

# Going Public to Grow? Evidence from a Panel of Italian Firms

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**Abstract.** This paper investigates the consequences of the going public decision for the growth of Italian firms using US firms as a benchmark for comparison. We find Italian firms conducting IPOs are larger than US firms, but raise fewer funds from the IPO and grow more slowly afterwards. We also compare Italian IPOs across time. Firms going public in the 1990s display features that are more similar to US IPOs. We describe changes to the Italian economy and financial markets potentially responsible for the change. We also compare firms of different size and with different governance structure, and we find that they behave differently after going public. Our results suggest that public policies that simply increase access to equity markets may not be effective unless they provide incentives for the firms' decision-makers to use the new capital to grow.

**Keywords:** Initial public offerings; Going public; Firm growth; Business groups and Small firms; Italian stock markets

**JEL Classification:** G30, G32, L21, O16

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## I. Introduction

European policymakers have viewed the underdevelopment of the markets for risk capital with growing concern, identifying financial obstacles to growth as a potential weakness of the EU. An explicit goal of current public policy in Europe is to promote the development of markets for risk capital to assist the expansion of existing small firms, especially in high-technology industries, and to promote entrepreneurship and the growth of employment associated with entrepreneurial firms. But what happens to a European firm which goes public remains an open question, as outside of the UK, few European firms go public.<sup>1</sup>

Within Europe, Italy is a particularly very interesting case. Publicly traded firms are not pervasive in the Italian economy. Few Italian firms go public. Until recently, Italy's public and private equity markets were among the smallest in Europe.<sup>2</sup> Italian policy has encouraged better access and more use of equity capital, and provided firms with incentives to go public. It is important to understand how these policies have influenced the decisions of firm managers and owners.

Our research examines the behavior of most of the firms in the Italian economy that went public over a 23-year time period between 1977 and 1999. These firms are part of a data set that contains information for approximately 1700 Italian firms, which we use to provide a benchmark for comparison. To set the stage for our research and as an additional benchmark for comparison we examine data from the United States from several thousand newly public US firms over a similar period. Our decision to use

the US as a benchmark reflects both our priors and the conventional wisdom that the Initial Public Offering (IPO) provides young firms with the financing that they need to rapidly increase scale and capture profits associated with good investment opportunities.

While we expected to find differences between the US and Italy, we were quite surprised by their extent. While many firms that go public in both countries are part of high-technology industries or industries with a substantial amount of intangible or specific-use capital, here the similarities appear to end. The size of firms going public in Italy tends to be much larger than US IPOs. The amount of equity capital raised by the typical Italian IPO is quite small relative to the size of the firm, and also quite small relative to the typical US IPO. The average US firm going public grows quite rapidly (in terms of assets, capital, and sales). In contrast, Italian IPOs display much slower growth after they go public. Both absolute and relative employment growth for the typical US firm that goes public is quite rapid after the IPO. In contrast, Italian firms that go public tend to add relatively few employees. Because one of the goals of improved access to equity capital is employment growth, this last point is particularly relevant for European public policy.

The striking differences between the behavior of US and Italian firms led us to reorient our efforts to focus more intensively on the characteristics of newly public Italian firms. We compare the behavior of Italian IPOs prior to 1990 with those after 1990. There were important changes in the Italian tax system in the 1990s that provided incentives for firms to go public and institutional changes in the Italian economy as it prepared for full integration into the EMU. The 1990s were also witness to financial innovations in the Italian and European equity markets that may have increased SMEs access to equity finance. Our analysis will help gauge how better access to public equity markets has affected firm performance on several margins.

We also examine how firms of different size and with different governance structures (e.g., group-affiliated or independent) behave after the IPO. Firms with different ownership structure may have different motivations to go public.

<sup>1</sup> One of the few studies to examine European firms' performance after their IPO is the paper by Pagano, Panetta, and Zingales (1998, hereinafter PPZ), who examine the general question of why firms go public. The features of the Italian data helped to answer the general questions posed by their research. In particular, unlike US firms, data for Italian firms were available for many years prior to the IPO, and there were a large number of sample firms that did not go public during the sample period, which gave PPZ with a "control" group they could exploit in their empirical analysis.

<sup>2</sup> EASD (2000), Committee of Wise Men on the Regulation of European Securities Markets, 27<sup>th</sup> September.

For example, firms with high prospects for growth and no affiliation with pyramidal groups (and so no access to the group's internal capital markets) may be subject to binding financing constraints. For this class of firms the motivation to conduct an IPO may be to acquire finance for rapid growth.

The nature of the firm conducting an IPO, and the behavior of the firm in its wake, appears to be changing in Italy. There were important differences in the behavior of Italian IPOs between the 1980s and the 1990s. Italian firms that went public in the 1990s are smaller than Italian firms that went public in the 1980s. The size of the IPO was larger relative to the size of the firm, and the firm retained a larger proportion of the proceeds of the IPO. However, firms going public in Italy in the 1990s grew before, not after the IPO. Importantly, employment growth of Italian IPOs in the 1990s was larger than those in the 1980s, a point that may be appreciated by European policymakers.

We also find important differences in the behavior of Italian IPOs by ownership structures and by size. The initial public offering has practically no impact on the behavior of affiliated or large firms whereas it positively affects the growth and performance of independent and small firms. Independent and small firms raise more equity from the IPO and appear to be using the IPO proceeds for growth. Our findings also indicate that, after going public, small firms succeed in obtaining more funds on the credit market.

Overall, the decision to go public in Italy appears to be more complex than it is in the US, where capturing opportunities for growth appears to dominate other issues. More importantly, we believe that for European policymakers to achieve their desired outcomes, policies that simply increase access to equity capital may not be effective unless they also provide incentives for the firms' managers to use the new capital to grow.

The remainder of the paper is organized as follows. Section II describes the institutional and regulatory environment facing firms in Italy and the US that conduct IPOs. Section III describes the behavior of firms in the United States and in Italy samples both prior to and in

the aftermath of their IPOs, illustrating the sharp differences in their behavior and describing the changing characteristics of an Italian IPO in the 1990s. Section IV presents the results of the regression analysis that investigates the ex-post and ex-ante behavior of Italian firms that went public over the period 1977-1999. Section V, which concludes the paper, describes how our results might shape these policies.

## II. Equity Markets in Italy

### II. A *The evolution of the Italian stock market*

The first Italian stock exchange was created in Milano in 1808. Italian exchanges were given strict and detailed admission criteria for quotation, which remained largely unchanged until 1974, when a new law created the regulatory body which governs the Italian equity markets, the CONSOB (*Commissione Nazionale per le Società e la Borsa*). CONSOB regulations were tightened in 1984, and became less restrictive in 1997.

Few firms trade on Italy's stock market and the market is small. In 1980, the number of companies quoted on Italy's markets (141) was smaller than the number at the beginning of the 20th century (approximately 170). In 1980, the ratio of market capitalization to GDP in Italy was only 3.1 percent. During the 1980s the number of listed firms increased following the stock market boom and the economic expansion, but the value of market capitalization remained low (7.4% of GDP in 1987) and the number of new listings dropped towards the end of the decade. The development of the Italian exchanges has been slow because of the important role of the banking sector in the provision of funds to the corporate sector and state ownership in Italian industry.

In the 1990s, the Italian stock market showed signs of more vigorous development. From 1990 to 1999, 120 companies listed, most of them between 1995 and 1999 and the capitalization of the market as a percentage of GDP ratio rose from 6.6 to 73% in June 2000 (in the US the ratio was 114.5%).<sup>3</sup> This upsurge

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<sup>3</sup> Notably, however, in this period, 123 companies were retired

may be related to new financial developments spurred by the European Commission's requirements to join the Single Market (1993) and later the European Monetary Union (1999).<sup>4</sup> European integration policies required liberalized capital markets and widespread privatizations. Large privatizations in the Italian economy were one factor for the large jump in market capitalization. The Stock Exchange itself was privatized in late 1997 and new, less restrictive criteria to be admitted for quotation were issued.<sup>5</sup> A tax incentive was offered to small and medium companies that decided to go public in 1994.<sup>6</sup> The Italian government also introduced a tax reform program in 1997 meant to reduce the tax burden for shareholders and a new dividend tax credit regime was introduced. Finally the *Nuovo Mercato*, the Italian counterpart of the NASDAQ, opened in 1999.

