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ABSTRACT

Europe's 'New' Stock Markets*

The creation of Europe's 'new' stock markets represents a major experiment in market design with important implications for the ability to support innovative, fast-growing companies. We evaluate the success of these markets based on a large number of measures of firm performance and strategy, which extend to several pre- and post-listing years. Our hand-collected database is obtained from the listing prospectuses and annual reports of 538 companies that listed on the Neuer Markt, Nouveau Marché, and Nuovo Mercato from 1996 through 2001. Three findings stand out. First, these companies experience a dramatic change after the Initial Public Offering (IPO), re-balancing their capital structure, increasing their debt and investment, accelerating growth, and becoming less profitable. These changes are consistent with the existence of credit constraints, and are greater than for companies listing on the 'main' markets. Second, we document a considerable variation in post-IPO growth rates and corporate strategy, across both companies and markets. This variation is largely due to the ability to raise equity capital at IPO. Third, the adoption of US GAAP accounting standards substantially increases firms' ability to raise capital. While Europe's 'new' markets have provided high-growth companies with an unprecedented opportunity to finance their growth, the adoption (and enforcement) of tighter standards of disclosure is then crucial for their success.

JEL Classification: G10, G15 and G30
Keywords: accounting standards, corporate disclosure, going public, Initial Public Offerings (IPOs), operating performance, ownership and stock markets

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There is a growing view among economists that a vibrant stock market is crucial for supporting entrepreneurial, high-growth firms (Michelacci and Suarez (2001), Subrahmanyan and Titman (1999)). Allowing entrepreneurial companies to go public provides them with several advantages. First, they can raise equity capital to overcome credit constraints, thus acquiring the ability to sustain their investment in tangible and intangible capital. Second, listed companies can attract and retain more easily key employees and increase their human capital, because of greater public exposure and of the possibility to offer performance-based compensation through stock options. Third, ease of listing at a relatively early stage allows venture capitalists to exit a company and turn their capital and knowledge to new ventures, thus making their investment more appealing in the first place.

The ability of Nasdaq to provide listing companies and venture capitalists with these advantages has been credited for fostering entrepreneurship and thus helping the sustained productivity growth of the U.S. during the 1990s (Black and Gilson (1998)). European stock exchanges, by contrast, have traditionally been unwelcoming of young, fast-growing companies without a proven track record (Blass and Yafeh (2000), European Commission (1998)). The typical company which lists in Europe is large and established, operates in a mature sector, and goes public for motives other than raising new capital for investment (Pagano, Panetta, and Zingales (1998), Pagano, Röell, and Zechner (2002), Rydqvist and Högholm (1995)).

The opening of 'new' markets by several European stock exchanges in the late 1990s has dramatically changed this picture. Markets like the Neuer Markt (Frankfurt) or the Nouveau Marché (Paris) were set up on the model of Nasdaq by local established stock exchanges with the explicit goal to help companies with high growth potential to go public, raise equity, and mature. This goal has been pursued by adopting new rules, with a marked departure from the admission and listing requirements of the 'main' markets along several dimensions (Bourse de Paris (1999), Deutsche Börse (2000)). In particular, firms listing on the 'new' markets must conform to tighter disclosure procedures, including the use of international accounting standards.

These attempts to create equity markets suitable for high-growth companies represent a major experiment in market design. While a significant novelty in the European financial landscape, they have more general implications for the creation of equity markets suitable for entrepreneurial companies that need funds to invest and exploit their growth potential. In this paper we ask to what extent have the admission and listing requirements adopted by the 'new' markets been successful.

The commonly perceived degree of achievement of the 'new' markets has varied with stock prices (see Red Herring (1998) and The Economist (2001)). However, a proper evaluation of the success of these attempts cannot rely solely on stock price performance. The 'new' markets opened during a period of high and rising valuation of technology stocks worldwide which was followed by a steep, protracted fall since mid 2000. Such a pattern need not be related to the growth potential of listing firms and may therefore garble our assessment of it. Moreover, the short history of these markets prevents a comparative assessment of stock performance between newly listed and other companies. A more appropriate way to evaluate the success of the 'new' markets so far is to look at their ability to attract companies with high growth potential and to allow them raise the capital they need to unfold it. Such ability can be measured by the amounts of capital raised and invested,

and by firms' accounting performance after listing. This paper contributes such an assessment.

We develop a unique, hand collected database from the issuing prospectuses and annual reports of 538 non-financial companies listed on the Nouveau Marché (Paris), the Neuer Markt (Frankfurt), and the Nuovo Mercato (Milan) from March 1996 through December 2001. These are the largest among Europe's 'new' markets in terms of number of listed companies, capitalization, and turnover. Moreover, they have adopted a homogeneous regulatory framework, which allows a comparison of the companies they list. We base our analysis on several measures of firm performance which include financial variables, non-financial (age, number of employees, foreign sales, and research and development). We look at both the levels and the growth rates of these variables, which we collect for several pre- and post-listing years. Our findings are quite interesting.

