ratio	Debt/EBITDA (Earnings Before Interests, Taxes, Depreciations and Amortizations) Ratio in the latest period prior to the IPO date.	SOLVENCY	Positive
	Current Asset Ratio	Current Asset / Total Assets Ratio in the latest period prior to the IPO date.	CURRENT	Negative
	Internet Dummy	Dichotomous variable equal to 1 if internet-related firm (zero otherwise).	INTERNET	Positive
	Age	Number of years since the inception of the IPO firm.	AGE	Negative
	Size	Total asset value in the latest period prior to the IPO date.	SIZE	Negative
	Proceeds	The Gross Proceeds Value of the IPO.	PROCEEDS	Negative
Control Variables				
Market conditions				
	Market Return	The buy-and-hold return of the IGBM Index over a one month period prior to the IPO date.	MKRETURN	Positive
	Market Volatility	The standard deviation of the daily return of the IGBM Index over a one month period prior to the IPO date.	MKVOLAT	Positive
	Bubble Dummy	Dichotomous variable equal to 1 for IPOs during the bubble period (1998-1999) (zero otherwise).	BUBBLE	Positive
	AIM Market Dummy	Dichotomous variable equal to 1 for IPOs in the AIM (Alternative Investment Market), zero if it is in the MAIN market.	AIM	Positive
Industry dummies				–
Year dummies				–

Table III Descriptive Statistics

	Mean	***Median***	***Standard Deviation***	***Maximum***	***Minimum***
Underpricing **(IR) (%)**	7.56%	4.28%	24.34%	184.62%	-53.15%
Adjusted Initial Return **(AR) (%)**	7.57%	3.57%	24.34%	184.54%	-52.79%
Women Ratio **(WOMEN)**	0.07	0.00	0.10	0.50	0.00
"Dominical" Ratio **(DOM)**	0.35	0.36	0.26	1.00	0.00
Non-Executive Ratio **(NONEXE)**	0.73	0.75	0.16	1.00	0.33
Directors in the IPO **(PROPDIRE) (%)**	22.59%	20.60%	19.56%	100.00%	0.00%
Solvency Ratio **(SOLVENCY)**	9.06	5.33	32.51	244.77	-59.05
Current Assets **(CURRENT)(thousands)**	567325.44	99940.28	1133274.65	7545090.25	108.24
Age **(AGE)**	20.16	11.00	21.09	102.00	0.50
Total Assets **(SIZE)(thousands)**	7531603.19	260844.75	35881682.71	290283313.75	1184.54
Proceeds **(PROCEEDS)(thousands)**	665645.76	250616.35	1130900.79	5516677.99	777.77

This table reports summary statistics for the sample of firms that went public through an IPO during the period 1998-2013. The number of cases is 72. IR is the firm's initial return on going public; AR is the firm's initial return on going public adjusted by the return of the IGBM Index; WOMEN is the proportion of women in the Board of Directors; DOM is the proportion of members which are large shareholder´s representatives; NONEXE is the proportion of non-executive directors; PROPDIRE is the proportion of shares in the IPO that belongs to the members of the Board of Directors; SOLVENCY is the Debt/EBITDA (Earnings Before Interests, Taxes, Depreciations and Amortizations) Ratio in the latest period prior to the IPO date; CURRENT ASSETS is the amount of current assets in the latest period prior to the IPO date; AGE is the number of years since the firm was founded at the time of the IPO; SIZE is the total asset value in the latest period prior to the IPO date and PROCEEDS is the gross proceeds value of the IPO.