## II. B Barriers to going public in Italy

It is well known that the costs of going public are large. For a small to medium sized Italian firms, the Stock Exchange Council's 1994 estimate of the direct cost of going public was slightly more than 4% of the gross proceeds of the IPO. In the US, Chen and Ritter (2000) show that in the period from 1995 to 1998, more than 90 percent of issuers paid underwriting fees of 7% of the proceeds. They remark that spreads on IPOs in the US are much higher than in other countries.

An important component of the costs of going public is the underpricing of the IPO. There are many potential explanations for why shares in

an IPO are underpriced.<sup>7</sup> One explanation that is likely to be relevant for Italian companies is the adverse selection problem that arises from information asymmetries in the financial market. Cherubini and Ratti (1991) show an underpricing premium of 27.1 percent over the period 1985 to 1991. CONSOB estimates of the average underpricing for Italian firms over the period 1988-94 show a premium of 26.6 percent. The premium for Italian firms is large when compared to US firms, and even larger when compared to other large European countries. Loughran, Ritter, and Rydqvist (1994) report underpricing premia of 15.8% in the US, of 4.2% in France, and of 10.9% in Germany. Jenkinson (1990) reports underpricing of 12.2% for UK firms. There has, however, been a sharp decline in the underpricing of recent Italian IPOs, which may reflect the development and increased liquidity of the Italian equity markets. CONSOB estimated the underpricing premium during the period 1995-2000 at 7.2 percent.

The institutional environment facing an Italian firm, although broadly representative of the environment that faces the typical European firm, is quite different from that in the US. Venture capital flows in much of Europe, but especially Italy, tend to be quite small. US underwriters are highly experienced, and institutional investors (pension funds, insurance companies, and investment funds) provide a great deal of capital for investment, even at very early stages and are increasingly active in corporate governance. In contrast, some European countries still restrict the ability of institutional investors to participate in equity markets. Compared to Europe, the market for corporate control in the US is very active and there are many laws and regulations designed to protect the interests of minority shareholders.

Up to the end of 1997 the regulatory requirements to be approved for listing on the Milano Stock Exchange were similar to those in force at the NYSE, and much more severe than those required by the NASDAQ. Italian firms needed to display shareholders' equity in excess

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from quotation, mostly because they were taken private, not because they went bankrupt. Therefore, at the end of 1999, only 264 firms were enlisted at the Italian Stock Exchange (in contrast 2619 US firms were listed at NYSE, at the end of 1999).

<sup>4</sup> Amongst the legal and institutional reforms that reshaped the financial markets in Italy in the early 1990s, was the new discipline for securities markets, financial intermediaries, and brokerage firms, the introduction of the trading-on-line system (the Italian "big-bang"), the regulation of take-over bids, the widening of the operational span for investment funds, common funds, as well as a growing attention toward disclosure rules and transparency.

<sup>5</sup> For a detailed discussion of listing requirements and costs in Italy, an appendix is available from the authors.

<sup>6</sup> In 1995 and 1996, sixteen companies went public exploiting this tax incentive, according to the CONSOB annual report.

<sup>7</sup> The extent of and the motivations for the underpricing phenomenon have received much attention (see Ritter and Welch, 2002, for a recent survey). See also Ritter (1987), Jenkinson (1990), and Ross, Westerfield and Jaffe (1999) for international comparisons of its size.

of 10 billion lira, positive earnings in the three years prior to listing and at least 25% of the equity must be floated among at least 500 new shareholders. The requirement of three years of positive earnings means that small, young, Italian firms face very large barriers to equity capital relative to similar firms in the US. Until 1999, when the New Market was introduced, start up firms with R&D intensive projects in the development stage could not have listed at all under the Italian rules.

Finally, firms that go public face extensive disclosure requirements, which may force them to disclose sensitive information to potential competitors. Disclosure rules also expose companies to a closer scrutiny from tax authorities, thus reducing the scope for tax evasion. Issues regarding disclosure are not emphasized in the US literature. Indeed, a large number of US companies that go public are in the high tech sector, and they must disclose some information about their ongoing projects in their prospectus.

In addition to costs and requirements to list, a variety of additional barriers exist in Italy that limit both the demand for equity shares and the supply of equity finance. Together, these factors can help to explain the small number of listed firms and the relatively small capitalization of the equity market.

The demand for equity shares in Italy was limited by a lack of participation of institutional investors, government policies that discouraged the holding of equity by individuals and limited the liquidity of shares, and a legal system that poorly protected the interests of minority shareholders. Investment (mutual) funds are a recent development in Italy and their role is not nearly as important in Italy as it is in the US.<sup>8</sup> The private pension system is virtually nonexistent in Italy. Italian pension funds also face significant regulatory barriers to holding

equity, although these regulations are currently being debated by the legislature and may soon be eliminated.

Several broad elements of the economy in Italy discouraged household savings and individual investors from using the equity market. Because of a need to finance a large public deficit, the Italian government gave tax preferences to increase demand for treasury obligations. Until the early 1990s the capital markets were tightly regulated, and individual investors faced thin domestic markets for equity shares. At the same time regulations made it impossible to diversify individual portfolios by holding shares of foreign firms.

Lastly, some observers have pointed to a high-degree of risk aversion, with respect to the decision to hold equity, on the part of the Italian public. This is partly due to the poor protection of minority shareholders' interests. La Porta, Lopez-de-Silanes, Shleifer, and Vishny (LLSV, 1998) place Italy amongst the countries that share the French civil law tradition, which provides weak legal protection to investors and minority shareholders, a lower quality of law enforcement and the poorest accounting standards.<sup>9</sup> In contrast, the common law legal framework in Anglo-Saxon countries provides stronger protection to minority shareholders' interests and may be better able to support an equity market (LLSV, 1998; Modigliani and Perotti, 2000).

The supply of equity in Italy is limited because of the structure of corporate governance. Corporate governance in Italy, like much of continental Europe, is centered upon family ownership. Some research suggests that the owner-founder of the company may be reluctant to go public because he fears that he will eventually be compelled to release the firm's control and the private benefits associated with it (Barca, 1994).<sup>10</sup> Other research suggests

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<sup>8</sup> Mutual funds were introduced in Italy in 1983. They did not hold an economically meaningful share of equity until the end of the 1980s. In the 1990s, institutional investment as a proportion of households' total financial investment in Italy has been steadily increasing (from 9.8% in 1990, to 16.7% in 1995 and 33% in 1999), but is still much lower than in the US. At the end of the 1990s, the proportion of households' total financial assets held by institutional investors in Italy and US was 37.0% and 70.5%, respectively (Bank of Italy, Annual Reports, 2000 and 2001).

<sup>9</sup> The inferior level of protection of Italian minority investors, in international comparisons, is acknowledged by the CONSOB itself (Annual Report, 2000), with the provision, however, that the recently introduced reforms "pave the way to strengthen the protection of shareholders". Johnson, La Porta, Lopez-de-Silanes, and Shleifer (2000) document that legal tunneling (a term originally coined to define the expropriation of minority shareholders in the Czech Republic) has occurred in developed civil-law countries such as Italy, France and Belgium.

<sup>10</sup> Zingales (1994) documents what appear to be enormous

that raising funds in public equity markets may be less attractive because valuation of corporate assets is lower in countries with poor investor protection, like Italy (LLSV, 2002; Burkart, Panunzi, Shleifer, 2003). Ownership concentration is typically high, and even the largest corporations are controlled by a single individual or a family, often through pyramidal business groups (Bianchi, Bianco, and Enriques, 2001). Several explanations have been proposed for the existence of groups (Brioschi, Buzzacchi, Colombo, 1989; Bebchuck, Kraakman, Triantis, 2000). Affiliation with pyramidal groups can reduce the severity of financing constraints for member firms (Schiantarelli and Sembenelli, 2000; Carpenter and Rondi, 2000). Groups' controlling shareholders may conduct carve outs in order to raise funds for the internal capital market and to maximize the proceeds from selling shares in a subsidiary (see also PPZ) without losing their control rights over the whole group structure. Finally, the group structure helps the controlling shareholder to control a large amount of assets with a minimal investment. Under poor investor protection, this exacerbates the agency problems between inside and outside shareholders.

