



UNIVERSITA' DEGLI STUDI DI BERGAMO
DIPARTIMENTO DI INGEGNERIA GESTIONALE
QUADERNI DEL DIPARTIMENTO[†]

Department of Economics and Technology Management

Working Paper

n. 02 – 2009

IPO valuation of European pyramidal groups

by

Michele Meoli, Stefano Paleari, Silvio Vismara

[†] Il Dipartimento ottempera agli obblighi previsti dall'art. 1 del D.L.L. 31.8.1945, n. 660 e successive modificazioni.

COMITATO DI REDAZIONE[§]

Lucio Cassia, Gianmaria Martini, Stefano Paleari, Andrea Salanti

[§] L'accesso alla Collana dei Quaderni del Dipartimento di Ingegneria Gestionale è approvato dal Comitato di Redazione. I *Working Papers* della Collana costituiscono un servizio atto a fornire la tempestiva divulgazione dei risultati dell'attività di ricerca, siano essi in forma provvisoria o definitiva.

IPO Valuation of European Pyramidal Groups*

Michele Meoli^a, Stefano Paleari^b, Silvio Vismara^c

^a University of Bergamo, Department of Economics and Technology Management,
viale G. Marconi 5, 24044 Dalmine
michele.meoli@unibg.it

^b University of Bergamo, Department of Economics and Technology Management,
viale G. Marconi 5, 24044 Dalmine
stefano.paleari@unibg.it

^c University of Bergamo, Department of Economics and Technology Management,
viale G. Marconi 5, 24044 Dalmine
silvio.vismara@unibg.it

Abstract. The purpose of this study is to shed light on the valuation of firms belonging to European pyramidal groups at the time of their IPO. We question if the particularity in their ownership structure, and the identity of the ultimate shareholder, affect the valuation of the firms going public. With reference to firms that went public in Europe over the last decade, we find that value at IPO is affected by the affiliation to a pyramidal group, and by the ultimate controller identity, even when controlling for firm and offer specific variables, such as age, size, underpricing. In particular, companies under a pyramidal ownership are better valued: investors, therefore, recognize a positive value to pyramids affiliation, that may substitute for weak markets institutions.

* We wish to thank William Gerken and all participants at the "Eastern Finance Association Conference" (29 April - 02 May 2009, Washington) for helpful comments. Mauro Seghezzi provided superb research assistance. All errors are our own. The usual disclaimer applies.

1 Introduction

Pyramidal structures are very common in Europe, where they are involved in the ownership structure of 20% of the Western Europe countries, while their presence is limited to a 9% in the US (Faccio and Lang, 2002). Pyramids are also a very common mechanism of separation between ownership and control around the world: 67% of companies in Indonesia, 49% in Taiwan, and 37% in Japan (Claessens et al., 2000), 35% in Canada (Attig et al., 2006) are controlled through a pyramidal structure. Frequently, these business groups have a holding company at the top and various layers of subsidiaries below. The entrepreneur typically has the majority of voting rights in every company, either directly in the holding or indirectly in the subsidiaries. Most of the literature on pyramidal groups emphasizes the agency problem between the group controlling agent and subsidiaries' minority shareholders, associated with the low share of cash flow that the entrepreneur is entitled to in operating subsidiaries and hence with the opportunities for their expropriation (Bebchuk, 1999; Bebchuk et al., 2000). This poses particular challenges to their valuation. We investigate whether cross-shareholdings to build pyramidal structures may affect the attractions of the equity market.

The purpose of the current study is therefore to shed light on the valuation of pyramidal companies. There are a variety of situations in which the value of a firm must be established without referring to the market value. One example is the valuation of a closely held business for the purpose of determining gift and estate taxes or settlements. Corporate control transactions such as merger and acquisitions or management buyouts also require the valuation of equity. However, the most crucial time for valuation is that of an IPO. The challenge facing a company going public is indeed convincing a wide variety of potential external investors that it has potential.

The valuation of IPOs takes up an important place in finance. Nevertheless, empirical literature on the subject is widely focused on US offerings, while the European specific context has drawn smaller attention, probably due to a higher difficulty to access to homogeneous and comparable data. Consequently, the peculiar ownership structure European companies has not gained much attention so far. It is indeed well-known that, while in Anglo-Saxon countries ownership is largely dispersed, in continental Europe, as well as in Japan and many other Asian countries, we often observe two different structures: the government control of big companies in regulated industries which are going to be liberalized, and a private control, by means of "pyramids", in the other

cases. Such peculiarity yield several implications for studies in corporate finance (La Porta et al., 1999). The purpose of the current study is to shed light on the valuation of pyramidal companies at the time of their IPO.

This is an issue with considerable practical and theoretical importance to both investors and academics. The determinants of the offer price should indeed indicate the value drivers underlying stocks perceived to be important by the players in the capital market. Precisely, we question whether this particular aspect in the governance of European companies does affect the valuation of the firms going public. Our interest is based on the evidence that complex pyramidal structure are often correlated to high managerial agency costs (Claessens et al., 2002; La Porta et al., 2002; Bekaert et al, 2003; Lins, 2003), larger private control benefits (Burkart et al., 1998; Nenova, 2003; Doidge, 2004; Dyck and Zingales, 2004), lower protection of minority shareholders (Bebchuck et al., 2000; La Porta et al., 2000) and underdeveloped market for corporate control (Nenova, 2003; Doidge, 2004; Meoli et al., 2008). We therefore wonder whether investors, anticipating higher expropriation opportunities, discount this effect from IPO valuation, and expect to observe *ceteris paribus* lower prices. On the other side, Morck (2009) acknowledge a role to pyramids in developing countries, where they may substitute for weak markets institutions, even though no such role is evident in developed or in slowly growing developing economies.

Empirically, we investigate the effect of the ownership structure on IPO valuation using an extensive European dataset (EurIPO), which combines corporate governance and ownership information with several other explanatory variables, drawn from previous literature indications (spanning from size and age to offer structure). We expect our analysis to demonstrate that European IPOs, although valued upon similar fundamentals with respect to US IPOs, are affected by the existence of a differentiated ownership structure. In particular, investors to some extent anticipate the higher possibility to be expropriated when pricing shares of companies owned by a pyramidal group.

The remainder of this paper is structured as follows. Section 2 reviews the literature, Section 3 presents the research design, while econometric results are discussed in Section 4. Conclusions follow.

2 Previous Literature

2.1 The valuation of IPOs

The valuation of IPOs is an important area under investigation by both financial and accounting literature. In the last decade, research approaches have evolved in several directions. Opened by Kim and Ritter (1999), a broad stream of literature studies the methodologies used to price IPO companies (e.g. Purnanandam and Swaminathan, 2004; Cassia, Paleari and Vismara, 2004; Jagannathan and Gao, 2005). The general finding is that IPO firms are on average priced at a premium to listed firms. Others studies specifically address such issue of over-optimism when valuing IPOs, questioning the activity of financial analysts and intermediaries. On one side, analysts' activity reduces agency costs associated with the separation of ownership and control (Jensen and Meckling, 1976); on the other, there is some criticism that analysts provide biased information. Prior research has indeed typically indicated that analysts tend to be overoptimistic and that their forecasts systematically exceed the actual figures (see, for instance, Rajan and Servaes, 1997; Brav and Lehavy, 2003).

Closely related to the valuation of IPOs is the branch of literature investigating the value relevance of accounting data for IPO firms. These studies have typically examined three sets of potential value drivers (Guo, Lev and Zhou, 2005): various firm and issue attributes (such as the stake retained by pre-IPO owners or the age at the IPO), financial fundamentals (such as sales, earnings, and research and development expenditures) and non-financial information (such as web-traffic measures, patents or alliance agreements). Our contribution to this literature is to relate the IPO valuation to firm-level variables of ownership. This approach is of particular interest in the European context, where, differently from the US the ownership structure is typically not largely dispersed even after the IPO.