First, listing companies are small by all measures, but not as young as one might expect. Their high rates of investment and growth suggest that they need capital to keep expanding. They are heavily leveraged and seem to have stretched their borrowing capacity to its boundary. As one would expect from innovative firms, expenditure in research and development is strong. Still, many of these companies do not manage to sell their products outside their domestic market. These companies are also much smaller, less indebted, and faster growing than those listing on traditional stock markets. After the Initial Public Offering (IPO), listing companies experience a dramatic change. They rebalance their capital structure, increase debt, and accelerate growth. These changes are consistent with the existence of credit constraints. Young, innovative companies are more likely to be credit constrained (Evans and Jovanovic (1989)), as confirmed by surveys and other evidence about European innovative companies (Eurostat (1998), Guiso (1998)).

Second, we document substantial variation in level measures and growth rates of post-IPO performance and corporate strategy, both within and across markets. While companies were fairly similar at the time of the IPO, they later become very different in terms of corporate policies and performance. This heterogeneity is partly due to differences across markets. In particular, companies listed on the Neuer Markt increase sales, assets and employment more than twice as those listed on the Nouveau Marché. We find the amount of capital raised at IPO to explain a large part of such variation in post-IPO growth. In other words, firms which raise more money can invest and grow more.

Third, we find the adoption of international accounting standards substantially increases firms' ability to raise capital. More specifically, firms which conform to the US GAAP standards raise more capital per unit of assets. This explain part of the difference in performance across markets, since the Neuer Markt mandates the use of international accounting standards (US GAAP or IAS): 143 of its companies have chosen the US GAAP, versus only six on the Nouveau Marché and none on the Nuovo Mercato. Interestingly, the positive, significant effect of accounting standards remains when we look only at companies listed on the Neuer Markt, thus discarding the possibility of a pure market effect. We conclude that disclosure requirements—notably accounting standards—have a great impact on selecting firms with a truly high growth potential.

Our study contributes to several strands of literature. First, we provide an econometric evaluation of new listing rules which tests the importance of disclosure in the process of going public (see Leuz (2002)) and thus contributes to the ongoing debate on the informativeness of accounting standards (Levitt (1998), Sunder (2002)). Second, we contribute to the empirical studies on the

operating performance of companies which go public (see Degeorge and Zeckauser (1993), Jain and Kini (1994), Mikkelson, Partch and Shah (1997), Smith (1990)) and of firms issuing seasoned equity (Loghran and Ritter (1997)). These studies consider only companies listing on U.S. stock exchanges, and concentrate on few measures of accounting performance, while we examine a much wider array of variables in order to get a comprehensive view of the effects of going public on corporate growth. Third, ours is the the first study to compare companies listed on several Europe's 'new' stock markets, extending work focused on the Neuer Markt (Kukies (2000), Fischer (2000)) or on IPO underpricing (Aussenegg et al. (2002), Derrien and Womack (2002), Franzcke (2001)).

The paper is organized as follows. Section 1 provides a brief account of the creation of Europe's 'new' stock markets and compares them to Nasdaq. Section 2 describes our dataset. Section 3 discusses the structure of listing companies by looking at both financial and non-financial aspects. Section 4 documents the effects of going public on a 'new' market. Section 5 analyzes the determinants of companies' post-IPO growth performance. Section 6 concludes.

1 The creation of Europe's 'new' stock markets

The 1990s have been a period of major changes for European stock markets (The Economist (2001)), which have faced widespread deregulation and the advent of the euro. European stock exchanges have demutualized, and some of them have gone public; the bourses of Paris, Amsterdam and Brussels merged into Euronext, and a new alliance linked the Scandinavian bourses; admission and listing requirements in most markets have changed. One of the most significant changes has been the creation of 'new' markets for small companies with a high growth potential, in an effort to replicate the success of Nasdaq in the U.S.. Nasdaq was created in 1971 as an electronic trading platform alternative to the New York Stock Exchange, and has evolved into the quintessential market for high-growth companies such as Cisco, Intel, or Microsoft. More than 6,000 companies went public on Nasdaq in the 1990s, raising 2.9 billion dollars.