### III. Going public to grow? An Initial Look

A common perspective is that a firm conducting an IPO represents the successful culmination of the entrepreneurial process. Because equity finance is expensive, firms that conduct an IPO should have investment opportunities that, *ex ante*, appear highly profitable. The IPO provides young firms with needed funds to increase scale and capture profits. For the US, empirical evidence exists to support some of these arguments. Firms going public in the US tend to be young and small. Ritter (1991) examines a sample of 1526 US IPOs during the period 1975-1984 and finds that the typical issuing firm is 6 years old. The median firm in his sample has sales of \$7.59 million. Carpenter

and Petersen (2002) examine a large panel of US high-tech companies and find that firms grow rapidly after going public. They report that the median firm's assets triple five years after the IPO, and employment grows by 70 percent relative to the year of the IPO.<sup>11</sup>

#### III. A The data

The remainder of the paper explores the consequences of the going public decision for the growth of Italian firms.

To conduct our study, we use a large dataset of Italian manufacturing firms constructed by CERIS-CNR using data published by Mediobanca, a large investment bank (annual directory *Le principali società*). The database is an unbalanced panel of 1715 companies over the period 1977-1999. It includes only firms with at least five consecutive observations so that each firm has a time series of at least five and at most twenty-one years. The data contain information about the firms' income statement and balance sheet variables. It also provides information about the firms' age, ultimate ownership, group-affiliation and business activity.<sup>12</sup> Only a minority of the sample firms is publicly traded. Of the 137 listed manufacturing firms in the panel, 57 companies went public on the MSE during the sample period, the latest entry being in 1997 to have at least three observations after the IPO.<sup>13</sup> For the 57 firms conducting an IPO,

<sup>11</sup> It is important to note, however, that the ex post performance of the share price of US IPOs typically under perform a sample of matching firms in the long run (Ritter, 1991).

<sup>12</sup> For a comprehensive description of the database, see Benfratello *et al.* (2001).

<sup>13</sup> To identify quoted companies we used the annual directory *Indici e Dati* published by Mediobanca, and "Il Taccuino dell'Azionista". We used Table X of *Indici e Dati* (1998) to find the date when a firm was listed (began trading publicly) on the Milano Stock Exchange (MSE). To identify the date when the proceeds from going public *accrued* to the firm we used Table XIV of *Indici e Dati* (1998) which reports the period and the terms of the public offering. We found that for several firms the year they first became listed did not match with the year of the IPO. In some cases this occurred because the firm was previously listed in one of the minor Italian exchanges or the *Mercato Ristretto*. In some cases the firm received the proceeds from its IPO in the year prior to its listing on an exchange. Our results are based on the exact year when the firm received funds from the sale of common stock through its IPO. PPZ noted a similar problem when they constructed the sample for their study. They noted that their results were robust to the choice of dates for the IPO.

private benefits of control rights. He shows that the premium attributed to voting shares (as compared to nonvoting shares) on the Milan Stock Exchange from 1987-1990 is as large as 82 percent of the value of the share. See also, for more recent evidence, Dyck and Zingales (2004).



we examine their size, growth, leverage, and profitability around the period of the IPO. We also examine how much equity finance accrued to the firm at the time of its IPO and how firms used the proceeds of their IPO. And while it is true that only a small percentage of the total number of sample firms go public, our sample contains a large proportion (about two thirds) of the total number of non-financial companies that go public in Italy during the sample period.

Because the US is often used as a benchmark for the comparison of risk capital markets we made limited use of an unbalanced panel of 3189 US publicly traded manufacturing firms from COMPUSTAT over the period 1981-1997, for comparative purposes. We include both active and inactive companies. All sample firms must be incorporated in the U.S.

### III. B Comparing Italian and US firms

A comparison between the two samples of IPOs shows that Italian firms are much larger than US firms in terms of employment (579 vs. 130 at the median), real sales (71.4 vs. 25 bn. Lira), and real total assets (73.4 vs. 16.1 bn. Lira). Moreover, Italian firms going public tend to be quite old (the median age is 23).<sup>14</sup>

Table 1 highlights the differences between newly public US and Italian firms that was the genesis of our study. Panel A shows median growth rates for US firms from t-1, the year prior to the IPO, to t+3. Panel B shows median growth rates for Italian firms. US firms grow very rapidly the year they go public (t+0). The rapid growth is readily apparent in all four measures contained in Table 1. Total assets (line 1) grows by 67 percent the year the firm goes public. The rapid growth of this component is to be expected, as cash proceeds from the IPO are a component of total assets. The firms' stock of fixed capital grows rapidly in the year of the IPO, increasing by almost 33 percent. The rapid growth of capital persists until after t+2 suggesting that firms use the

proceeds of the IPO to dramatically increase the scale of the firm. Labour inputs also increase rapidly at and after the IPO. Employment grows by 18.5 percent in t+0, and employment growth appears persistent.<sup>15</sup> Sales growth rates for US firms going public are also high.<sup>16</sup>

Panel B of Table 1 shows the median growth rates of newly public Italian firms. Assets, capital, and sales all show positive growth rates both prior to the IPO, the year of the IPO itself, and in the three years succeeding it. However, it is important to note that they are quantitatively very small compared to those of firms in the United States. Newly public Italian firms also display growth rates that are unspectacular in an absolute sense. Somewhat ominously from the standpoint of public policy, the Italy's new public firms display very little, if any, growth in employment.

Because Italian firms are much larger than US firms when they go public, a possible explanation of the growth differences between the two samples may be the difference in the initial firm size. We therefore calculated the growth rates for a sub-sample of size comparable US firms, - i.e. with a median number of 500 employees at the date of the IPO. We found that US large firms' growth rates of total assets, sales, employment, and particularly, fixed capital are still much higher than Italian firms', in most cases twice as large (see Table A2 in the Appendix).

These large differences in behavior between Italian and US firms that go public suggest that they may very well go public for different reasons.

<sup>15</sup> Although not shown in the table, we found that median employment increased from 130 employees in the year of the IPO to 215 3 years after. This result helps to illustrate why European policymakers have displayed such interest in reducing potential obstacles to going public.

<sup>16</sup> The growth of newly public US firms proceeds at such high rates that it is quite unlikely that they are driven by industry level or macroeconomic growth. Nonetheless, to partially control for this possibility, we "matched" firms by calculating the median growth rates, by year, for all variables in Table 1 using firms in the same three-digit industry. We standardized the growth rate by subtracting the newly public firm's growth rate for each year t-1 to t+3 from the industry median for the corresponding calendar year. The results appear in the appendix the paper, in table A1. They show that even when we match new public firms to this control group, the extraordinarily high growth rates during the period surrounding the IPO remain.

<sup>14</sup> Our evidence is consistent with other research that also shows that firms going public in Italy, and other EU member states as well, tend to be old and large. PPZ report, for the IPOs in their study, an average of 33 and a median of 26. Rydqvist and Hogholm (1995) report an average age of 40 for new public firms in Europe.