The studies about the relationship between ownership and IPO variable are characterised by an empirical approach and focus on the effect of ownership (and ownership changes) on post-issue performance. In particular, the theoretical bases of this empirical investigation are connected to an important and ongoing debate in the corporate finance literature that goes back to the Berle and Means (1932) thesis. They suggest that an inverse correlation should be observed between the diffuseness of shareholdings and firm performance. Afterwards, Jensen and Meckling (1976)

analyze the conflict of interest between managers and owners when the latter cannot costlessly monitor the performance of the managers. Their model implies that when managerial ownership is high, the monitoring role of the board is decreased. In contrast, if managerial ownership is low, companies can set strong boards to monitor the management (Fama and Jensen, 1983). Accordingly, the reduction in management ownership that occurs at the IPO may increase the agency problems. From a different perspective but with similar predictions, Leland e Pyle (1977) develop a model in which these original shareholders seek financing for projects whose true value is known only to them. By retaining a significant ownership stake in the firm, entrepreneurs can signal projects' quality since false representation can be costly. Building on this theoretical background, our paper moves forward to analyse the relationship between ownership structure and valuation.

2.2 Ownership Structure and Valuation

The idea that ownership structure affects value plays a central role in modern finance literature (Demsetz and Lehn, 1985, Morck et al., 1988, Cho, 1998, Hovakimian et al., 2001, Claessens et al., 2002, La Porta et al., 2002, Lins, 2003). There are two seminal theoretical papers shaping this relationship: Leland and Pyle (1977) and Jensen and Meckling (1976). In Leland and Pyle's model (signaling hypothesis), the entrepreneur knows more about the expected future cash flows of the firm than do potential investors. Accordingly, equity retention at the time of listing by existing shareholders is interpreted by the market as a signal of their firm commitment. Therefore, the current value of the firm is positively related to the equity retention at the IPO. Besides, according to the agency hypothesis (alignment-of-interest hypothesis), higher ownership retention by managers reduces their incentives to undertake non-value maximizing projects (Jensen and Meckling, 1976). Due to a reduction of agency costs, this hypothesis predicts that firm value increases as management ownership rises.

Other theoretical work suggests that the relationship between firm value and retained equity may not be significantly positively related across the full range of possible values of management ownership. Contrary to the alignment-of-interest and to the signaling hypothesis, Fama and Jensen (1983) point to the problem of managerial entrenchment, suggesting that both positive and negative effects arise from managerial ownership in companies (entrenchment hypothesis). Indeed, in a high information asymmetry environment, managers may indulge preferences for

non-value-maximizing behaviour. Bebchuk (1999) shows that managers who own substantial fractions of the firm's equity, such that they gain effective control of the firm, may pursue private benefits. Therefore, high levels of management ownership may result in entrenchment because outside shareholders find it difficult to monitor and control managerial actions. Stulz (1988) shows that an increase in the fraction of voting rights in control of managers acts as an economic takeover defense by reducing the probability of a successful takeover bid. In his model, the concentration of voting rights in the hands of incumbent management has an ambiguous influence on the value of the firm. On the negative side, an increase in the managerial control of voting rights adversely affects the value of the target, as it may reduce the probability of value-increasing takeovers. On the positive side, takeover premiums offered when such attempts are made, increase with the fraction of voting rights that are controlled by managers.

Empirical research accounts for the entrenchment hypothesis by considering a non-linear relationship between managerial ownership and firm performance. Morck, Shliefer and Vishny (1988) argue that the performance effect of the incentive alignment argument dominates the performance effect of the entrenchment argument for low levels of managerial ownership. The alignment hypothesis effects appear to be dominant within the 0 percent to 5 percent range of managerial ownership. The entrenchment effect is dominant within the 5 percent to 25 percent ownership range; and for still higher levels the picture is reversed back once again. Subsequent studies on European firms find turning points at higher levels of ownership (McConnell and Servaes, 1990; Short and Keasey, 1999; Roosenboom and Van der Goot, 2005; and Bonardo, Paleari and Vismara, 2007). The difference is attributed to the size of the sample firms: whereas Morck et al. (1988) only analyze large U.S. companies from the Fortune 500 list, the sample of European studies typically contain smaller firms. Building on this research, we hypothesize a nonlinear relation between management ownership and firm value.

2.3 Pyramidal groups

Most of the literature on the relationship between ownership structure and valuation – or performance - is based on an Anglo-Saxon perspective, where ownership is largely dispersed. However, it is well-known that in Continental Europe (Franks and Mayer, 2001), in Japan and in many other Asian countries (Hiraki et al., 2003), we often observe two different structures: the government control of big companies in regulated industries which are going to be liberalized,

such as the energy and telecommunication industries (Boubakri et al., 2004) and a private control, by means of pyramids, in the other cases (La Porta et al., 1999). A similar pattern is evident also when we consider how ownership and control are separated. In the UK and USA, public companies live side by side with family companies. Sometimes the separation is performed by adopting a dual-class structure, with limited or no-voting rights for a group of shareholders. In continental Europe, the situation is quite different (Becht and Röell, 1999, La Porta et al., 1999, Buyschaert et al., 2004). A dual-class structure is often working in conjunction with pyramids, where the controlling shareholder just controls the quoted company with the highest position in the group (Bebchuck et al., 2000, Faccio and Lang, 2002). This allows the group to conduct relevant financial investments with minimal financial resource from the majority shareholders (Slovin and Sushka, 1997), with no chance for minorities to affect/dismiss the operation. A similar analysis concerning East Asian Countries is provided by Claessens et al. (2002).

Recent literature expresses concerns about the pyramidal ownership structure in continental Europe. Those concerns are discussed from different perspectives. First, when the separation between ownership and control is obtained via groups, high managerial agency cost may arise (Claessens et al., 2002; La Porta et al., 2002; Bekaert et al, 2003; Lins, 2003), and private control benefits are larger (Burkart et al., 1998; Nenova, 2003; Doidge, 2004; Dyck and Zingales, 2004). Secondly, recent studies in corporate finance underline how pyramids adversely affect the protection of minority shareholders (Bebchuck et al., 2000; La Porta et al., 2000). Third, a pyramid structure determines an underdeveloped market for corporate control and this point is commonly investigated in the literature by analysing how markets award voting rights (Nenova, 2003; Doidge, 2004).

As pyramids are employed to separate ownership and control, allowing a single controlling shareholder to control large conglomerates (Becht and Roell, 1999, and Faccio and Lang, 2002), an important research question is how the ownership of the controlling shareholder affects a firm's value. In particular, former literature consider two hypothesis. On the one hand, according to the *interest alignment hypothesis*, the possession of a higher level of cash flow rights by large shareholders serves to commit them to active monitoring and the maximization of firm value. La Porta et al. (2002) and Claessens et al. (2002) report evidence to support a positive correlation between the cash flow rights of large shareholders and Tobin's q in samples of large seasoned firms. Yeh et al. (2008) find that this positive correlation is weakened in aftermarket trading.

On the other hand, according to the *entrenchment hypothesis*, the separation of ownership and control generates an interest conflict between controlling and minority shareholders. Grossman and Hart (1988) and Harris and Raviv (1988) show that separating ownership and control lowers the value for shareholders, and may not be socially optimal. Shleifer and Vishny (1997) illustrate that when ownership goes beyond a certain point and large owners gain almost full control, private control benefits are generated for the large shareholder that are not shared by the minority shareholders. Claessens et al. (2002) report that the difference between the control (voting) rights and cash flow rights of the largest shareholders is associated with a value discount, and that this discount increases with the size of the difference between voting and cash flow rights. Further, Yeh et al. (2008) find that a deviating voting-cash structure also correlates negatively with IPO underpricing.