Europe's 'new' stock markets were created as Śtrading segmentsŠ within an established stock market. They were explicitly designed to 'provide high-growth companies with access to the international investment community, within an accessible and well regulated market structure' (Euro.nm (1999)). The Neuer Markt, for example, targets 'small to medium-sized companies which meet international standards of transparency and publicity, (...) innovative enterprises which develop new markets, utilize new methods of procurement, production or distribution, or offer new products and/or new services, and whose activities can be expected to generate high turnover and profits in the future' (Deutsche Börse (1997)).

The first 'new' market to appear was Easdaq, set up in Brussels in 1996 by the European Associations of Dealers and the (American) National Associations of Dealers. Easdaq was soon followed by the Nouveau Marché of the Paris Bourse and by the Alternative Investment Market of the London Stock Exchange. In early 1997 'new' markets appeared also in London (AIM Ű Alternative Investment Market) Amsterdam (Nieuwe Markt), Brussels (Euro.nm Bruxelles), and Frankfurt (Neuer Markt). Others followed soon in Zurich, Stockholm, Milan (Nuovo Mercato), and Madrid (Nuevo Mercado).[1]

[1] In April 1997 the 'new' markets of Amsterdam, Brussels, Frankfurt, and Paris set up the Euro.nm alliance in

The experience of the 'new' markets has been uneven. Some have experienced low liquidity and turnover and have failed to attract investors and listings companies (Grant Thornton (2002)). For example, Easdaq attracted few IPOs, especially from high-growth companies, and in 2001 it was taken over by Nasdaq and renamed Nasdaq Europe. The dwindling flow of IPOs made the Brussels Bourse close its 'new' market in April 2001. Other markets have attracted mainly companies previously listed on the local main market, as in the case of TechMARK, which in 1999 superseded AIM as the 'new' market of the London Stock Exchange. AIM, in turn, attracted many companies in traditional businesses. Other markets remained focused on one sector, like the Swiss New Market focused (biotech and medical technology) and the Nuevo Mercado (Internet-related companies).Table 1 provides a snapshot of the 'new' markets at the end of 2001 and compares them to Nasdaq, which is by far larger in all respects.

We focus our attention on three markets: Nouveau Marché, Neuer Markt, and Nuovo Mercato. Together with TechMARK these are the largest markets in terms of listed companies, market capitalization, and turnover. However, these markets have attracted a large number of IPOs, whereas three quarters of the companies listed on TechMARK transferred from other markets of the LSE. Many of these are long established firms like British Telecom, Vodafone, or Glaxo Wellcome. Even more importantly, the three markets we focus on share a homogeneous regulatory structure which is summarized in Table 2 and which is different from that of TechMARK. Companies listing on TechMARK must satisfy the standard requirements set by the UK Listing Authority, which consist of three years of published accounts, of an expected capitalization of at least 700,000 pounds, and of a free float of at least 25% of the total number of issued shares. The admission requirements of the three 'new' markets are close to those of Nasdaq (national market section), which include the flotation of equity for at least 1.1 million dollars distributed among at least 400 investors for a market capitalization of at least 8 to 20 million dollars, depending on the standard of listing chosen.

It is important to remark that the major departure from the 'main' markets did not consist of laxer requirements bur rather of tighter ones. In fact, most of the companies listing on a 'new' market would have qualified for an IPO on the main market. In particular, the requirement of a pre-IPO record of profitability, which might constitute a barrier to the listing of younger companies, had already been abandoned by most exchanges by the time the 'new' markets were created.[2] Also, the minimum amount of equity to be sold to the public at the IPO is often higher than for the main markets.

The mark of the 'new' markets is therefore that of tighter disclosure rules, which were adopted in order to induce a self selection of valuable firms and to overcome the informational asymmetries between companies and investors. A comprehensive prospectus, timely publication of informative annual and quarterly report, introduction through a regulated sponsor which is responsible for ensuring a constant flow of information to financial analysts are the pillars upon which the 'new' markets have built their attempt. Listing requirements were also devised so as to ensure that companies use the IPO to raise new equity, rather than to sell-off the founders' stakes. To this

an effort to create a pan-European market, which in 1999 extended to the Nuovo Mercato. Euro.nm was dismantled at the end of 2000, due to difficulties in coordinating national regulators, to high costs in cross-border transactions, and to changes in the strategic alliances of the participating stock exchanges.

[2]For instance, Paris abandoned the profitability requirement in 1989, Milan in 1998, and Frankfurt never had it.

purpose, no more than half of the shares placed on the market (the 'free float') may come from incumbent shareholders, and the rest must consist of newly issued shares. Moreover, like at Nasdaq, incumbent shareholders are bound by lock-in rules not to sell most of their shares in the year after the IPO.