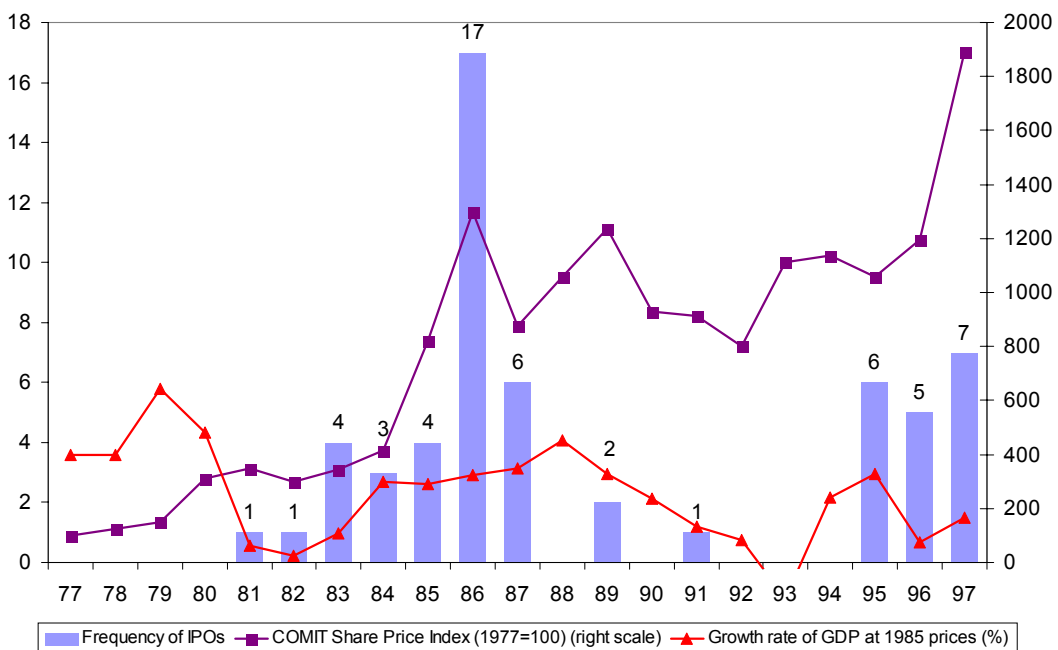
III. C Characteristics of the Italian IPO Sample

Figure one shows how the Italian IPOs were distributed through time. The distribution of IPOs in the sample is distinctly bimodal, with activity clustering in two periods; the mid 1980s and the late 1990s. There are demand and supply-side explanations for clusters of IPOs. Demand side explanations are based upon the idea that firms require equity capital for growth. Supply side explanations are based upon the idea that the equity markets help to absorb a large supply of funds which need to be invested. Overlaid on the table are graphs showing the time series properties of Italian GDP growth and equity prices. The data in figure 1 do not help identify which of the explanations are more likely. On the one hand, robust economic growth in mid 1980s might help drive an increase in the demand for equity capital and help explain the cluster of IPOs. Likewise, Italian managers' anticipation that their markets would grow after Italy was admitted into the EMU might also be consistent with demand side explanations and the cluster of IPOs in the

1990s. On the other hand, the growth in equity prices in both the 1980s and 1990s might be consistent with a hot issue market and a supply side explanation for the clusters of IPOs in both periods.

Table 2 provides a set of summary statistics for new public firms in the year of their IPO grouped by ownership structure, size and year of the IPO. The first column displays statistics for the full sample of IPOs. To place them into perspective, in column two we provide a second set of statistics for all firms that did not go public and were not quoted on the stock exchange during the sample period. Section I of the table shows some physical characteristics of the firm. Firms that went public were substantially larger than nonpublic firms, with approximately 60 percent larger sales, over twice as many total assets, and more than 200 more employees, at the median. Firms conducting IPOs were younger than nonpublic firms. Section II of the table provides information about the financial characteristics of the firm.

Figure 1 – Italian Firms Going Public in the 1980-1999 Period, GDP growth, Real Interest Rate, and Share Price Index



Firms conducting IPOs appear to be less indebted than the nonpublic firm sample. At the median, the ratio of total debt to total assets is 0.162 for the IPO sample vs. 0.252 for the nonpublic firm sample. Section III of the table shows some of the operating characteristics of the firm. In the year of the IPO, listed firms display substantially higher returns on assets (0.171 vs. 0.114) and returns on equity (0.585 vs. 0.474).<sup>17</sup> Also, they tend to invest at a higher rate relative to the size of their capital stock (0.159 vs. 0.104 for the nonpublic sample). On balance, the higher returns on assets and equity, combined with the faster rate of investment, suggest that the newly public firms perform somewhat better than the nonpublic firms do. The IPO sample's lower indebtedness also suggests somewhat superior financial performance.

The last section of the table shows the characteristics of proceeds of the IPO itself. The gross proceeds of the IPO, scaled by the firms beginning of period total assets is 0.304. Scaled by end of period total assets, the ratio is 0.243. Roughly put, if all the proceeds of the IPO were ploughed back into the firm, it would increase its scale by roughly 30 percent. The statistic for our sample of US firms, which includes the entire manufacturing sector, is 0.994.<sup>18</sup> One reason for the distinct difference between the growth of Italian and US IPOs in table 1 now becomes quite clear: the size of the IPO an Italian firm conducts is roughly 30 percent of the size of a US IPO, relative to the size of the firm. Furthermore, much of the proceeds of the IPO is not retained by an Italian firm. Net proceeds, which are gross proceeds less proceeds retained by the existing shareholder, have a median value less than half that of gross proceeds, suggesting that the owner manager uses the IPO to extract his wealth from the firm.<sup>19</sup> A more precise measure of the

proceeds of the IPO retained by the firm would match gross and net proceeds for a given firm. We therefore calculated net proceeds/gross proceeds, and found that its median value is 0.531.

In Table 2, columns three and four compare characteristics of group affiliated and independent companies, observed at the median as of the year of quotation.<sup>20</sup> For each variable, we performed two-sample Wilcoxon rank-sum tests of the difference of medians. Independent firms going public are slightly older and significantly smaller than carve-outs. Independent IPOs also display a higher debt to asset ratio, but a lower proportion of long term debt. Independent IPOs appear slightly less profitable than group affiliated IPOs, but also display significantly higher investment rate. The characteristics of the IPO is where we find the most striking differences between the two sub-samples. Not only independent firms raise more funds than carve-outs relative to the size of the firm (0.263 vs. 0.147), they also plough them back into the firm at a much higher degree (0.682). At the median, carve-outs retain none of the proceeds into the firm. These findings support the mainstream hypotheses about the motivations to go public for group-affiliated and independent firms. Within a pyramidal business group, the so-called Chinese-box mechanism allows the controlling shareholder to sell part of his shares and diversify his wealth while still retaining the control rights. In contrast, raising equity funds for growth appears as the dominant issue for independent firms where large amounts of retained proceeds combine with higher investment rates.

Columns five and six report separate statistics

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between shares offered for sale by old shareholders and new shares offered for sale. The firm would receive the proceeds only of the latter kind of sale. We defined total proceeds as the sum of the sale of shares from existing shareholders and the sale of new shares. We defined net proceeds (proceeds that accrue to the firm) as the sale of new shares.

<sup>17</sup> For enlisting firms, we computed ROA and ROE by using beginning of period equity and assets to account for the influence of the IPO. However, this results in the loss of a few observations, as some firms enter the panel in the year that they go public.

<sup>18</sup> Carpenter and Petersen (2002) calculated a similar statistic for a sample of newly public US high technology firms. They found the ratio of new equity funds to total assets in the year of the IPO had a median value of 1.76.

<sup>19</sup> We used the information in *Indici e Dati* to distinguish

<sup>20</sup> As explained in Section II, many listed firms in Italy belong to large pyramidal groups, or are technically carve-outs (i.e., firms belonging to a group where at least one company is quoted). Of the 137 quoted firms in the CERIS panel, 61 are affiliated to a large pyramidal group. Of the 57 newly public firms, 23 are group-affiliated. Interestingly, floatation of subsidiaries or carve-outs is more typical of the Eighties (21 out of 38 new listings are group affiliates), than of the Nineties, when none of the firms taken public belongs to a major group.

for IPO by firm size. We define “small” a firm with real sales less than 40 bn. Lira at the IPO date. Small firms appear older, at the median, than large firms do, when they go public. While it is true that many large new listings are *de facto* carve-outs from a mature business group, this finding is consistent with well-documented evidence that in Italy, firms tend to remain small for long.

The main difference between small and large firms is the characteristics of the IPO. Small firms raise a significant larger share of net proceeds than large firms, relative to the firm size, and they retain virtually all of the proceeds within the firm. At the median, the ration between net and gross proceeds is 0.996 for small firms and 0.261 for large firms. Whether small firms use the new equity funds to rebalance their books or to finance growth is a matter that we can better handle with the econometric analysis.