3 Research Design

3.1 IPOs in Europe

Unlike the United States, the institutional setting of European IPOs is not overseen by a single regulator but by a patchwork of distinct national regulators whose only common duty, when belonging to the European Union, is to issue regulations in accordance with the legal guidelines of the European Investment Services Directive, the Prospectus Directive, and the Transparency Directive. Any firm willing to undertake an IPO on a regulated market must first obtain permission from a regulatory body which can be the Ministry of Finance, the regulatory authority of security markets, or the stock exchange itself, depending on the country. Most of the stock exchanges in Europe are organized in segments with a main market and one or more second-tier markets dedicated to particular classes of firms. Historically, second-tier markets in Europe have been successful in hot periods and collapsed in cold ones. On the other side, the whole history of stock exchanges in Europe has seen an evolution in the segmentation of stock markets.

Such evolution in the structure of the industry is linked to the most striking feature of the landscape of European IPOs, i.e. its 'cyclicality'. Historically, Europe's IPO market has been dwarfed by the U.S. IPO market (Ritter, 2003). In 2000, however, in spite of a high volume of IPOs in the U.S., continental European IPO volume exceeded that of the U.S. for the first time in

at least several decades. More recently, the London Stock Exchange took over by launching a successful second-tier market for small and medium companies, namely the Alternative Investment Market (AIM). This has been able to beat the US IPO markets by attracting a large number of companies from different industries and countries (Paleari, Pellizzoni and Vismara, 2008). As a consequence, there has been an intense debate over the causes of the decreasing appeal of US IPO market, involving the 2002 Sarbanes-Oxley Act (Leuz et al., 2007; Zhang, 2007). Despite its international appeal, the AIM is still very weak in continental Europe, where listing takes place predominantly in the issuer's home market and, even when a security is listed simultaneously in more than one market, trading tends to be concentrated in this market (Paleari, Ritter and Vismara, 2009).

3.2 Dataset and sample

In recent years, the market for IPOs in Europe has been characterised by several important developments that we believe are worth to be presented. Given the vast number of IPOs, we have chosen to focus on the stock exchanges of the four largest economies, namely Germany, France, UK, and Italy. The list of IPOs is selected from the EURIPO database that provides the IPO prospectus as well as very detailed information on all the companies that have recently gone public in Europe¹. The list of IPOs comprehends all and only those 'real' Initial Public Offerings. We therefore exclude introductions (admissions with no initial offer), re-admissions as well as listings of companies already listed on other stock markets. IPOs of investment entities (such as investment trusts) and financial companies are also excluded because they display different characteristics compared with other IPO firms.

Table 1 describes the panorama of European IPO over the last decade, by market and by year of listing. In the period 1995-2006, there were 3,052 non-financial firms that conducted an IPO on the stock market of Germany (Deutsche Börse), France (Euronext), the United Kingdom (London Stock Exchange), and Italy (Borsa Italiana). Most of the IPOs took place on the London Stock Exchange, coherently with the higher propensity to go public in the Anglo-Saxon countries

¹ The EURIPO database is developed by Universoft, a spin-off of the University of Bergamo (www.euripo.eu). It contains data on more than 5,000 companies that went public through IPO on European stock markets since 1985. Specific data about the firms was collected from the IPO prospectuses and annual reports.

compared to Continental Europe. In particular, the AIM (Alternative Investment Market), with 1,195 IPOs is the market with more IPOs in Europe and in the last period 2004-2006 the IPOs on this “second-tier” market were more than ten times those on the LSE Main Market. If we exclude the rise and fall of the New Markets, the fraction of IPOs on the continental European markets is fairly constant at about one third of the total number of IPOs in Europe. The parenthesis of the New Markets, that interested all Europe, with the exception of the UK, produced 513 IPOs, most of them in the bubble period 1998-2000².

[INSERT SOMEWHERE HERE TABLE 1]

Table 2 reports the descriptive statistics. The market to book ratio at the IPO varies across markets. The highest median M/B was on the New Market (4.68, and 4.75 on the German Neuer Markt), while the lowest is on the Italian Stock Exchange (excluding the Nuovo Mercato). The age of the companies at the IPO is higher in Continental Europe (12 years) and particularly low on the AIM (3 years). Firm size varies accordingly, spanning from median values of 30 €m in Continental Europe to 2.87 €m on the AIM. Long term debt is more important in financing continental European IPO-firms (leverage 22.44%), while it had scarce relevance for the New Markets (5.6%). Less profitable firms went public on the New Markets (median ROE 7.1%) and on the AIM, where most of the companies, especially in the last years, had negative earnings (-1.73%). The size of the offer (proceeds) are in median larger on the traditional markets in Italy (74 €m) and in the UK (50.3 €m). The smallest are on the Euronext, due to the large number of IPOs on the Second Marchè and Marchè Libre. Most of the IPOs in the UK does not have a secondary offer (participation ratio in median equal to 0, while in the typical continental Europe IPO 10% of shares held by existing shareholder are sold at the offer. Underpricing is higher on the

² The number of IPOs reported in this paragraph, as well as in Table 1, excludes those made by financial companies. European New Markets formed a pan-European network named Euro.NM with a Markets Harmonization Agreement which established similar regulations. Euro.NM was a network of regulated national markets dedicated to growth companies, each governed by its home country requirements. Its members were the French Nouveau Marché (first listing March 20 1996, closed on February 21 2004), the German Neuer Markt (first listing March 10 1997, closed on June 5 2003), the Dutch Nieuwe Markt NMAX (first listing March 25 1997, then absorbed in Euronext), EuroNM Belgium (first listing April 11 1997, then absorbed in Euronext) and the Italian Nuovo Mercato (first listing June 17 1999 and renamed MTax on September 19 2005). As for the UK, no independent new market was launched, but it was only created a new market segment (techMARK) grouping the companies listed on the LSE operating in high-tech industries. Besides, the AIM replaced the USM (Unlisted Securities Market) in June 1995.

New Markets (19.37%, with 29.03% on the Neuer Markt) and lower in Continental Europe (3.90%).

[INSERT SOMEWHERE HERE TABLE 2]

3.3 Pyramids and Ultimate Controlling Shareholder

In order to address the research question about how the pyramidal structure and the ultimate shareholder identity affects a firm's value, we introduce a set of dedicated variables³. We introduce a dummy variable to check for the typical mechanism employed to enhance control in Europe, namely the pyramidal structure. According to the definition in Faccio and Lang (2002), pyramiding occurs when the controlling shareholder owns one corporation through another which he does not totally own. We identify pyramids by setting a 10% cut off threshold to define a controlling stake. In Figure 1 we depict the ownership structure of an Italian company included in the sample, as a typical example of pyramid.

[INSERT SOMEWHERE HERE FIGURE 1]

While pyramiding is not the only way to separate ownership and control, we shall neglect less significant mechanism such as firm-specific voting caps, golden shares and informal alliances (i.e. voting blocks) or transfer restrictions on shares. Moreover, while the dual class share structure is widely used in Europe, it has to be noticed that, in most countries, companies do not issue non-voting shares before being listed. For instance, in Italy (legge 216/1974, and art. 145-147 d.Lgv 58/1998), only listed companies are allowed to issue shares with limited voting rights, and when they do, they must grant an advantage on earning distribution. Due to this discipline, dual class structure is not a determinant of value at the time of IPOs in Italy.

³ In fact, former literature such as Morck, Shliefer and Vishny (1988) analyze the hypothesis of a non-linear relationship between ownership and valuation. As pyramid affiliation and ultimate ownership are measured in our paper with dummy variables, we do not investigate non-linearity in our analysis.