Figure 1 Average number of members in the "Board of Directors" per IPO year

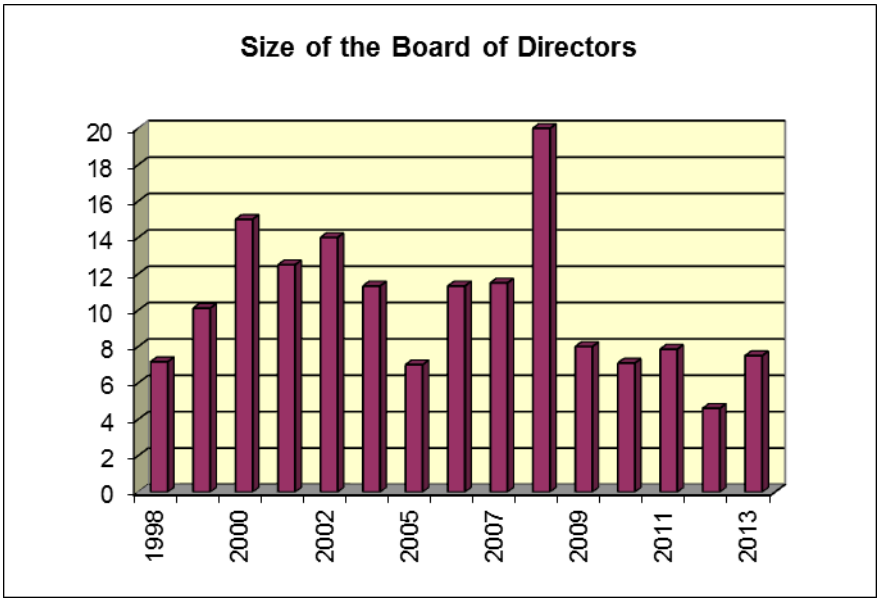

Figure 2 Average number of "dominical" members per IPO year

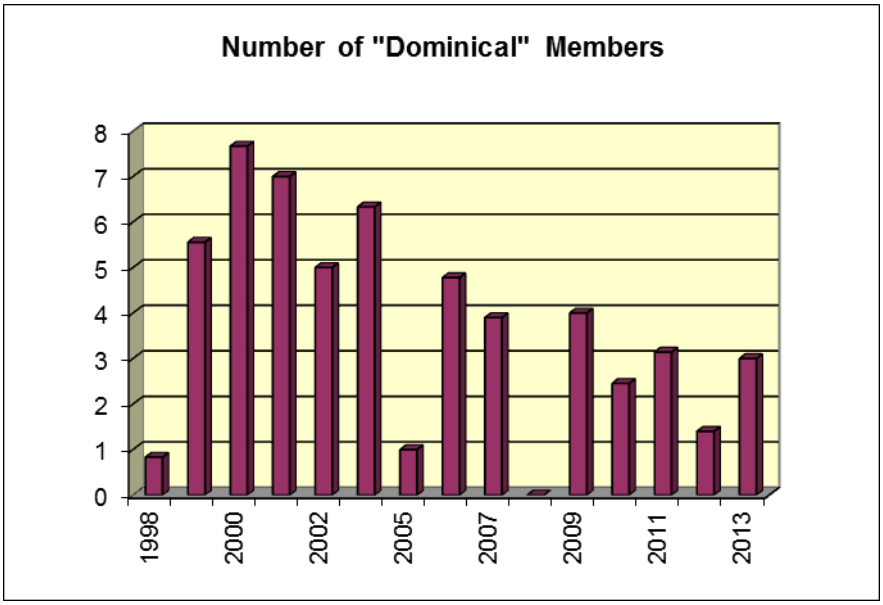

Figure 3 Average number of independent members per IPO year

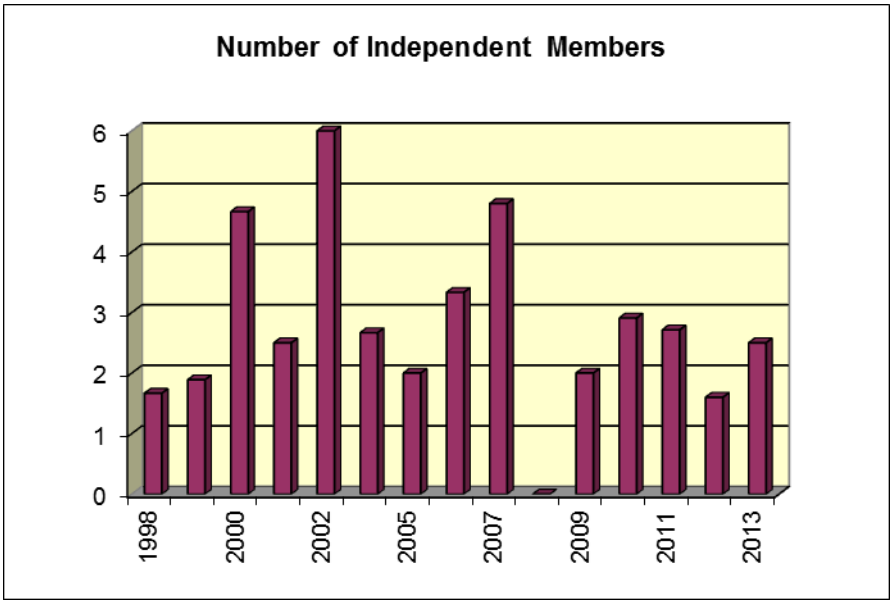

Figure 4 Average number of women per IPO year

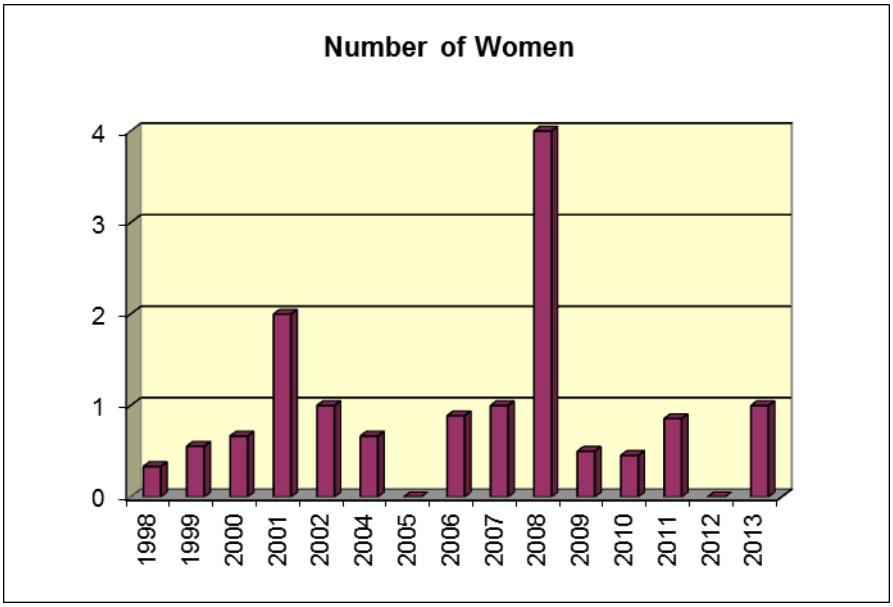

Figure 5 Percentage of "dominical" members per IPO year

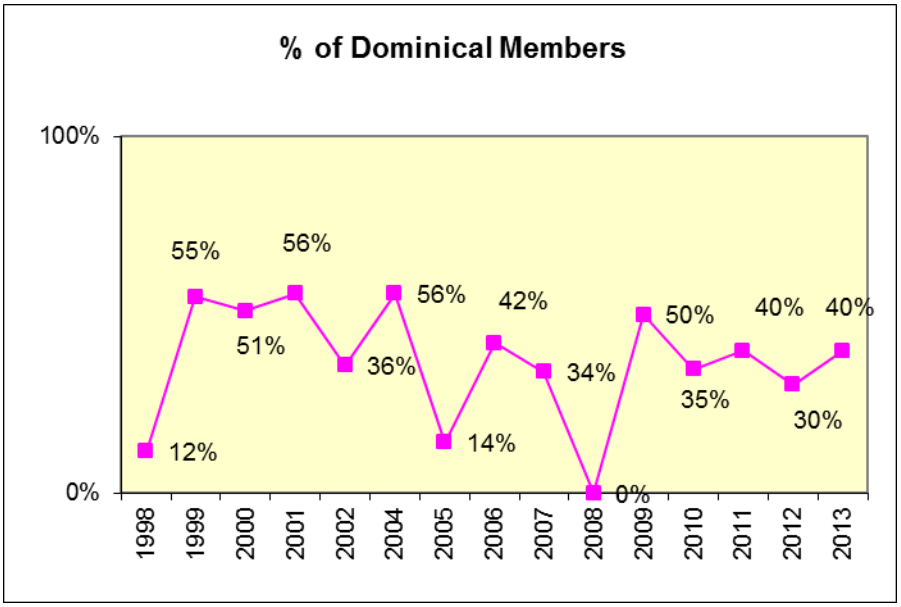

Figure 6 Percentage of independent members per IPO year

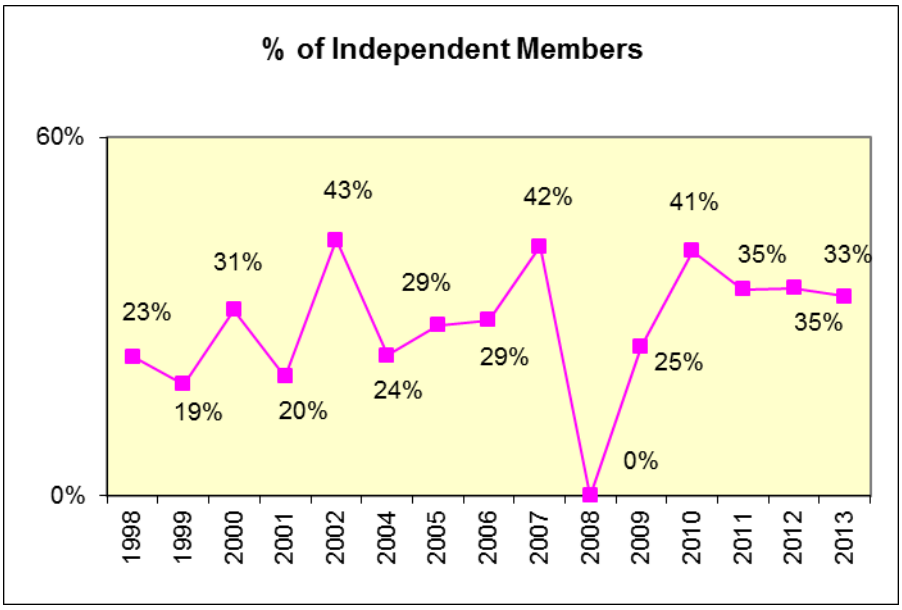

Figure 7 Percentage of women in the Board of Directors per IPO year

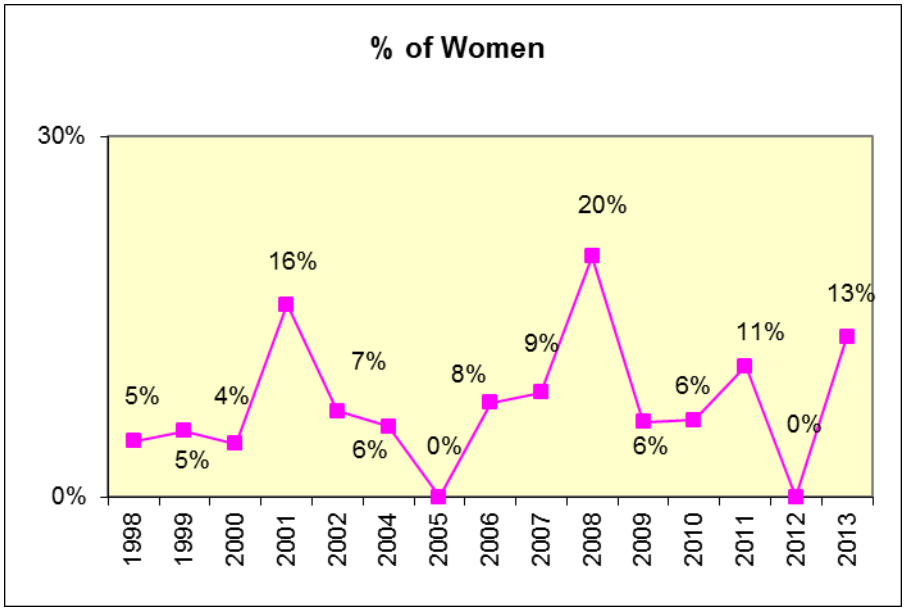

Figure 8 Distribution of members in the Continuous Market