The last two columns of Table 2 split the data into the periods 1977-1989 and the period 1990-1999. Firms that went public in the 1990's were much smaller, in terms of employment, sales and assets. They also appear less indebted, and while they had similar or slightly poorer returns on assets and equity, they displayed faster rates of investment. When we turn to the initial public offerings, we find that IPOs in the 1990s were significantly bigger relative to the firm size, and that the firm retained a significantly larger share of the proceeds. Total proceeds doubled at the median, from 17 percent of assets to 35 percent of assets. Net proceeds in the 1980s were only 0.4 percent of assets, yielding the firm essentially no funds that it could use for growth, and nearly 20 percent of assets in the 1990s. Since the new listings were also typically independent, small-sized firms, this final piece of evidence suggests that institutional changes in the 1990s encouraged a new type of firms to tap the equity markets.

### III. D Differences between pre- and post-IPO behaviour

In Table 3 we compare size, growth, profitability and leverage of enlisting firms before and after the IPO. The table reports the median values of two-year averages for the

firms for which observations are available and significance tests of difference between medians.

Looking at the entire IPO sample, we find that number of employees is larger (638 vs. 592), and that labour inputs appear to be growing somewhat faster after the IPO. However firms do not appear to grow any faster after the IPO in terms of fixed capital investment and real sales. Both profitability and leverage are significantly lower after going public. When we split the data by governance structure, we find that independent IPOs significantly increase the firm size (measured by employees) while they decrease both profitability and leverage. In contrast, group affiliated firms do not display statistically significant differences in their behaviour around the IPO date. When we compare IPOs over time we find that new listings in the 1990s report higher investment rates and sales growth before going public and faster employment growth after the IPO, while leverage significantly declines after going public.<sup>21</sup>

Overall, Table 3 highlights the similarity of independent and recent IPOs, with similarly higher growth rates of sales and fixed capital before the IPO, and faster employment growth after the IPO. This appears as a major recurrence in the face of the uneventful story of firms that either belong to pyramidal groups or went public in the 1980s.

## IV. Econometric Results

In this section, we carry out an econometric analysis of the ex-post and the ex-ante behaviour of Italian firms that went public over the period 1977-1999. We examine the behaviour of Italian IPOs grouped by size, ownership structures, and timing of the IPO. The model is a simple empirical specification that tests the effects of the decision to go public on a set of variables that account for the firm's operating performance, financial characteristics and growth (see for example, PPZ, 1998).

We regress each variable on a set of dummy

<sup>21</sup> We do not report statistics for the large and small firms' sub-samples because the data requirement to construct the two-year averages leaves us with only nine small firms.

variables for the year of the IPO and the three subsequent years. Since only firms that meet the listing requirements can go public, their performance can be different from that of the other firms in the panel. We therefore include an additional set of dummies, which at time  $t$ ,  $t-1$ ,  $t-2$  and  $t-3$  take value 1 if firm  $i$  meets the requirements for listing on the Italian exchange (positive earnings and equity greater than 10bn lira). We include time dummies to control for the business cycle and for other macroeconomic conditions, for example the evolution of the stock price index and interest rates. Our model takes the form:

$$y_{it} = \alpha + \sum_{j=0}^3 \beta_j IPO_{t-j} + \sum_{j=0}^3 \delta_j QUO_{t-j} + f_i + \lambda_t + \varepsilon_{it} \quad [1]$$

where  $i$  indexes firms and  $t$  time, and  $f_i$  and  $\lambda_t$  are firm and time dummies, respectively.  $Y_{it}$  is, in turn, a financial or operating variable, or a growth rate.  $IPO_t$  is a dummy variable that returns a value of one when the firm goes public (in the subsequent years, e.g., one year after the public offering,  $IPO_{t-1} = 1$ , and  $IPO_t = IPO_{t-2} = IPO_{t-3} = 0$ ). Lags of IPO then control for persistence in the effects of going public and help describe the ex post behaviour of the firm. Likewise,  $QUO_t$  is the dummy variable controlling for differences in the performance between firms that meet the listing requirements and those that do not. Finally, in order to account for cross-sample differences, the IPO dummies are interacted with two dummies indicating the firm's status (i.e. date of the IPO, ownership, and size).

Table 4 reports estimated coefficients from panel regressions where standard errors are robust to heteroskedasticity.<sup>22</sup> For each variable we show estimates for the three sets of sub-samples separately.<sup>23</sup>

<sup>22</sup> When we split the sample of IPO firms across time, the number of post-IPO observations for firms going public in the 1990s becomes very small, which may reduce the precision of the estimates, especially for  $t+3$ .

<sup>23</sup> We omit reporting the coefficients on the control variables/dummies ( $QUO_t$ , etc.) and of the time dummies for brevity. Although not reported in the Tables, the estimated coefficients for the set of  $QUO$  dummy variables are always statistically significant.

To investigate the behaviour of the firms before they go public, Table 5 reports results from a similar model where the operating or financial variable is regressed against a set of dummies that takes value 1 for the year preceding the IPO. The specification takes the form:

$$y_{it} = \alpha + \sum_{j=0}^3 \beta_j IPO_{t+j} + \sum_{j=0}^3 \delta_j QUO_{t+j} + f_i + \lambda_t + \varepsilon_{it} \quad [2]$$

#### IV. A IPO-80s vs. IPO-90s

The first set of results in Table 4 refers to IPOs grouped by timing of the initial public offering. The ex-post behaviour of firms going public in the 1990s, i.e. in a period of favourable institutional change, appears disappointingly similar to the behaviour of their predecessors. In the 1990s Italian firms did not grow faster after going public in term of investment, total assets and employment. If any, they even grew less than firms going public in the 1980s in term of real sales. After going public, profitability significantly decreases for IPO90s whereas it increases for IPO80s. Leverage also decreases for IPO90s, and the decline is persistent and quantitatively large. The statistical evidence is also pronounced when the long-term debt to assets ratio is used. For all variables, the difference between estimated coefficients across the two sub-samples is statistically significant in most years.

When we turn to ex-ante behaviour, we find that IPO80s do not exhibit any discernible growth pattern whereas IPO90s have grown significantly before they went public. Table 5 reports significantly positive coefficients on pre-IPO dummies at  $t-1$  and  $t-2$  in the regressions for fixed investment, total assets, sales and employment. Firms in the 1990s also display higher profitability before going public. In contrast, firms going public in the 1980s before going public.

The ex-ante pattern of IPO90s' results may either indicate spending for a growth project in anticipation of going public, or reflect the manager's decision to go public to take advantage of a window of opportunity. The evidence from post-IPO regressions is rather

clear, however, - the growth process stopped right after the IPO, profitability began to decrease in  $t+1$ , while leverage persistently declined throughout the period. This suggests that managers in the 1990s took their companies public at the peak of a successful period of growth, when floatation would allow them to maximize the IPO proceeds, and then used the equity funds to rebalance the companies' books.

#### *IV. B Independent vs. Affiliated IPOs*

In Table 5 we find that, similarly to IPO90s, independent firms tend to grow faster immediately before the IPO. At  $t-1$ , they display positive and significant coefficients indicating faster growth of fixed and total assets, real sales and employment. Table 4, however, shows that, differently from IPO90s, independent firms continue to grow after going public, the evidence more pronounced when we examine growth of total assets (at  $t$  and  $t+2$ ) and employment (at  $t+1$  and  $t+3$ ). Because they also appear to be reducing leverage quite substantially for two years after the IPO, their behaviour may reflect spending in anticipation of going public and subsequent use of IPO proceeds to increase the scale of the firm and rebalance the company's books.

Independent firms also tend to grow significantly faster than group-affiliated firms both before and after the IPO. Indeed, very few of the estimated coefficients for carve-outs are statistically significant, indicating that the going public decision is not a turning point in the affiliated firms' life cycle. This evidence confirms that other issues appear to dominate the motivation to list a subsidiary, such as to allow the group's controlling shareholder to divest partly from the company, or to separate control rights from cash flow rights, or to maximize the IPO proceeds when the issue market is hot.

#### *IV. C Small firms vs. Large firms*

Our analysis reveals that small firms' growth is the most affected by the going public decision. The descriptive analysis in Section III highlighted that small firms were found to retain almost all of the proceeds from the IPO.