Second, we check for the role of the ultimate controlling shareholder's identity, by introducing a set of dummy variables taking value of 1 according to the following classification⁴:

1. Family: the ultimate shareholder is a family (including an individual) or a firm that is unlisted on any stock exchange;
2. Widely-held financial institution: the ultimate controlling shareholder is a financial firm (SIC 6000-6999) that is widely held at the control threshold;
3. Widely-held corporation: the ultimate controlling shareholder is a non-financial firm, widely held at the control threshold;
4. State: analyzing the control chain we get to a national government (domestic or foreign), local authority (county, municipality, etc.) or government agency.

Table 3 reports descriptive statistics on the pyramidal ownership and on the ultimate controlling shareholder identity. In this section, the sample is limited to the cases with available detailed information on the ownership structure. Precisely, we first matched our data with the Faccio and Lang (2002) ownership dataset, identifying a sample of 213 IPOs. Only 144 of these companies are included in our following empirical analysis, due to missing information. Second, we hand-collected data for all Italian IPOs between 1995 and 2006, obtaining a population of 169 companies. The table reports information on the ownership structure for the two samples. Pyramidal ownership appears diffuse in all countries, while widely held companies are extremely scarce (0.82%). The differences are not to be generalized, as they refer to small samples. Nevertheless, it is evident how financial institutions play a major ownership role in the UK with respect to the Continental Europe. As good example of a market with a dominant pyramidal structure, in Panel B we report statistics on the sample of data for all Italian IPOs between 1995 and 2006 (169 observations). More than half of the sample is interested in a Pyramidal structure and a dominant role is covered by families as ultimate shareholders.

[INSERT SOMEWHERE HERE TABLE 3]

⁴ Other less relevant cases are dropped, so that this set of dummies does not constitute a complete partition of the sample.

3.4 Methodology and variable definition

Theoretically, the market values of companies differ from their book values by the present value of their future abnormal earnings. With this respect, the market-to-book ratio (henceforth M/B) reflects investors' assessment of the future abnormal profits of the firm or, in other words, the difference between expected return on equity and cost of equity. This ratio is of particular interest as it seems to generate a market premium. Indeed, the spread in returns between value stocks (those with low M/B) and growth stocks (those with high M/B) is found to be statistically and economically significant. Several explanations for this premium are possible. The most important are the risk proxy idea (Fama and French, 1993) and the investor overreaction idea (Lakonishok, Shleifer, Vishny, 1994). The first explanation states that growth stocks are riskier and thus require a higher return. The second explanation posits that the premium arises because investors' expectations are based on extrapolation of recent past performance.

The extent of M/B may also be used as an indication of intangible assets of a company that are not entirely reflected in its financial statements. Financial accounting does not attempt to value the firm in its entirety since it records each of its severable assets at an amount in accordance with current legislation. On the other hand, the market values the company as a going concern. So, the M/B gives an idea of the intellectual capital and intangibles not explicated from the financial accounting standards. However, the market value of a company is subject to a number of external variables, referring to degree of competition in the industry (monopoly power, deregulation) and to the investors' sentiment (think for instance to the overpricing of dotcoms going public on the new stock markets and the subsequent drop in their values).

In this paper, we refer to the M/B to estimate the relation between variable of ownership structure and valuation. We investigate if any ownership or governance specificities are reflected in the value attributed from the market to the companies going public⁵. All estimations are obtained through OLS, regressing Market to Book values, with reference to the different samples. The first step of our empirical analysis is to run a first regression on the determinants of IPO valuations, drawing from the existing literature. IPO valuation might indeed not be related to the ownership structure itself, but instead emerges from correlations between the latter and unmeasured features

⁵ To calculate the market-to-book ratio of equity, market capitalization on the first day of trade is divided by the sum of the primary offering proceeds and the book values of equity from the last pre-IPO financial statement. As in previous studies (e.g. Kim and Ritter, 1999), market-to-book values (dependent variable) are constrained to be non-negative and no greater than 10.

of firm quality. While this is a possibility, we control for the effect on valuation and performance of a number of firm-quality characteristics. A detailed definition of the variables is provided in Table 4. In this first step, we employ our broader dataset of European IPOs between 1995 to 2006 in order to establish a baseline regression. Only 1,406 observations contain full information, and are therefore employed in our baseline regression analysis.

Second, we focus on two samples containing ownership information: the first sample contains a set of firms included in the Faccio and Lang (2002) dataset; the second contains all Italian IPOs between 1995 and 2006. For both sample we start regressing Market to Book in the baseline regression model. Then, we consider a Pyramid structure dummy, and last we control for the ultimate shareholder identity. In the regression analysis dedicated to the ownership structure, the sample is limited to the cases with available information on the ownership structure (see Table 3).

[INSERT SOMEWHERE HERE TABLE 4]

4 Econometric Results

Table 5 provides results for a set of regressions with different specifications of determinants. All estimations are obtained through OLS, regressing Market to Book values for a sample of 1,406 companies (505 in Model 3), with reference to IPO operations between 1995 and 2006 in the UK, in Italy, in Germany and in the Euronext Countries. An essential set of regressors is included in Model (1): firm age and firm size are firm determinants; offer size, underpricing and participation are the offer determinants, while hi-tech markets and internet bubble dummies check for the effects of market segmentation and extraordinary evaluation of IPO between 1999 and 2000. Results are mostly aligned with our expectations: firm age and size coefficient are both negative and significant, as well as the offer dimension. By contrast, the other offer determinants, as underpricing and participation both have positive and statistically significant coefficients. The dummy variable catching the marginal effect of hi-tech market has also a positive and significant coefficient, as well as the internet bubble dummy. While in Model (1) the analysis of time effect is limited to the internet bubble, we check for each year effect in Model (2): most results are unaffected, but coefficient for firm size and hi-tech market lose their significance. In Model (3)

we test for the effect of further firm determinants, such as profitability, financial (leverage) and operating risk. Interestingly, while profitability and operating risk take a positive and a negative coefficient sign, as expected, leverage takes a positive and significant sign⁶. In Model (4) we include two further dummies, in order to control for the relevance of specific industries featured by high levels of market to book ratio, such as hi-tech and consumer services. Both dummies are significant. Interestingly, all coefficients introduced in the baseline regression keeps sign and significance alongside all specifications, with the exception of hi-tech market. We argue that, while most former literature acknowledge a positive effect for IPO on new markets, this effect is lost when we check either for firm profitability and risk, or specific industry effects.

[INSERT SOMEWHERE HERE TABLE 5]

In Table 6 we report estimations obtained through OLS, regressing Market to Book values for a sample of 144 companies, with reference to IPO operations between 1995 and 1998 in the UK, in Italy, in Germany and in the Euronext Countries, and included in the Faccio and Lang (2002) database. 69 of the initial 213 observations are dropped for insufficient information.

Model (1) presents a baseline regression, including most relevant firm and offer determinants: firm age and size, offer size and structure, underpricing. Hi-tech market dummy checks for market segmentation effects, while year dummies are here included in all specifications (Internet bubble dummies is obviously dropped because of sample time limitations). This model estimation shows some inefficiency due to the limitations of the sample, but still most signs are consistent with results provided by Table 5. The most remarkable difference is that of firm size, here positive and non significant. In Model (2) we insert into the model specifications a variable checking for the effect of Pyramiding. The dummy coefficient is positive and significant, rejecting the hypothesis that an higher expectation of expropriation is linked to the presence of this ownership framework. In Model (3) we include a set of dummies in order to test whether specific identities of the ultimate shareholder have an impact on the market to book ratio of IPOs. No coefficient is significant, but interestingly we notice how family and widely-held corporation

⁶ The result definitively deserve further investigation. Nevertheless, we drop accounting variables from the following investigation of the ownership effect. This is due to a limited availability of full observations, and because of the difficulties in homogenizing such variables for firms belonging to different countries.

have a positive coefficient, and by contrast widely-held financial institutions and state have a negative one.