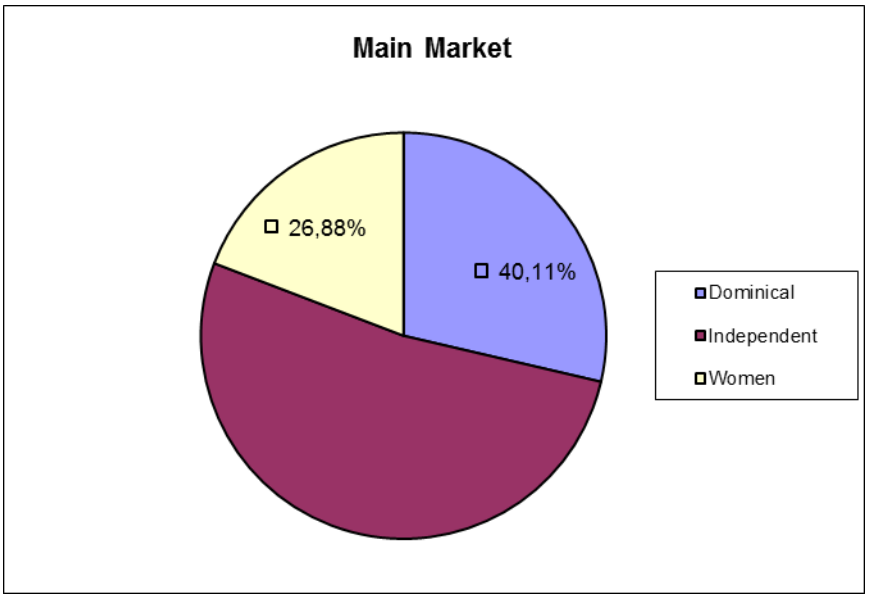

Figure 9 Distribution of members in the Alternative Investment Market

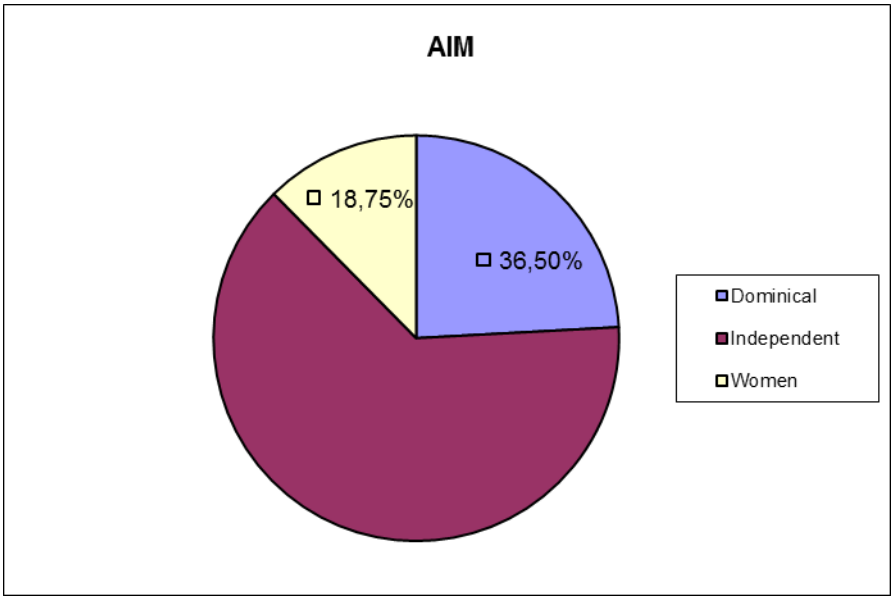

Table IV Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. WOMEN	1.000															
2. DOM	-.002	1.000														
3. NONEXE	.224	.529**	1.000													
4. PROPDIRE	.005	-.097	-.147	1.000												
5. AUDITOR	.046	.107	.175	-.067	1.000											
6. UREPUTATION	.114	.179	.257*	.087	546**	1.000										
7. SOLVENCY	.046	.028	-.019	-.113	.055	-.050	1.000									
8. CURRENT	-.003	-.226	-.334**	.134	-.090	.121	-.194	1.000								
9. INTERNET	-.119	.156	-.001	-.268*	-.244*	-.218	-.110	.057	1.000							
10. AGE	.406**	-.029	.083	.148	.144	.297*	-.060	.109	-.155	1.000						