While similar, the Nouveau Marché, Neuer Markt, and Nuovo Mercato also differ in some respects. In particular, the German market has been more demanding in terms of disclosure requirements. It mandates publication of the IPO prospectus and of annual reports in English, and requires compliance with the German takeover code. Moreover, it imposed since its opening a timely publication of annual and quarterly reports, bi-annual meetings with financial analysts, and disclosure of changes in management shareholdings. The required adoption of international accounting standards (US-GAAP or IAS) was a major step in differentiating the Neuer Markt, since very few companies listed on EuropeŠs traditional or 'new' stock markets choose internationl standards. The choice of Deutsche Börse was inspired by the view that tight disclosure rules are necessary to attract international and institutional investors and ensure market liquidity (Deutsche Börse (2001)). However, the Neuer Markt also allows companies two years before migrating to international accounting standards, accepting simple Śreconciliation accountsŠ between the German and the international accounts until then. As a consequence, companies may adopt one of three options: German, US GAAP, or IAS.

2 The Dataset

We base our study on a unique, hand collected database which consists of information from the listing prospectuses and annual reports of 538 non-financial companies which listed on the Nouveau Marché, Neuer Markt, and Nuovo Mercato between March 1996 and December 2001.[3] Whenever possible, we downloaded the annual reports and listing prospectuses from the websites of the stock exchanges or of listed companies. We then contacted individually all the remaining companies by phone or by e-mail. In some cases we photocopied these documents at the Commission des Opérations de Bourse, the French stock exchange regulator.

Out of 545 IPOs of non-financial companies we collect 538 prospectuses, or 98.7%. For the companies in our sample we collect 1,183 (post-IPO) annual reports, about 90% of the total through fiscal 2000, the latest year for which accounting information is available. We also obtain 755 pre-IPO balance sheets from listing prospectuses. We take into account that nineteen companies have changed name after listing and that two mergers involved four listed companies.

Table 3 shows the distribution of IPOs in the three markets. The Neuer Markt accounts for 61% of all IPOs, the Nouveau Marché for 31%, and the Nuovo Mercato for 8%. The number of IPOs doubled each year up to 1999, when it reached 174, in 2000 it increased to 217, and dropped to 18 in 2001. Table 3 also shows the number of cross- and dual-listings.[4] While dual-listings roughly replicate the distribution of the overall population, 85% of all cross-listings occurred on

[3] We do not include in our sample 19 financial companies, since the structural differences in their balance sheet structure makes it difficult to compare them to services or manufacturing firms. Also, we consider only once the two firms which dual-list in these markets: Lycos Europe (Frankfurt and Paris) and Tiscali (Milan and Paris).

[4] A cross-listing occurs when a company lists in a country other than the one where it is headquartered. A dual-listing occurs when a company lists on two different markets.

the Neuer Markt, and none on the Nuovo Mercato.

From each prospectus and annual report we collect information on many variables. They include a company's age, nationality, balance sheet data, choice of accounting standards, and ownership structure. All financial data before 1999 have been converted into euros. Age is measured since the creation of the company, not from its incorporation, since several companies incorporated only when they decided to go public. All shareholders have been identified individually and assigned to one of the following categories: venture capital, corporate venture capital (when the shareholder is a member of the European Venture Capital Association or of a national association), financial investor, founder (including 'Chinese' boxes used for tax purposes and shares held by family members), strategic investor (typically an industrial company), and others (unidentified shareholders).

Whenever available we collect information on employment, on foreign sales, and on the amount of research and development (both expenditure and employment). From stock exchanges we collect data related to the IPO event: the issue price, the amount of new shares issued, the amount of shares sold by existing shareholders, and the amount of utilization of the 'greenshoe' over allotment option, from which compute the amount of free float. From Datastream we obtain the daily amount of outstanding shares and daily closing prices, from which we compute market capitalization.

There are 69 companies whose fiscal year ends in a month different from December. In order to obtain data comparable across companies, we apply to these a rebalancing 'dating' procedure.[5]

Each company is assigned to one of six sectors on the basis of the sectoral attributions of Datastream, which are derived from the Financial Times classification.[6] Table 4 reports the sectoral distribution of listed companies by market, both in terms of their number and of their relative capitalization at IPO. While looking at the number of listed companies shows no strong sectoral pattern of specialization across markets, weighted averages show that Frankfurt attracts larger companies in all sectors, but especially in software and IT and in technology. Frankfurt hosts 61% of all companies, but they account for 74% of total market capitalization. Paris hosts smaller companies, even more than Milan. More than half of the companies (and of capitalization) are in the IT services, Internet, and software sector (ITSIS). Companies is in the two other high-tech industries, biomedical products and technology, are a quarter of the total, but represent only a sixth of the total capitalization. Media and entertainment accounts of 9% of the total capitalization. Only about 4% of the companies is in traditional manufacturing and services, accounting for less than one percent of the total capitalization. Milan is heavily specialized in telecom, which are among the largest companies. Nineteen financial companies (not reported) concentrate in Milan and Paris. Unreported statistics confirm the stability over time of sectoral patterns, both absolute and weighted, with the exception of the increasing number of biomedical companies listing on the

[5] More specifically, for the 44 companies whose fiscal year ends between January and June we assign annual reports to the previous calendar year, so that a company which closes its books in March has its 2000/2001 annual report assigned to the year 2000. For the 25 companies whose fiscal year ends between July and November we assign annual reports to the same calendar year so that a company which closes its books in September has its 2000/2001 annual report assigned to the year 2001.