In the following models 4, 5, and 6, we report estimations obtained through OLS, regressing Market to Book values for a sample of 169 companies, with reference to the population of Italian IPO between 1995 and 2006. Model (4) presents the same baseline regression as in the former tables. Results are quite similar to those of the European sample, but offer size is here significant⁷. In Model (5) we check for Pyramiding effect. Consistently with results in Table 5, we find a positive coefficient, though we cannot provide any statistical evidence about the significance of this effect. In Model (6) we include a set of dummies in order to test whether specific identities of the ultimate shareholder have an impact on the market to book ratio of IPOs. Family dummy coefficient is the only to take a positive sign, while the State dummy coefficient, that is negative, is the only one to be statistically significant.

[INSERT SOMEWHERE HERE TABLE 6]

Some divergence between the two estimated coefficients linking ownership structure and firm valuation deserve further discussion.

First, while still positive, the dummy variable identifying pyramidal ownership is not significant when tested on the sample limited to the Italian firms. Some country-specific effect is definitively at work. An intriguing explanation is to condition the supposed positive effect of pyramidal affiliation to minority shareholder protection. In fact, different contributions in recent literature assert that, notwithstanding recent improvement, minority protection in Italy has been an issue in the last decade (Dyck and Zingales, 2004; Melis, 2005; Meoli et al., 2008). Therefore, the positive relationship between pyramidal affiliation and firm valuation may hold only when minority protection is good.

Second, while the state as an ultimate owner has a negative effect also for the European sample, statistical significance is found only on the Italian sample. In this case, it would be interesting to

⁷ Offer Size of Italian IPOs is quite different from that of European ones, as noticed in Table 2, Panel B, and this might be one of the reasons why the estimated coefficient differs. This result would deserve further investigation when a larger dataset is available.

test whether the political turbulence experienced in Italy in the last decade could be a determinant of this stronger negative effect.

Further empirical evidence is needed to confirm both these intuitions.

5 Conclusions

This paper investigates the determinants of valuation at the time of European firm IPOs, with a particular focus on the role of the ownership structure. Our interest is based on the evidence that complex pyramidal structure, quite common in continental Europe, are often correlated to high managerial agency costs, larger private control benefits, lower protection of minority shareholders and underdeveloped market for corporate control.

Our analysis is based on a broad sample consisting of all 3,052 non-financial firms that conducted an IPO in the period from 1995 to 2006 on the stock market of the four largest European economies. We employ two reduced samples for the analysis of ownership determinants: a sample of firms included in the Faccio and Lang (2002) dataset and the population of Italian IPOs between 1995 and 2006. We find that the market to book ratio at the IPO varies across markets, with the highest median value was on the New Markets dedicated to high-tech companies. Initial market valuation is supported by underpricing and participation by existing shareholders, while firm age, size and offer dimension all have a negative impact. Market value at time of valuation is also higher for firms listed during the internet bubble. The well known positive effect on valuation of companies on technological market is also significant, but it is not robust in wider specification including accounting determinants and when checking for industry effects.

As for ownership structure, we show that firms included in pyramidal groups are awarded in value by the market. The result is significant on a cross-section of European IPOs included in the Faccio and Lang dataset, but not statistically confirmed on the Italian IPOs. While Morck (2009) asserts a positive function of pyramids in fast developing countries, as substitute for efficient market institutions, this is a first evidence that, in continental European countries, pyramids maintain this positive function. By analyzing the effect of the ultimate shareholder identity, we find out that state ownership is detrimental for the valuation: the result is significant on the Italian sample.

Hence, European IPOs are affected by the existence of a differentiated ownership structure, although our results have low significance levels. Our results are therefore not to be generalized, while we leave to future research the confirmation of the above mentioned hypotheses on wider and more homogeneous samples.

References

- [1] Attig, N., Fong, W.F., Gadhoum, Y., Lang, L.H.P., 2006. Effects of large shareholding on information asymmetry and stock liquidity. *Journal of Banking and Finance*, 30, 2875-2892.
- [2] Bebchuk, L. A., 1999. A Rent-Protection Theory of Corporate Ownership and Control. NBER Working Papers 7203, National Bureau of Economic Research, Inc.
- [3] Bebchuk, L.A., Kraakman R., Triantis G.G., 2000. Stock Pyramids, Cross-Ownership, and Dual Class Equity: The Creation and Agency Costs of Separating Control from Cash Flow Rights. In *Concentrated Corporate Ownership* (R. Morck, Ed.), 445-460.
- [4] Becht, M., Röell, A., 1999. Blockholdings in Europe: An International Comparison. *European Economic Review*, 43, 1049-1056.
- [5] Bekaert, G., Lundblad, C., Harvey, C.R., 2003. Equity Market Liberalization in Emerging Markets. *Journal of Financial Research*, 26, 275-299.
- [6] Berle, A., Means, G., 1932. *The Modern Corporation and Private Property*. Harcourt, Brace, & World, New York.
- [7] Bonardo, D., Paleari, S., Vismara, S., 2007. The non-linear relationship between managerial ownership and firm performance, *Corporate Ownership and Control*, 4 (4), pag. 18-29.
- [8] Boubakri, N., Cosset, J.C., Guedhami, O., 2004. Privatisation, corporate governance and economic environment: Firm-level evidence from Asia. *Pacific-Basin Finance Journal*, 12, 65-90.
- [9] Brav and Lehavy, 2003 A. Brav and R. Lehavy, An empirical analysis of analysts' target prices: short-term informativeness and long-term dynamics, *Journal of Finance* 58 (2003), pp. 1933–1967.
- [10] Burkart, M., Gromb, D., Panunzi, F., 1998. Why higher takeover premia protect minority shareholders. *Journal of Political Economy*, 106, 172-204.
- [11] Buyschaert, A., Deloof, M., Jegers, M., 2004. Equity sales in Belgian corporate groups: expropriation of minority shareholders? A clinical study. *Journal of Corporate Finance*, 10, 81-103.
- [12] Cassia, L., Paleari, S., Vismara S., 2004. The Valuation of Firms Listed on the Nuovo Mercato: The Peer Comparables Approach, *Advances in Financial Economics*, 10, pag. 113-129.
- [13] Claessens, S., Djankov, S., Fan, J.P.H., Lang, L.H.P., 2002. Disentangling the incentive and entrenchment effects of large shareholdings. *Journal of Finance*, 57, 2741-2771.
- [14] Cho, M.H., 1998. Ownership structure, investment, and the corporate value: an empirical analysis. *Journal of Financial Economics*, 47, 103-121.