11. SIZE	.169	.192	.384**	-.164	.507**	.509**	.391**	-.251*	-.161	.185	1.000					
12. PROCEEDS	-.030	.023	.198	-.006	.445**	.618**	.202	-.043	-.076	.150	.737**	1.000				
13. MKRETURN	-.173	.129	.053	-.055	-.013	.034	-.134	.061	-.095	-.237*	.033	.069	1.000			
14. MKVOLATILITY	.200	-.066	-.134	.116	-.202	-.356**	.035	-.024	.128	.070	-.270*	-.295*	-.526**	1.000		
15. BUBBLE	.024	-.073	.073	.088	.059	.143	-.001	-.027	-.043	.187	.109	.190	-.017	-.006	1.000	
16. AIM	-.105	-.053	-.272*	.026	-.636**	-.724**	-.163	.067	.322**	-.257*	-.742**	-.790**	-.148	.406**	-.351**	1.00

This table reports the Pearson´s correlation coefficients for the variables used in the regressions; * significant at 0.05 level; ** significant at 0.01 level.

Table V Results (I)

Variable				
Intercept	0.3156	0.2382	0.4942**	0.6672
	(1.1880)	(0.8250)	(2.4380)	(1.340)
WOMEN	0.0293	0.0666	0.0336	0.2203
	(0.1520)	(0.3310)	(0.1740)	(1.0070)
DOM	-0.0557	-0.0444	-0.0379	-0.0272
	(-0.6440)	(-0.5020)	(-0.4470)	(-0.2870)
NONEXE	0.0377	0.0387	0.0334	0.0475
	(0.2520)	(0.2580)	(0.2230)	(0.2680)
PROPDIRE	-0.0003	-0.0001	0.0001	-0.0001
	(-0.0320)	(-0.1530)	(0.0010)	(-0.0990)
AUDITOR	-0.0045	0.0039	-0.0247	-0.0173
	(-0.0820)	(0.0700)	(-0.4830)	(-0.2860)
UREPUTATION	0.2443***	0.2366***	0.2151***	0.2211***
	(4.1600)	(3.9420)	(4.1680)	(3.1570)
SOLVENCY	0.0022***	0.0022***	0.0022***	0.0027***
	(3.4840)	(3.4680)	(3.4420)	(2.905)
CURRENT	0.7452	0.0728	0.0747	0.2212**
	(0.9470)	(0.9200)	(0.9480)	(2.100)