[6] The six sectors are constructed using the following aggregation: biomedical (includes chemicals, diversified, health, pharmaceuticals, personal care), technology (includes construction, engineering, electrical products, electronics, house goods), media and entertainment (includes leisure and media), telecom, traditional (includes food, forestry, steel, distribution, transport) IT, software and internet (includes software, automotive services, retailers), financial services (includes banks, insurance, investments specialty finance).

Neuer Markt, and the vanishing number of companies in traditional businesses.

3 Which companies list on the 'new' markets?

In this section we explore the structure of the companies which listed on the Nouveau Marché, Neuer Markt, and Nuovo Mercato through December 2001. Table 5 provides summary statistics, both aggregate and by market, for several variables measured at the time of the IPO for the 538 companies in our sample. Panel A looks at financial variables, Panel B at non-financial variables like age, number of employees, foreign Sales, and several measures of research and development. Panel C reports the growth rates of some variables. Finally, Panel D looks at the amount of capital raised and at the size and composition of the free float.

The Table shows high heterogeneity for most variables, reflected in the large standard deviation of most variables and by (unreported) high values of skewness and kurtosis. Therefore in the rest of the paper we concentrate on median values, unless otherwise specified.[7] Notice that we improve on existing studies by constructing a more precise measure of the variables at IPO. Previous studies considered as the base value that published in the annual report at the end of the IPO year. Instead, we take our measures from the listing prospectus, and use the closest annual report information only for variables not reported in the prospectus.

3.1 The structure of listing companies at IPO

Table 5(a) shows that companies listing on the 'new' markets are small. The median values of assets and sales at IPO are 13.6 and 12.9 million euros, respectively. Small size is reflected also in the median level of employees, which equals 112. Interestingly, the median age at IPO is just above 8 years—these companies are younger than those listing on a main market but not newborns. This is somewhat surprising since the 'new' markets were created with the purpose of becoming a listing outlet for companies without an established track record. In fact, these companies are (on median) younger than those listing on EuropeŠs main markets, but considerably older than those listing on U.S. stock markets.[8] Another staggering fact is the low value of intangible assets. For innovative firms, intangible assets typically represent an important share of total assets. This is hardly the case for these companies, whose intangible assets account for only about 5% of total assets.

Looking at the financial structure is instructive. Listing companies are heavily indebted. Their debt is higher than shareholders' equity, and their leverage ratio is substantial. Even the ratio of debt to tangible assets is high, close to two thirds. The maturity composition of debt shows that borrowing long-term is very difficult: 75% of the loans are due within one year. Despite the high variation in other variables, the capital structure and debt maturity are remarkably stable across companies. Interestingly, debt to banks represents only a small fraction of debt, suggesting that these companies rely on a variety of alternative sources of finance.

[7] High heterogeneity is found by other studies of post-IPO corporate behavior, such as Degeorge and Zeckauser (1993), Jain and Kini (1994), or Kaplan (1989). They also concentrate on median values.

[8] The median age of companies listing in Europe in the 1980s and early 1990s is 26 years for the sample of Rydqvist and Högholm (1995), and 40 for the sample of Italian companies of Pagano, Panetta and Zingales (1998). By contrast, the median age of companies listing in the U.S. in the 1980s was six years according to Ritter (1991) and five years for a sample of venture-backed companies in Gompers (1996).

When they arrive at the IPO these companies are growing fast. In the year before listing assets, employees and R&D expenditure, which reflect the investments policy of the company, grow between 34% and 40%.[9] Sales grow by 27% and debt by 20%. Moreover, while the growth rate of debt is 20%, the (unreported) growth rate of bank loans is close to zero. These figures are consistent with a view of companies which have come near to using up their borrowing capacity and face binding credit constraints.[10] The likelihood of this possibility is confirmed by the (unreported) growth rate of leverage in the year preceding the IPO, which is small and negative (-2%).