Regression results in Table 4 show what they used them for. The investment equation shows that small firms have grown significantly more than large firms do in term of fixed assets at  $t$ ,  $t+2$ , and  $t+3$ . This result holds when the small firms' sub-sample is limited to that going public in the 1990s and the growth rate of small firms appears to be quantitatively larger (not reported in the table). More importantly from the perspective of public policy, employment also tend to be growing faster. Small firms also increase profitability after the IPO, particularly if measured by Return on Sales, suggesting that highly profitable growth opportunities led small firms to tap the equity markets. In this respect, the ex-post behaviour of small firms is more similar to that of newly public US firms than any other of the other sub-samples we examined.

Lastly, the pattern of small firms' indebtedness after the IPO suggests that access to the equity market may facilitate borrowing in the credit market. We find that small firm increase their leverage significantly more than large firms two and three years after the IPO. The evidence is more pronounced if we use the ratio of Long Term Debt to Assets, with positive and highly significant coefficients at  $t+2$  and  $t+3$ . This may indicate that newly public small firms succeed in obtaining further external funds as their public visibility increases and information-related problems decrease in the years subsequent the IPO (Roell, 1996, and Anderson, 1994).

## **V. Conclusions**

This paper sets the stage for its analysis by comparing the behavior of firms that go public in Italy and in the US. We find that firms that go public in Italy and the US behave in startlingly different ways. US firms tend to grow rapidly, in terms of assets, capital, and employment. The proceeds raised as a result of the IPO are large relative to the size of the firm. In contrast, Italian firms do not grow rapidly after their IPOs and the IPO itself does not appear to generate a substantial amount of financial capital for the firm. Firms going public in Italy are typically older and larger than firms going public in the US. The managers of

a US firm going public appear to do so primarily to obtain funds to rapidly increase the scale of the firm. In contrast, the owner/managers of Italian firms appear less motivated by growth projects.

The challenge for research, and policy, is to determine why the typical Italian firm that goes public behaves much differently from its US counterpart. We exploit features of the Italian institutional context and of the corporate and governance structures to derive further insights from cross-sectional differences in the effects of the decision to list. We also exploit features of our data to investigate enlisting firms' growth, profitability and leverage before they go public.

Our statistical and econometric analysis highlights the existence of a dual class of IPOs in Italy with different motivations to go public. We label them "Old-style" and "New-style" firms.

"Old-style" firms have controlling shareholders that use the IPO as a way to diversify their wealth, to maximize the IPO proceeds in a "window of opportunity", to separate ownership and control along a chain of subsidiaries. Their motivation to go public has nothing to do with growth. Large firms, particularly those affiliated to pyramidal business groups feature in this class. "Old style" firms are more likely to go public within poorly developed financial markets, and flourish under legal systems providing weak protections to minority investors.

"New-style" firms use the equity capital to finance either an undergoing or a prospective growth project, and then use the IPO proceeds to de-leverage, re-balancing the capital structure after investment and growth. Small firms and independent companies feature in this class. With undeveloped capital markets, the costs of going public can be prohibitively large for these firms, but the absence of a pyramidal structure may signal lower risks of expropriation to minority shareholders, thus increasing the demand for equity from investors.

Our findings suggest that institutional and regulatory changes as well as tax reforms in the 1990s encouraged more "New-style" firms, to go public. We noticed that the IPO characteristics of Italian firms going public in the 1990s did change, with larger amounts of

equity finance raised, and a larger proportion of proceeds reinvested in the firm. We also found that "New-style" firms appear to be pursuing a growth strategy, either just before going public, as independent firms do, or after the IPO, as small firms do. In spite of this evidence, the differences between Italian and US newly public firms' growth rates remain so large in an absolute sense, that they raise further questions about the effectiveness of European policies to generate employment through easier access to equity finance.

We have found that recent policy reforms have facilitated the access to public equity markets for a new type of firms that would have not gone public under the old *regime*. However, our research also suggests that going public does not guarantee either faster growth or more jobs. Public policies must provide shareholders with incentives to use new capital to grow. The cross-sectional differences we found between independent and affiliated firms clearly argue in favour of any reform aimed at dismantling pyramidal business groups. The discipline of existing instruments of separation of ownership and control is a matter that requires to create countervailing monitoring devices for minority shareholders, to tighten corporate governance rules and to strengthen investors' legal protections.

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*Table 1A – US Firms going Public 1981-1997  
(Medians)*

	<i>t-1</i>	<i>t+0</i>	<i>t+1</i>	<i>t+2</i>	<i>t+3</i>
1. Growth rate of Total Assets	0.258	0.670	0.082	0.066	0.042
2. Growth rate of Fixed Capital	0.154	0.323	0.239	0.098	0.039
3. Growth rate of Sales	0.214	0.247	0.195	0.146	0.114
4. Growth rate of Employment	0.094	0.185	0.149	0.092	0.056

*Table 1B – Italian Firms going Public 1977-1997  
(Medians)*

	<i>t-1</i>	<i>t+0</i>	<i>t+1</i>	<i>t+2</i>	<i>t+3</i>
1. Growth rate of Total Assets	0.086	0.141	0.081	0.074	0.049
2. Growth rate of Fixed Capital	0.024	0.071	0.046	0.020	0.024
3. Growth rate of Sales	0.058	0.022	0.052	0.067	0.046
4. Growth rate of Employment	0.009	-0.001	0.025	-0.027	-0.004

*Table 2*  
*Characteristics of the IPO Sample, Grouped by Ownership, Size, and the Year of the IPO*  
*(median values)*

	<i>IPO Sample</i> <sup>(1)</sup>	<i>Full Sample</i> <sup>(2)</sup>	<i>Group Affiliated IPOs</i>	<i>Independent IPOs</i>	<i>Large Firm IPOs</i>	<i>Small Firm IPOs</i>	<i>IPO 80 (1977-1989)</i>	<i>IPO 90 (1991-1999)</i>
<i>N. Firms</i>	57	14,265 obs.	24	33	42	15	38	19
I. Firm Characteristics								
Employees	579	373	912	404 <sup>a</sup>	755	283 <sup>a</sup>	717	353 <sup>b</sup>
Real Sales (Mill. ITL, 1980=100)	71,428	44,358	87,322	53,304 <sup>b</sup>	91,081	32,019 <sup>a</sup>	76,568	58,253
Real Total Assets (Mill. ITL, 1980=100)	73,412	38,836	96,087	62,305 <sup>a</sup>	82,281	31,675 <sup>a</sup>	75,537	67,409
Age	23.0	28	22.5	24	21.5	25	20.5	25
II. Financial Characteristics								
Leverage	0.310	0.503	0.349	0.310	0.280	0.411	0.393	0.225
Debt / Assets	0.162	0.252	0.134	0.213	0.141	0.256	0.238	0.135
Long Term Debt / Assets	0.092	0.082	0.099	0.087	0.096	0.087	0.100	0.057
III. Operating Characteristics								
Return on Assets	0.171	0.114	0.148	0.138	0.151	0.138	0.143	0.149
Return on Equity	0.585	0.474	0.400	0.324	0.355	0.332	0.388	0.324
Investment Rate	0.160	0.104	0.110	0.209 <sup>b</sup>	0.160	0.156	0.128	0.178
IV. Characteristics of the IPO								
Gross Proceeds / Total Assets	0.243	--	0.147	0.263 <sup>a</sup>	0.255	0.197	0.171	0.353 <sup>a</sup>
Net Proceeds / Total Assets	0.102	--	0.000	0.162 <sup>a</sup>	0.057	0.145 <sup>b</sup>	0.004	0.196 <sup>a</sup>
Net Proceeds / Gross Proceeds	0.531	--	0.000	0.682 <sup>a</sup>	0.261	0.996 <sup>a</sup>	0.024	0.627

Notes:

(a, b) means significant two-sample Wilcoxon rank-sum (Mann-Whitney) test of difference of medians at 0.01; 0.05 level.

1) Firms that went public between 1977 and 1997 as of the year of the Initial Public Offering.

2) Full sample of firms in the CERIS dataset, excluding observations for the firms that went public between 1977 and 1997 and of firms already quoted in the Milan Stock Exchange.