INTERNET	0.1063**	0.0956**	0.1145**	0.1162*
	(2.4520)	(2.0730)	(2.6830)	(1.665)
AGE	-0.0007	-0.0006	-0.0007	-0.0023
	(-0.6700)	(-0.6340)	(-0.7320)	(-1.8690)
SIZE	-0.0294***	-0.0330***	-0.0359***	-0.0217
	(-2.5180)	(-2.5760)	(-3.6410)	(-1.317)
PROCEEDS		0.0075		
		(0.7010)		
MKRETURN	1.0399***	1.0381***	0.9596**	1.2223***
	(2.5850)	(2.5690)	(2.4290)	(2.7280)
MKVOLAT	3.5234	3.1395	4.0862	7.7972
	(0.8740)	(0.7680)	(1.0220)	(1.5010)
BUBBLE	0.1322***	0.1377***	0.1073**	
	(2.6600)	(2.7250)	(2.4620)	
AIM	0.0932	0.1275		-0.0006
	(1.0400)	(1.2440)		(-0.0040)
Industry dummies				Yes
Year dummies				Yes
R^2	33.59%	32.99%	33.50%	39.77%
Log-likelihood	46.4775	46.7982	45.7894	65.8975
Chi-squared	46.5700	47.2100	45.1900	85.4100
Prob (Chi-squared)	0.0000	0.0001	0.0000	0.0000