The noisiest measure of all is earning performance. We measure earnings with operating margin, both absolute and relative to end-of-year total assets (return on assets, ROA). Since going public increases assets substantially, ROA could bias downward the earnings performance for more asset-intensive companies. For this reason, we compute the return on sales (ROS) as an alternative measure of profitability. We obtain similar results with both measures. We also compute a third performance measure, net cash flow, defined as the difference between operating margin and capital expenditure. Net cash flow is the primary component of net present value calculations, and hence a good indicator of how traditional valuation methods would assess a company. Moreover, it is a measure of how much cash is available for investment in intangible assets. Net cash flow at IPO is negative (and variable), which we take as a further indication of the financial pressure on investment in assets that cannot be collateralized.

The 'new' markets were created to provide an environment conducive to the listing of innovative, high-growth firms. To assess their success in this respect, we construct several measures. Since the ability to innovate cannot be measured directly, we need to resort to indirect indicators. Companies are not required to disclose their research and development (R&D) activities in the prospectus or in their annual reports, and in fact only slightly more than a third of them do report R&D figures. Therefore we construct an R&D dummy that takes value one for companies which report the amount of R&D expenditure or of R&D workers, or which declare to be actively pursuing R&D programs. We assume that firms which do not mention R&D in their prospectus do not perform it. According to our dummy, two thirds of the companies engage in some form of R&D. We then look at the extent of firms' engagement in R&D. The basic measure is the amount of expenditure in R&D, but a more precise measure is its ratio to sales, i.e. R&D intensity. We find R&D intensity to be high and volatile, but well within the range expected from companies in high-technology industries. As a further measure of a company's involvement with R&D, we look at the share of employees working in R&D. The R&D labor share is important because the salaries of scientists and engineers make up a large part of the research costs but also because these employees represent a large part of a company's human capital. For companies which report R&D labor figures (about a one in four), the R&D labor share is in fact large: 25% of total employment. The amount of R&D available per R&D employee, which can be though of as a measure of R&D capital intensity is also substantial (69.200 euros).

Another dimension of innovation concerns commercialization. Innovative, fast growing compa-

[9] Growth rates are computed by annualizing the growth rates between the last available pre-IPO annual report and the information provided in the prospectus. Similar results hold if we compute the growth rate during the last fiscal year before the IPO.

[10] The 2002 European Business Survey by Grant Thornton, the professional services firm, finds that European medium sized companies rank access to capital as the prime advantage of listing on a stock exchange.

nies are expected to market aggressively their products, and thus to expand quickly their market beyond its domestic boundaries. To measure the extent of sales abroad, we compute the share of foreign sales reported in the listing prospectus. Slightly less than a third of the companies report this share, whose median value is a remarkable 29%. We also construct a dummy variable which takes value one if a firm declares in the listing prospectus to be selling abroad. According to this measure, 61% of the companies sells abroad. The difference with the number of companies reporting foreign sales figures is likely to be due to companies whose foreign sales are a trivial part of total sales.

These figures reflect a composite picture. They suggest that a large part of the listing companies engage in R&D and in the commercialization of their products outside domestic markets. At the same time, however, one might expect a higher percentage of these firms to be actively researching and commercializing abroad.

3.2 Differences across markets

Table 5 also looks at each market separately. Two things stand out. First, there are some important differences across companies which go public on different markets. Second, the Neuer Markt accounts for a large part of the across firm variability. For example, companies listing in Paris are younger and smaller than those listing in Frankfurt or Milan. Companies listed in Paris and Milan also have higher operating margins and higher return rates on assets or sales which are more than double than those of companies listed in Frankfurt.

Differences are found for variables which relate to innovation. First, intangible assets amount to only about 3% of total assets in Paris but for twice as much in Frankfurt and Milan. Frankfurt-listed companies employ a larger fraction of R&D workers, and choose a higher R&D intensity than the others. Moreover, 72% of the companies declare to engage in R&D in Frankfurt but only 52% in Paris.[11] The foreign sales share is very similar in Paris and Frankfurt, but much lower in Milan. The two dimensions along which markets differ least are capital structure and debt maturity. Companies on the Neuer Markt rely somewhat more on bank debt, confirming that close banking ties are an important feature of German mid-sized companies (the *Mittelstadt*).

In terms of pre-IPO growth rates, companies listing in Frankfurt arrive at the IPO growing faster than those listing in Paris, whose intangible assets grow particularly slowly. The growth of companies listing in Milan is slower. More sizeable differences arise in relation to capital raised. Companies listed on the Neuer Market raise about three time as much equity as those listed on the Nouveau Marché. Even larger is the amount raised by companies listed on the Nuovo Mercato, due in part to the floatation of two big telecom companies (Tiscali and ebiscom). The variability of capital raised is low in Paris but extremely high in Frankfurt and Milan.