*Table 3*  
*Italian Newly Public Firms. Pre and Post-IPO Size, Growth, Profitability, and Leverage*  
*(median values of two-year averages before and after the IPO)*

<i>N. Firms</i>	<i>IPO Sample</i>		<i>Group Affiliated IPOs</i>		<i>Independent IPOs</i>		<i>IPO 80 (1977-1989)</i>		<i>IPO 90 (1991-1999)</i>	
	36		16		20		24		12	
	<i>pre-IPO</i>	<i>post-IPO</i>	<i>pre-IPO</i>	<i>post-IPO</i>	<i>pre-IPO</i>	<i>post-IPO</i>	<i>pre-IPO</i>	<i>post-IPO</i>	<i>pre-IPO</i>	<i>post-IPO</i>
Employees	592	638 <sup>b</sup>	910	958	417	483 <sup>a</sup>	741	793	365	370 <sup>b</sup>
Employment Growth	0.002	0.011	-0.008	-0.007	0.008	0.015	-0.008	0.006	0.012	0.022
Investment Rate	0.109	0.110	0.103	0.099	0.137	0.135	0.104	0.110	0.126	0.118
Real Sales Growth	0.060	0.036	0.063	0.058	0.059	0.008	0.061	0.078	0.060	0.006
ROA	0.201	0.144 <sup>a</sup>	0.192	0.150	0.216	0.139 <sup>a</sup>	0.204	0.154 <sup>b</sup>	0.181	0.112 <sup>a</sup>
Leverage	0.498	0.364 <sup>b</sup>	0.507	0.425	0.498	0.334 <sup>b</sup>	0.506	0.417	0.498	0.318 <sup>a</sup>

Note: (a, b) means significant sign-rank (Wilcoxon) test of difference of medians at 0.01; 0.05 level.

Table 4: Analysis of the Ex-Post Behaviour of Firms going Public  
(t-statistics in parentheses)

		Year 0	Year + 1	Year + 2	Year + 3	Adj-R <sup>2</sup>
Investment Rate	IPO-80s	0.016 (0.658)	-0.018 (-0.794)	-0.026 (-1.036)	-0.016 (-0.511)	0.101
	IPO-90s	0.052** (2.569)	0.004 (0.253)	-0.004 (-0.213)	-0.027 (-0.896)	
	IPO-Large	0.013 (0.583)	-0.022 (-0.961)	-0.044* (-1.718)	-0.046 (-1.420)	
	IPO-Small	0.079***b (3.973)	0.018 (0.914)	0.044**a (1.961)	0.060 b (1.424)	
	IPO-AFF	-0.031 (-0.922)	-0.028 (-0.884)	-0.056 (-1.471)	-0.070 (-1.537)	
	IPO-IND	0.073***a (4.587)	0.008 (0.527)	0.015 c (0.972)	0.037 b (1.408)	
Growth rate of Total Assets	IPO-80s	0.096*** (3.710)	0.031 (0.839)	0.050 (1.635)	-0.029 (-1.174)	0.063
	IPO-90s	0.205***c (3.577)	-0.049 (-1.363)	-0.016 (-0.478)	0.005 (0.116)	
	IPO-Large	0.114*** (3.843)	0.014 (0.382)	0.031 (1.039)	-0.021 (-0.786)	
	IPO-Small	0.202*** (3.529)	-0.003 (-0.077)	0.047 (1.072)	-0.012 (-0.310)	
	IPO-AFF	0.073** (2.190)	0.021 (0.433)	-0.017 (-0.451)	-0.023 (-0.672)	
	IPO-IND	0.180***b (4.777)	0.003 (0.087)	0.077***c (2.462)	-0.011 (-0.366)	
Growth rate of Sales	IPO-80s	-0.005 (-0.243)	0.024 (1.092)	-0.003 (-0.122)	-0.010 (-0.446)	0.070
	IPO-90s	-0.041 (-1.149)	-0.095**b (-2.357)	-0.087***a (-3.327)	-0.016 (-0.430)	
	IPO-Large	-0.005 (-0.239)	-0.018 (-0.768)	-0.051** (-2.272)	0.006 (0.255)	
	IPO-Small	-0.045* (-1.724)	0.018 (0.445)	0.058**a (2.067)	-0.045 (-1.363)	
	IPO-AFF	-0.019 (-0.780)	-0.018 (-0.505)	-0.026 (-0.917)	-0.013 (-0.433)	
	IPO-IND	-0.011 (-0.451)	0.002 (0.101)	-0.017 (-0.650)	-0.002 (-0.062)	
Growth rate of Employment	IPO-80s	0.012 (0.754)	0.021* (1.852)	-0.000 (-0.021)	0.007 (1.072)	0.206
	IPO-90s	0.046 (1.102)	0.010 (0.437)	-0.003 (-0.103)	0.068 (0.901)	
	IPO-Large	0.010 (0.687)	0.003 (0.259)	-0.015 (-1.176)	0.014 (0.855)	
	IPO-Small	0.072 (1.251)	0.051**c (2.226)	0.033 b (1.564)	0.024 (1.248)	
	IPO-AFF	-0.004 (-0.370)	0.005 (0.356)	-0.024* (-1.802)	-0.000 (-0.045)	
	IPO-IND	0.045 c (1.565)	0.027* (1.722)	0.018 b (1.120)	0.034* (1.679)	

Continued: Analysis of the Ex-Post Behaviour of Firms going Public

		Year 0	Year + 1	Year + 2	Year + 3	Adj-R <sup>2</sup>
Leverage (Debt / Debt + Equity)	IPO-80s	-0.017 (-0.669)	-0.004 (-0.166)	0.007 (0.249)	-0.000 (-0.012)	0.612
	IPO-90s	-0.196*** <sup>a</sup> (-5.397)	-0.214*** <sup>a</sup> (-8.062)	-0.189*** <sup>a</sup> (-5.725)	-0.178*** <sup>a</sup> (-3.751)	
	IPO-Large	-0.070*** (-2.596)	-0.058** (-2.151)	-0.058* (-1.829)	-0.045 (-1.487)	0.612
	IPO-Small	-0.079** (-1.961)	-0.038 (-1.121)	0.024 <sup>c</sup> (0.720)	0.050 <sup>b</sup> (1.445)	
	IPO-AFF	-0.031 (-0.965)	-0.017 (-0.482)	-0.007 (-0.177)	-0.005 (-0.131)	0.612
	IPO-IND	-0.106*** (-3.492)	-0.086*** (-3.011)	-0.058** (-1.970)	-0.037 (-1.094)	
Long Term Debt / Assets	IPO-80s	0.006 (0.407)	0.019 (1.274)	0.056*** (3.002)	0.038** (2.378)	0.574
	IPO-90s	-0.018 (-1.043)	-0.034*** <sup>a</sup> (-3.395)	-0.023* <sup>a</sup> (-1.880)	-0.011 (-0.364)	
	IPO-Large	-0.005 (-0.398)	0.003 (0.210)	0.032* (1.836)	0.018 (1.141)	0.574
	IPO-Small	0.010 (0.364)	0.021 (0.873)	0.058** (2.137)	0.077*** <sup>b</sup> (2.996)	
	IPO-AFF	0.012 (0.599)	0.019 (1.002)	0.066** (2.475)	0.038* (1.869)	0.574
	IPO-IND	-0.012 (-0.908)	-0.004 (-0.287)	0.017 (1.024)	0.027 (1.351)	
Return on Assets	IPO-80s	0.032*** (2.904)	0.026*** (2.720)	0.022** (2.541)	-0.005 (-0.532)	0.609
	IPO-90s	0.016 (1.189)	-0.023* <sup>a</sup> (-1.748)	-0.028** <sup>a</sup> (-2.404)	-0.006 (-0.327)	
	IPO-Large	0.025** (2.530)	0.011 (1.267)	0.004 (0.596)	-0.005 (-0.523)	0.609
	IPO-Small	0.040** (2.070)	0.020 (1.188)	0.028 (1.551)	0.001 (0.083)	
	IPO-AFF	0.024** (1.954)	0.011 (0.958)	0.004 (0.490)	-0.001 (-0.057)	0.609
	IPO-IND	0.031*** (2.548)	0.016 (1.406)	0.016 (1.386)	-0.005 (-0.475)	
Return on Sales	IPO-80s	0.033*** (3.951)	0.035*** (4.149)	0.035*** (4.449)	0.019*** (2.549)	0.670
	IPO-90s	0.017** (2.203)	0.009 <sup>b</sup> (1.050)	-0.001 <sup>a</sup> (-0.116)	0.006 (0.478)	
	IPO-Large	0.019*** (2.918)	0.021*** (2.893)	0.017*** (2.566)	0.011 (1.579)	0.670
	IPO-Small	0.056*** <sup>b</sup> (4.042)	0.052*** <sup>b</sup> (4.044)	0.056*** <sup>a</sup> (4.143)	0.041*** <sup>c</sup> (2.599)	
	IPO-AFF	0.025** (2.459)	0.022** (2.232)	0.022** (2.108)	0.024** (2.335)	0.670
	IPO-IND	0.031*** (3.894)	0.034*** (3.922)	0.031*** (3.796)	0.015* (1.680)	

Notes: t-statistics in round brackets. Standard errors are robust to heteroskedasticity.