The estimations have been carried out on a sample of 72 observations on companies that went public over the period 1998-2013. The table shows the values of the coefficients in the regression models estimated by means of Ordinary Least Squares (OLS). The LIMDEP 9.0 software package has been used. The dependent variable is the IR (the firm's initial return on going public). The independent variables are: WOMEN is the proportion of women in the Board of Directors; DOM is the proportion of members which are large shareholder´s representatives; NONEXE is the proportion of non-executive directors; PROPDIRE is the proportion of shares in the IPO that belongs to the members of the Board of Directors; AUDITOR is a dichotomous variable equal to 1 for a pre-2002 Big Five (or post-2002 Fat Four) auditor (zero otherwise); UREPUTATION is a dichotomous variable equal to 1 if the underwriter belongs to the group of underwriters with the highest market share in the IPO market (zero otherwise); SOLVENCY is the Debt/EBITDA (Earnings Before Interests, Taxes, Depreciations and Amortizations) ratio in the latest period prior to the IPO date; CURRENT is the amount of current assets in the latest period prior to the IPO date; INTERNET is a dichotomous variable equal to 1 if internet-related firm (zero otherwise); AGE is the number of years since the firm was founded at the time of the IPO; SIZE is the total asset value in the latest period prior to the IPO date; PROCEEDS is the gross proceeds value of the IPO; MKRETURN is the buy-and-hold return of the IGBM Index over a one month period prior to the IPO date; MKVOLAT is the standard deviation of the daily return of the IGBM Index over a one month period prior to the IPO date; BUBBLE is a dichotomous variable equal to 1 for IPOs during the bubble period (1998-1999) (zero otherwise); AIM is a dichotomous variable equal to 1 for IPOs in the AIM (Alternative Investment Market), zero if it is in the MAIN market.

***, **, * Significantly different to zero for a 1%, 5% and 10% level of significance. –*t*-statistic in parentheses.

Table VI Results (II)

Variable	OLS	MLE (mean)	MLE (variance)
Intercept	0.3165***	0.0213	0.0015
	(2.8510)	(0.2160)	(1.4810)
WOMEN	-0.0486	-0.0868	-2.6048
	(-0.3180)	(-0.9880)	(-1.5500)
DOM	0.0491	0.0724	2.6357***
	(0.7850)	(1.3560)	(3.3720)
NONEXE	-0.0590	-0.0592	-0.3619
	(-0.5130)	(-0.7720)	(-0.2630)
PROPDIRE	0.0001	0.0004	0.0205
	(0.1600)	(0.6230)	(2.3490)
SIZE	-0.0121**	0.0037	0.4165***
	(-2.4140)	(0.6830)	(6.1800)
Adjusted R^2	2.62%		
Log-likelihood	24.8898	24.8898	
Chi-squared	3.3900	36.5309	
Prob (Chi-squared)	0.6395	0.0000	

The estimations have been carried out on a sample of 72 observations on companies that went public over the period 1998-2013. The table shows the values of the coefficients in the regression models estimated by means of Maximum Likelihood Estimates (MLE). The LIMDEP 9.0 software package has been used. The dependent variable is the IR (the firm's initial return on going public). The independent variables are: WOMEN is the proportion of women in the Board of Directors; DOM is the proportion of members which are large shareholder´s representatives; NONEXE is the proportion of non-executive directors; PROPDIRE is the proportion of shares in the IPO that belongs to the members of the Board of Directors; SIZE is the total asset value in the latest period prior to the IPO date;

***, **, * Significantly different to zero for a 1%, 5% and 10% level of significance. –*t*-statistic in parentheses.