- [15] Claessens, S., Djankov, S., Fan, J.P.H., Lang, L.H.P., 2002. Disentangling the incentive and entrenchment effects of large shareholdings. *Journal of Finance*, 57, 2741-2771.
- [16] Demsetz, H., Lehn, K., 1985. The Structure of Corporate Ownership. *Journal of Political Economy*, 93, 1155-77.
- [17] Doidge, C., 2004. U.S. cross-listings and the private benefits of control: evidence from dual class firms. *Journal of Financial Economics*, 72, 519-553.
- [18] Dyck, A., Zingales, L., 2004. Private Benefits of Control : An International Comparison. *The Journal of Finance*, 59, 537-600.
- [19] Faccio , M., Lang, L., 2002. The ultimate ownership of Western European corporations, *Journal of Financial Economics* 65 (2002), pp. 365–395.
- [20] Fama, E. F., French, K.R., 1993, Common risk factors in the returns on stocks and bonds, *Journal of Financial Economics* 33, 3-56.
- [21] Fama, E. F., Jensen, 1983, Separation of ownership and control, *Journal of Law and Economics* 26, pp. 301–325.
- [22] Franks, J., Mayer, C., 2001. Ownership and Control of German Corporations. *The Review of Financial Studies*, 14, 943-977.
- [23] Grossman, S. J., Hart, O. D., 1988. Takeover Bids, the Free-Rider Problem, and the Theory of the Corporation. *Bell Journal of Economics*, 11, 42-64.
- [24] Guo, R., Lev, B., Zhou, N., 2005. The Valuation of Biotech IPOs. *Journal of Accounting, Auditing and Finance*, 20(4), 423-459.
- [25] Harris, M. and A. Raviv, 1988. Corporate Governance: Voting Rights and Majority Rules, *Journal of Financial Economics*, 20, 203-35.
- [26] Hiraki, T., Inoue, H., Ito A., Kuroki, F., Masuda, H., 2003. Corporate Governance and firm value in Japan: Evidence from 1985 to 1998. *Pacific-Basin Finance Journal*, 11, 239-265.
- [27] Hovakimian, A., Opler, T., Titman, S., 2001. The theory of capital structure. *Journal of Financial and Quantitative Analysis*, 36, 1-24.
- [28] Jagannathan and Gao, 2005. Are IPOs underpriced? A closer examination, Working paper, Kellogg Graduate School of Management – Northwestern University.
- [29] Jensen, M., Meckling, W., 1976. Theory of the firm: Managerial behavior, agency costs and ownership structure, *Journal of Financial Economics*, 3, 305-360.
- [30] Kim, M., Ritter, J.R., 1999. Valuing IPOs, *Journal of Financial Economics* 53 (1999), pp. 409–437.
- [31] Lakonishok, J., A. Shleifer, and R. W. Vishny. "Contrarian Investment, Extrapolation, and Risk." 1994. *Journal of Finance* 49: 1541–1578.
- [32] La Porta, R., Lopez-de-Silanes, F., Shleifer, A., 1999. Corporate Ownership around the World. *Journal of Finance*, 54, 471-517.
- [33] La Porta, R., Lopez-de-Silanes, F., Shleifer, 2000. Investor Protection and Corporate Governance. *Journal of Financial Economics*, 59, 3-27.
- [34] La Porta, R., Lopez-de-Silanes, F., Shleifer, A., Vishny, R.W., 2002. Investor Protection and Corporate Valuation. *Journal of Finance*, 57, 1147-1170.
- [35] Leland, H. and D. Pyle, 1977, Information Asymmetries, Financial Structure and Financial Intermediation, *Journal of Finance*, 371-388.
- [36] Leuz, C.; A. Triantis and T.Y. Wang, 2007. Why Do Firms Go Dark? Causes and Economic Consequences of Voluntary SEC Deregistrations, *Journal of Accounting and Economics*,
- [37] Lins, K.V., 2003. Equity ownership and firm value in emerging markets. *Journal of Financial and Quantitative Analysis*, 38, 159-184.

- [38] McConnell, John J., and Henri Servaes, 1990. Additional Evidence on Equity Ownership and Corporate Value, *Journal of Financial Economics* 27, 595-612.
- [39] Melis, 2005. Corporate Governance Failures: to what extent is Parmalat a particularly Italian Case?, *Corporate Governance: An International Review* 13 (4), 478-488.
- [40] Meoli, M., Paleari, S., Urga, G., 2008. Changes in ownership and minority protection: Governance lessons from the case of Telecom Italia. *International Journal of Managerial Finance*, 4(4), 323-342.
- [41] Morck, R., Shleifer, A., Vishny, R.W., 1988. Management ownership and market valuation: an empirical analysis. *Journal of Financial Economics* 20, 293-315.
- [42] Morck, R., 2009. The Riddle of the Great Pyramids. NBER Working Papers 14858, National Bureau of Economic Research, Inc.
- [43] Nenova, T., 2003. The value of corporate voting rights and control: a cross-country analysis. *Journal of Financial Economics*, 68, 325-351.
- [44] Paleari, S., Pellizzoni, E., Vismara, S. 2008. The going public decision: Evidence from the IPOs in Italy and in the UK. *International Journal of Applied Decision Sciences*, 1, 131-152.
- [45] Paleari, S., Ritter, J.R., Vismara, S., 2009. Explaining the Simultaneous Consolidation and Fragmentation of Europe's Stock Markets. Working paper, University of Bergamo.
- [46] Purnanandam, A., Swaminathan, B., 2004, Are IPOs really underpriced?, *Review of Financial Studies* 17 (2004), pp. 811-848.
- [47] Rajan, R., Servaes, H., 1997, Analyst following of initial public offerings, *Journal of Finance* 52 (1997), pp. 507-529.
- [48] Ritter, J. R., 2003, Differences between European and American IPO Markets, *European Financial Management*, 9(4), 421-434.
- [49] Roosenboom P., van der Goot, T., 2006. Broad-based employee stock options grants and IPO firms, *Applied Economics*, Taylor and Francis Journals, vol. 38(12), pages 1343-1351, July.
- [50] Shleifer, A., Vishny, R., 1997. A survey of corporate governance. *Journal of Finance*, 52, 737-783.
- [51] Short, H., Keasey, K., 1999, Managerial ownership and the performance of firms: Evidence from the UK, *Journal of Corporate Finance* 5 (1999), pp. 79-101.
- [52] Slovin, M. B., Sushka, M. E., 1997. The Implications of Equity Issuance Decisions within a Parent-Subsidiary Governance Structure. *The Journal of Finance*, 52, 841-857.
- [53] Stulz, R., 1988. Managerial control of voting rights: Financing policies and the market for corporate control. *Journal of Financial Economics* 20, 25-54.
- [54] Yeh, Y.H., Shu, P.G., Guo, R.J., 2008. Ownership Structure and IPO Valuation - Evidence from Taiwan, *Financial Management* 37, 141-161.
- [55] Zhang, I.X. (2007) "Economic consequences of the Sarbanes-Oxley Act of 2002", *Journal of Accounting and Economics*.

Table 1. The sample of IPOs. IPOs by year and by market. Continental Europe excludes the new markets (belonging the Euro.NM association) and comprehends all the other markets managed by Deutsche Börse, Euronext and Borsa Italiana. LSE comprehends both the Main Market and the AIM of the London Stock Exchange. In parenthesis, percentage relative to the total number of IPOs in the three-years period; in the last raw and in the last column, percentages are relative to the total of 3,052 IPOs.

| | 1995-1997 | 1998-2000 | 2001-2003 | 2004-2006 | 1995-2006 |
|--------------------------------|---------------|-----------------|---------------|---------------|-----------------|
| LSE - AIM | 172 | 249 | 192 | 582 | 1,195 (39.2) |
| LSE - Main Market | 165 | 141 | 28 | 55 | 389 (12.7) |
| Euronext - NM | 36 | 131 | 7 | 0 | 174 (5.7) |
| Euronext (others) | 122 | 264 | 90 | 152 | 628 (20.6) |
| Deutsche Börse - Neuer Markt | 11 | 277 | 11 | 0 | 299 (9.8) |
| Deutsche Börse (others) | 28 | 85 | 10 | 74 | 197 (6.5) |
| Borsa Italiana - Nuovo Mercato | 0 | 35 | 4 | 1 | 40 (1.3) |
| Borsa Italiana (others) | 30 | 42 | 22 | 35 | 129 (4.2) |
| Continental Europe (excl. NM) | 180 (31.9) | 391 (31.9) | 122 (33.5) | 261 (29.0) | 954 (31.3) |
| New Markets (Euro.NM) | 47 (8.3) | 443 (36.2) | 22 (6.0) | 1 (0.1) | 513 (16.8) |
| LSE | 337 (59.8) | 390 (31.9) | 220 (60.4) | 637 (70.9) | 1,584 (51.9) |
| Total | 564 (18.5) | 1,224 (40.1) | 364 (11.9) | 899 (29.5) | 3,052 |