\*\*\* Coefficient significantly from 0 at the 1 percent level or less.

\*\* Coefficient significantly from 0 at the 5 percent level.

\* Coefficient significantly from 0 at the 10 percent.

a, b, c, denote significance of differences between coefficients of sub-samples, at the 1%, 5% and 10 percent level, respectively.

Table 5: Analysis of the Ex-Ante Behaviour of Firms going Public  
(t-statistics in parentheses)

		Year - 3	Year - 2	Year - 1	Year 0	Adj-R <sup>2</sup>
Investment Rate	IPO-80s	0.116 (0.959)	0.013 (0.604)	-0.004 (-0.107)	0.033* (1.757)	0.101
	IPO-90s	-0.023 (-1.045)	0.021 (0.790)	0.084** (1.827)	0.069*** (3.658)	
	IPO-Large	0.082 (0.883)	0.021 (1.073)	0.041 (1.162)	0.037** (2.193)	
	IPO-Small	-0.028 (-0.754)	-0.027 (-1.121)	-0.026 (-1.019)	0.058*** (2.997)	
	IPO-AFF	0.171 (1.070)	0.005 (0.209)	-0.026 (-0.830)	-0.006 (-0.284)	
	IPO-IND	-0.032* (1.611)	0.018 (0.790)	0.070*c (1.637)	0.078***a (5.156)	
Growth rate of Total Assets	IPO-80s	-0.041 (-1.207)	-0.013 (-0.437)	-0.004 (-0.169)	0.086*** (3.262)	0.063
	IPO-90s	-0.005 (-0.151)	0.037 (1.230)	0.101***a (2.757)	0.242***a (4.287)	
	IPO-Large	-0.041 (-1.509)	-0.001 (-0.022)	0.020 (0.882)	0.111*** (3.795)	
	IPO-Small	0.010 (0.153)	-0.022 (-0.535)	0.052 (1.420)	0.204*** (3.606)	
	IPO-AFF	-0.015 (-0.400)	-0.000 (-0.007)	-0.009 (-0.356)	0.072** (2.097)	
	IPO-IND	-0.050 (-1.539)	-0.008 (-0.229)	0.051**c (2.119)	0.176***b (4.796)	
Growth rate of Sales	IPO-80s	-0.026 (-0.814)	-0.026 (-0.897)	0.012 (0.654)	-0.008 (-0.423)	0.067
	IPO-90s	0.052 c (1.581)	0.125***a (3.588)	0.102***b (2.644)	0.022 (0.599)	
	IPO-Large	-0.004 (-0.140)	0.037 (1.467)	0.043** (2.095)	0.011 (0.528)	
	IPO-Small	0.013 (0.180)	-0.049 (-0.819)	0.022 (0.585)	-0.057**b (-2.099)	
	IPO-AFF	-0.003 (-0.087)	-0.031 (-1.041)	0.036 (1.361)	-0.010 (-0.416)	
	IPO-IND	0.001 (0.025)	0.079**a (2.307)	0.044* (1.750)	0.002 (0.093)	
Growth rate of Employment	IPO-80s	-0.000 (-0.011)	-0.016 (-1.438)	0.017 (1.443)	0.010 (0.646)	0.206
	IPO-90s	0.050 (1.468)	0.073**a (2.080)	0.080**c (2.282)	0.077* (1.827)	
	IPO-Large	0.011 (0.745)	0.008 (0.509)	0.029** (2.083)	0.016 (1.038)	
	IPO-Small	0.031 (0.841)	0.028 (0.976)	0.057 (1.332)	0.070 (1.313)	
	IPO-AFF	-0.004 (-0.262)	-0.001 (-0.133)	0.032* (1.613)	0.003 (0.256)	
	IPO-IND	0.033 (1.331)	0.025 (0.921)	0.038* (1.745)	0.048* (1.668)	

Continued: Analysis of the Ex-Ante Behaviour of Firms going Public

		Year - 3	Year - 2	Year - 1	Year 0	Adj-R <sup>2</sup>
Leverage (Debt / Debt + Equity)	IPO-80s	0.049 (1.497)	0.023 (0.968)	0.028 (1.192)	-0.010 (-0.408)	0.613
	IPO-90s	-0.018 (-0.536)	-0.049*c (-1.639)	-0.033 (-1.068)	-0.175***a (-4.344)	
	IPO-Large	0.044 (1.532)	0.020 (0.959)	0.032 (1.545)	-0.046* (-1.724)	0.612
	IPO-Small	-0.023 c (-1.027)	-0.049 c (-1.415)	-0.044 c (-1.140)	-0.093** (-2.320)	
	IPO-AFF	0.045 (1.133)	0.029 (1.024)	0.026 (0.890)	-0.020 (-0.625)	0.612
	IPO-IND	0.019 (0.682)	-0.014 (-0.584)	0.006 (0.228)	-0.086*** (-2.835)	
Return on Assets	IPO-80s	0.017 (1.280)	0.025** (2.062)	0.049*** (4.151)	0.037*** (3.370)	0.613
	IPO-90s	-0.006 (-0.457)	0.043*** (2.620)	0.044*** (3.280)	0.033** (2.247)	
	IPO-Large	-0.004 (-0.418)	0.023** (2.094)	0.035*** (3.887)	0.030*** (3.128)	0.613
	IPO-Small	0.084***a (2.724)	0.078***a (4.719)	0.092***a (4.970)	0.056*** (3.083)	
	IPO-AFF	0.018 (1.206)	0.020 (1.451)	0.030*** (2.521)	0.032*** (2.547)	0.613
	IPO-IND	0.001 (0.100)	0.044*** (3.139)	0.063***b (5.039)	0.039*** (3.221)	

Notes:

t-statistics in round brackets. Standard errors are robust to heteroskedasticity.

\*\*\* Coefficient significantly from 0 at the 1 percent level or less.

\*\* Coefficient significantly from 0 at the 5 percent level.

\* Coefficient significantly from 0 at the 10 percent.

a, b, c, denote significance of differences between coefficients of sub-samples, at the 1%, 5% and 10 percent level, respectively.

## Appendix A

*Table A1 – Standardized difference in medians for US firms*

	<i>t-1</i>	<i>t+0</i>	<i>t+1</i>	<i>t+2</i>	<i>t+3</i>
1. Growth rate of Total Assets	0.239	0.639	0.049	0.041	0.010
2. Growth rate of Fixed Capital	0.171	0.314	0.231	0.081	0.019
3. Growth rate of Sales	0.169	0.200	0.149	0.095	0.053
4. Growth rate of Employment	0.098	0.163	0.125	0.068	0.029

*Table A2 – Large US Firms going Public 1981-1997  
(Median of employment @ IPO gt. than 500)*

	<i>t-1</i>	<i>t+0</i>	<i>t+1</i>	<i>t+2</i>	<i>t+3</i>
1. Growth rate of Total Assets	0.095888	0.255	0.132	0.106	0.085
2. Growth rate of Fixed Capital	0.061759	0.162	0.170	0.112	0.078
3. Growth rate of Sales	0.14898	0.169	0.129	0.098	0.084
4. Number of employees	1.134	1.27	1.438	1.623	1.738



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