In order to check the statistical strength of these differences we run a Kruskal-Wallis signed-rank test (unreported) to test if the median values at IPO across markets come from different populations. The test confirms that there are statistically significant differences for only some variables. We conclude that the high degree of heterogeneity across firms translates in systematic

[11] While 70% of the Milan-listed companies declare an engagement in R&D, this item includes advertising expenses. The minimal R&D involvement of these firms is reflected in the low number of R&D reporting companies and in their low R&D intensity and employment.

differences across markets only to a limited extent.

3.3 Differences across time

Does the structure of listing companies change over time? Table 6 provides evidence to answer this question by reporting yearly median values, aggregate and by market, for the same variables considered in Table 5. Here the interesting result is that only the Neuer Markt has experienced a significant evolution in terms of the characteristics of listing firms. The median age of companies listing in Frankfurt nearly halved between 1997 and 2000. They also became substantially smaller in terms of assets, employees, shareholders' equity, sales, and profitability, while R&D intensity has increased. The capital structure has changed much less. Also the growth rate of sales, assets, and employment have remained stable (and high) throughout the period. A Kruskal-Wallis signed-rank test (unreported) confirms the statistical significance of these changes for most variables. This suggests an evolution towards the younger, entrepreneurial ones which are the target of the 'new' markets. The data for the Nouveau Marché suggest a different story, where the structure of listing companies has remained largely unaffected over time.

3.4 Differences with companies listing on the main markets

Studies of post-IPO performance typically match IPO companies with ŚcontinuingŠ companies listed on the same market, using sector, size, and profitability as matching criteria. However, our goal is to evaluate the impact of the opening of the 'new' markets on the type of listing companies, and to assess whether the new listing requirements resulted in a different type of company going public. The mark of the 'new' markets is indeed the emphasis on disclosure, which is the main requirement which sets them apart from the ŚtraditionalŠ main markets. Therefore, the proper benchmark against which to measure the type of listing company is given by companies which listed on the main markets during the same period.[12]

Despite the relatively few IPOs on the main markets during the period we consider, we managed to construct a meaningful reference group. While 545 companies went public on the three 'new' markets we consider between 1996 and 2000, less than 200 non-financial companies went public in the respective main markets. For 135 of them we obtain from Datastream values for eight variables: sales, assets (total, tangible, intangible), operating margin, debt, shareholders' equity, and employment. We get these values for the period between 1996 and 2000.

The result is that companies which list on the 'new' and on the main markets are substantially different. The only similarity is the high heterogeneity of financial variables. The median company listing on a 'main' market is about ten times larger than the median company listing on a 'new' market, whether we measures size with sales, assets or employment. The difference is statistically significant. Surprisingly, tangible assets are a larger fraction of total assets for companies in the main markets. One possible interpretation is that these companies are more mature and established, and therefore can afford to invest more in assets which are hard to use as collateral for loans. This interpretation seems supported by the relatively lower level of leverage on the main

[12] Looking at companies listing on Nasdaq would introduce disturbances, such as national and business cycle effects, which would make the comparison of little use.

markets, and also by the high ratio of debt to tangible assets. Another important difference between the companies listing on main and 'new' markets is the higher profitability of the former, however computed.[13] Capital structure is also more balanced for companies listing on main markets.[14]

4 The effects of going public

We now turn to studying the effects of going public on a 'new' market. To do so we construct pre- and post-IPO values for all the measures of corporate performance we consider. Pre-IPO values average the values for the two pre-IPO years. If only one pre-IPO year is available we use that value. Similarly, 'post-IPO' values average the first two post-IPO years. Looking at pre- and post-IPO measures provides in fact a simple but meaningful measure of the impact of listing. Our procedure differs somewhat from other studies of post-IPO performance, which for each measure compare the value reported in the last pre-IPO balance sheet to those of several post-IPO balance sheets. For the large majority of firms, we only possess up to two post-IPO years, since most firms listed in 1999 and 2000. At the same time, unlike previous studies, we are able to use data for some pre-IPO years. Therefore we choose to compare averages of the pre- and post-IPO periods. Using two-year averages has the advantage to take into account all available information.[15]

To obtain a meaningful test, for each variable we only include those companies for which we possess *both* pre- and post-IPO data. Table 8 reports (in brackets) the number of observations and the median values of the pre- and post-IPO values. On these values we perform a Wilcoxon signed-rank test for the difference in medians (see Barber and Lyon (1996) for a justification of the use of this nonparametric test). We use the bold type to show values which differ at a level of significance of at least 5%. We report median values for the whole sample in columns 2-4 and median values for Paris- and Frankfurt-listed companies in columns 5-7 and 8-10, respectively.[16]

4.1 All markets

Going public on a 'new' market represents a major change for a company, in terms of ability to raise equity, deploy new resources for investment, accounting performance, and changes in capital structure. The IPO allows listing companies to raise substantial amounts of equity: a median amount of 51.8 million euros—more than thirty times the minimum required to get listed,

[13] We control for the presence of privatized companies, since several privatization took part in the 1990s in Europe and state-owned companies may well be different from privately owned ones. Our results do not change significantly after we exclude the seven privateized companies in the sample. We thank Bernardo Bortolotti for providing data on privatizations.