Table 2. Descriptive statistics. The table reports the median value for the sample of 3,052 IPOs. See main text for variable definitions. Monetary figures for sales and offer proceedings are in millions of euro, the exchange rates for UK firms are those at the IPO day for each firm for the IPO proceeding and the average of the year prior to the IPO for the sales (source: Datastream). The operating risk is measured as the variance of EBIT on the five years prior to the IPO. This variable is calculated on a more limited period for young companies, such as those going public on the AIM. This leads to an underestimation of their operating risk. Profitability and M/B are calculated only for those firms with positive pre-IPO book equity. Therefore, this statistic does not comprehend those companies with so negative earnings that their pre-IPO book value of equity is negative. This is the case of 246 companies, mainly going public on the new markets and on the AIM.

| <i>Panel A: Firms at IPO</i> | | | | | | |
|---------------------------------------|------------------|-------------------|-------------------------|---------------------|------------------------|----------------------|
| | M/B | Firm Age | Firm Size (Sales €m) | Leverage | Profitability (ROE) | Operating Risk |
| LSE - AIM | 2.51 | 3 | 2.87 | 10.31 | -1.73 | 79.9 |
| LSE - Main Market | 2.68 | 9 | 30.70 | 8.22 | 14.89 | 83.7 |
| Euronext - NM | 4.42 | 6 | 10.62 | 7.52 | 7.94 | 85.7 |
| Euronext (others) | 3.76 | 10 | 21.98 | 26.40 | 18.15 | 80.1 |
| Deutsche B. - Neuer Markt | 4.75 | 8 | 14.85 | 3.94 | 5.35 | 84.9 |
| Deutsche B. (others) | 3.36 | 9 | 33.13 | 14.47 | 10.20 | 85.0 |
| B. Italiana - Nuovo Mercato | 4.33 | 9 | 26.35 | 2.16 | 8.53 | 89.9 |
| B. Italiana (others) | 2.14 | 29 | 133.92 | 18.97 | 12.68 | 71.6 |
| Contin. Europe (excl. NM) | 3.36 | 12 | 30.31 | 22.44 | 15.70 | 80.5 |
| New Markets (Euro.NM) | 4.68 | 8 | 13.56 | 5.60 | 7.10 | 84.9 |
| LSE | 2.55 | 4.5 | 5.50 | 9.47 | 1.46 | 81.0 |
| Total | 3.22 | 7 | 12.91 | 13.26 | 9.76 | 81.6 |
| <i>Panel B: Offer characteristics</i> | | | | | | |
| | Proceeds (€m) | Participatio n | Underpricin g | Market Sentiment | Hi-tech | Consumer services |
| LSE - AIM | 6.12 | 0.00 | 11.48 | 289 | 23.8 | 23.1 |
| LSE - Main Market | 50.32 | 13.14 | 9.04 | 242 | 26.5 | 31.4 |
| Euronext - NM | 11.00 | 3.73 | 5.26 | 300 | 56.9 | 56.3 |
| Euronext (others) | 4.23 | 10.00 | 4.41 | 300 | 28.5 | 37.9 |
| Deutsche B. - Neuer Markt | 37.73 | 6.67 | 29.03 | 348 | 44.5 | 46.8 |
| Deutsche B. (others) | 36.25 | 11.48 | 3.45 | 322 | 21.8 | 29.4 |
| B. Italiana - Nuovo Mercato | 43.16 | 2.95 | 5.62 | 498 | 65.0 | 65.0 |
| B. Italiana (others) | 73.98 | 16.61 | 2.96 | 301 | 6.2 | 16.3 |
| Contin. Europe (excl. NM) | 9.92 | 10.10 | 3.90 | 309 | 24.1 | 33.2 |
| New Markets (Euro.NM) | 28.37 | 5.89 | 19.37 | 327 | 50.3 | 51.5 |
| LSE | 8.91 | 0.00 | 10.47 | 279 | 24.5 | 25.1 |
| Total | 11.81 | 3.92 | 9.04 | 305 | 28.7 | 32.1 |

Table 3. Descriptive Statistics on Pyramidal Structure and Ultimate Shareholder Identity (All data are percentages). The table reports information on the ownership structure for the two samples employed in the regression analysis. Ultimate ownership is classified according to Faccio and Lang (2002), where Other refers to unlisted companies and miscellaneous cases. In Panel A we report statistics on a sample of companies contained both in our IPO data and in the Faccio and Lang (2002) ownership dataset (213 observations). In Panel B we report statistics on the sample of data for all Italian IPOs between 1995 and 2006 (169 observations).

| <i>Panel A: European sample</i> | | | | | | | |
|------------------------------------|-----|----------|--------------------|------------------------|-----------------|-------|--------|
| | n. | Pyramids | Ultimate ownership | | | | |
| | | | Family | Widely Held Fin. Inst. | Widely Held Co. | State | Other |
| LSE - AIM | 30 | 26.67 | 23.89 | 23.81 | 0.00 | 1.73 | 50.58 |
| LSE - Main Market | 102 | 21.57 | 23.10 | 22.18 | 1.72 | 0.57 | 52.43 |
| Euronext - NM | 1 | 100.00 | 0.00 | 0.00 | 0.00 | 0.00 | 100.00 |
| Euronext (others) | 39 | 10.26 | 29.57 | 13.33 | 0.00 | 4.57 | 52.52 |
| Deutsche B. - Neuer Markt | 11 | 27.27 | 24.24 | 36.36 | 0.00 | 0.00 | 39.39 |
| Deutsche B. (others) | 11 | 0.00 | 24.24 | 13.18 | 0.00 | 10.91 | 51.67 |
| B. Italiana - Nuovo Mercato | 0 | - | - | - | - | - | - |
| B. Italiana (others) | 19 | 5.26 | 13.16 | 21.05 | 0.00 | 5.26 | 60.53 |
| Contin. Europe (excl. NM) | 69 | 7.25 | 24.20 | 15.43 | 0.00 | 5.77 | 54.59 |
| New Markets (Euro.NM) | 12 | 33.33 | 22.22 | 33.33 | 0.00 | 0.00 | 44.44 |
| LSE | 132 | 22.73 | 23.28 | 22.55 | 1.33 | 0.83 | 52.01 |
| Total | 213 | 18.31 | 23.52 | 20.85 | 0.82 | 2.39 | 52.42 |
| <i>Panel B: Italian population</i> | | | | | | | |
| | | Pyramids | Ultimate ownership | | | | |
| | | | Family | Widely Held Fin. Inst. | Widely Held Co. | State | Other |
| B. Italiana - Nuovo Mercato | 40 | 55.00 | 84.50 | 3.83 | 2.50 | 0.00 | 9.17 |
| B. Italiana (others) | 129 | 56.59 | 59.69 | 4.52 | 1.04 | 12.40 | 22.35 |
| Total | 169 | 56.21 | 65.56 | 4.36 | 1.38 | 9.47 | 19.23 |

Table 4. Variable definitions. Variables measured at the time of the IPO. Accounting data are hand-collected from IPO prospectuses.

| Variables | Definition |
|-----------------------------|--|
| Market-to-book | Ratio between the market value of the company at the IPO (first-day price times number of shares after the issue) and the post-listing equity book value (pre-IPO book value plus capital inflow at the IPO) |
| Firm Age | Years between the firm's initial incorporation and the time of the IPO |
| Firm Size | Sales (€m) (natural logarithm in the regressions) |
| Offer Size | Offer price times number of shares offered (€m) (natural logarithm in the regressions) |
| Underpricing | Difference between the first-day closing price and the final offer price, scaled by the final offer price (%) |
| Participation Ratio | Percentage of the IPO offering composed of existing shares |
| Leverage | Ratio between long term debt and equity |
| Profitability | Net earnings over book value of equity |
| Operating Risk | The variance of EBIT on the five years prior to the IPO, estimated as $\left\{ \frac{1}{n} \cdot \sum_{i=-n}^{-1} \left[\frac{(EBIT_i - \overline{EBIT})}{\overline{EBIT}} \right]^2 \right\}^{1/2}$, where n is min(age,5); |
| New Markets (Euro.NM) | Dummy variable equal to 1 if the firm goes public a 'new' stock market, belonging the Euro.NM association |
| Internet Bubble | Dummy variable equal to 1 if the firm goes public a in the period 1998-2000 |
| Hi-tech | Dummy variable equal to 1 if the company operates in a hi-tech consumer sector |
| Consumer Services | Dummy variable equal to 1 if the company operates in a consumer services sector |
| Pyramids | Dummy variable equal to 1 when the controlling shareholder owns one corporation through another which he does not totally own. We identify pyramids by setting a 10% cut off threshold to define a controlling stake. |
| Family | Dummy variable equal to 1 when the ultimate shareholder is a family (including an individual) or a firm that is unlisted on any stock exchange |
| Widely held financial inst. | Dummy variable equal to 1 when the ultimate controlling shareholder is a financial firm (SIC 6000-6999) that is widely held at the control threshold |
| Widely held corporations | Dummy variable equal to 1 when the ultimate controlling shareholder is a non-financial firm, widely held at the control threshold |
| State | Dummy variable equal to 1 when a national government (domestic or foreign), local authority (county, municipality, etc.) or government agency are shareholders |

Table 5. Estimating Baseline Regressions. All estimations are obtained through OLS, regressing Market to Book values for a sample of 1,406 companies (550 in model 3), with reference to IPO operations between 1995 and 2006 in the UK, in Italy, in Germany and in the Euronext Countries. (1) models M/B as a function of firm determinant, offer determinants, and two dummies taking into account the effects of the internet bubble and of New Markets; (2) substitutes the internet bubble dummy with year dummies; (3) adds leverage, operating performance and risk to the first model (856 further observations are dropped); (4) adds dummies for specific industries with common elevate market to book values. ***, ** and * represent statistical significance at 1, 5 and 10% respectively. Numbers in brackets are standard deviations of each coefficient.

| | (1) | (2) | (3) | (4) |
|-----------------------|----------------------|----------------------|----------------------|----------------------|
| Variables | Coefficient (std) | Coefficient (std) | Coefficient (std) | Coefficient (std) |
| Constant | 8.568*** (0.752) | 7.446*** (0.814) | 12.148*** (1.137) | 8.141*** (0.750) |
| Firm Age | -0.012*** (0.003) | -0.010*** (0.003) | -0.010* (0.006) | -0.011*** (0.003) |
| Firm Size | -0.140 (0.035) | -0.027 (0.035) | -0.170*** (0.063) | -0.008 (0.035) |
| Offer Size | -0.270*** (0.050) | -0.261*** (0.005) | -0.343*** (0.074) | -0.267*** (0.050) |
| Underpricing | 0.011*** (0.001) | 0.011*** (0.001) | 0.011*** (0.001) | 0.011*** (0.001) |
| Participation Ratio | 0.023*** (0.005) | 0.024*** (0.005) | 0.024*** (0.008) | 0.023*** (0.005) |
| New Markets (Euro.NM) | 0.555** (0.249) | 0.322 (0.254) | -0.309 (0.338) | 0.330 (0.250) |
| Internet Bubble | 0.768*** (0.200) | - | 1.503*** (0.282) | 0.732*** (0.198) |
| Year dummies | - | Yes | - | - |
| Leverage | - | - | 0.002*** (0.001) | - |
| Profitability | - | - | 0.008*** (0.002) | - |
| Operating Risk | - | - | -0.003*** (0.001) | - |
| Hi-tech | - | - | - | 0.425** (0.178) |
| Consumer Services | - | - | - | 0.510*** (0.166) |
| R ² | 0.188 | 0.21 | 0.33 | 0.21 |
| n. obs. | 1,406 | 1,406 | 550 | 1,406 |

Table 6. Estimating Regressions with Ownership Variables. Models 1 to 3 are obtained through OLS, regressing Market to Book values for a sample of 144 companies, with reference to IPO operations between 1995 and 1998 in the UK, in Italy, in Germany and in the Euronext Countries, and included in the Faccio and Lang (2002) database. Observations with missing information are dropped. Models 4 to 6 are obtained through OLS, regressing Market to Book values for the population of 169 companies that went public through IPO in the period 1995 to 2006 in Italy. Models (1) and (4) regress the dependent variable M/B as a function of baseline regressors, including year dummies; models (2) and (4) add two dummies for the presence of dual-class capital structure and pyramidal ownership; models (3) and (6) test the effect of specific ultimate ownership types: family, widely held financial institutions, widely held corporations and state. ***, ** and * represent statistical significance at 1, 5 and 10% respectively. Numbers in brackets are standard deviations of each coefficient.

| | (1) | (2) | (3) | (4) | (5) | (6) |
|-----------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| Variables | Coefficient (std) | Coefficient (std) | Coefficient (std) | Coefficient (std) | Coefficient (std) | Coefficient (std) |
| Constant | 1.708 (2.771) | 0.409 (2.795) | 0.670 (2.893) | 0.246 (2.197) | 0.203 (2.196) | -1.189 (2.247) |
| Firm Age | -0.012* (0.007) | -0.013* (0.007) | -0.013* (0.007) | -0.018*** (0.006) | -0.017*** (0.06) | -0.016*** (0.006) |
| Firm Size | 0.194 (0.123) | 0.247** (0.124) | 0.290** (0.131) | -0.318*** (0.114) | -0.310*** (0.114) | -0.330*** (0.113) |
| Offer Size | -0.107 (0.184) | -0.096 (0.182) | -0.154 (0.191) | 0.445*** (0.144) | 0.432*** (0.144) | 0.536*** (0.145) |
| Underpricing | 0.007** (0.003) | 0.006* (0.003) | 0.006* (0.003) | 0.035*** (0.006) | 0.036*** (0.011) | 0.039*** (0.006) |
| Participation Ratio | 0.004 (0.012) | 0.003 (0.011) | 0.002 (0.012) | 0.035*** (0.010) | 0.037*** (0.011) | 0.043*** (0.011) |
| New Markets (Euro.NM) | 1.835 (1.381) | 1.703 (1.363) | 1.707 (1.380) | -0.311 (0.479) | -0.254 (0.481) | -0.379 (0.474) |
| Year dummies | Yes | Yes | Yes | Yes | Yes | Yes |
| Pyramids | - | 1.349** (0.612) | 1.547** (0.661) | - | 0.333 (0.306) | 0.167 (0.331) |
| Family | - | - | 0.003 (0.006) | - | - | 0.003 (0.004) |
| Widely held financial inst. | - | - | -0.004 (0.006) | - | - | -0.012 (0.007) |
| Widely held corporations | - | - | 0.002 (0.028) | - | - | -0.012 (0.012) |
| State | - | - | -0.019 (0.025) | - | - | -0.011* (0.006) |
| R ² | 0.185 | 0.214 | 0.222 | 0.534 | 0.538 | 0.579 |
| n. obs. | 144 | 144 | 144 | 169 | 169 | 169 |

Figure 1. On the left side, a theoretical pyramidal structure. On the right side, As a typical example of real pyramidal structure, we report the ownership chain, at the time of the IPO, of Davide Campari Milan Spa. The ultimate shareholder (the Geravoglia Family), holds control through a 51% ownership share in Fincorus Srl, controlling Alicross Srl with a 60% share, controlling Davide Campari Milano SpA with a 51% share.