[14] As a further check, we also compare 'new' market listing companies with 'continuing' companies listed on the respective main markets. To this purpose we construct a sample of 570 non-financial companies which were continuously listed between 1996 and 2000. We obtain from Datastream data for the same variables as for IPO companies. Continuing companies are about forty times as large as companies listing on the 'new' markets in terms of assets or sales, and employ thirty times as many people. Their intangible asset are a larger fraction of total assets, and they have lower leverage and higher profitability. The average growth rates of sales and assets for 'continuing' companies are about a third of those for companies listing on the 'new' markets, and the growth rate of employees is one eighth. These differences are statistically significant in most cases.

[15] We also construct three-year averages, and obtain similar results at the cost of a lower number of observations.

[16] We exclude the Nuovo Mercato from this test because of the low number of post-IPO observations.

and more than ten times the level of shareholders equity at IPO. This value, however, varies substantially across firms. The amount of free float–the percentage of shares sold to the public–is instead remarkably stable near 30%. This means that the variability in amount raised is due to variation in firm size and in valuation. Most of the free float comes from newly issued shares. Pre-IPO shareholders, therefore, do not bring companies public simply to divest and sell their holdings.

Several things are worth noticing. First of all, these companies use the capital they raise to substantially increase both tangible and intangible assets. Notice that tangible assets increase much more than intangibles, which remain a small fraction of total assets. Employment increases threefold, and sales double. The growth rates of these variables also increase substantially after the IPO, which is noteworthy since they were already very high before it. The yearly growth rate of sales nearly doubles, reaching 70%, and that of assets nearly triples, reaching 167%. Notice that while the level of intangible assets increases less than the level of tangible assets, the growth rate of intangibles increases nearly three times more than the growth rate of tangibles, and reaches a staggering 542%. This pattern is consistent with a situation in which the IPO provides companies with resources to invest and expand.

As it typically happens with companies which go public, profitability drops (Degeorge and Zeckauser (1993), Jain and Kini (1994), Mikkelson, Partch, and Shah (1995)). While the operating margin triples the change is not statistically significant. The decrease in return on assets is large and significant. However, the return on sales remains virtually unchanged, which means that the mark-up on sales does not vary. In median terms, therefore, listing firms do not become less profitable because of a shortage of sales, but rather because sales do not keep up with the jump in assets. One interpretation is that commercialization takes time, and these companies still have to reap the fruits of their new investments. Alternatively, they might suffer from the same opportunistic behavior which has been found by the above mentioned studies to induce managers to pre-IPO window dressing or to post-IPO inefficient investment detected by previous studies (see Degeorge and Zeckauser (1993) or Loughran and Ritter (1997)).

The capital structure also changes after the IPO. Listing companies raise a substantial amount of new equity, which more than halves their leverage. At the same time, they use their increased equity base to raise their debt, which more than triples. The term structure of debt becomes even more tilted towards the short-term. Interestingly, while the share of debt to banks decreases significantly, the absolute amount of bank debt becomes larger. This, again, is consistent with a relaxation of credit constraints. In fact, the ratio of debt to tangible assets halves, reflecting a regained borrowing capacity.

The evolution of the capital structure is particularly telling if confronted with investment behavior. By all measures, we have seen that the IPO is followed by a sharp increase in investment. This behavior suggests a situation of pre-IPO credit constraints which get relaxed by the increased equity based. Moreover, these companies do not stop investing. Rather, they increase their capital expenditure and accumulate intangible assets. This contrasts with the known behavior of companies listing on main markets, which use the IPO proceedings to repay the debt they incurred for financing pre-IPO investments and slow down new investment (Pagano, Panetta, and Zingales (1998)).

Table 8 also documents that going public helps innovative firms reach wider markets. Firms which report foreign sales see their importance increase by a third, with a very high absolute level.[17] R&D is a particularly important investment for innovative firms. The absolute level of R&D more than doubles after the IPO. Also its growth rates increases, but not statistically significantly. Interestingly, R&D intensity does not fall despite the substantial increase in sales. Similarly, the increase in R&D per employee and the decrease in the R&D labor share are small and not significant. Their resilience shows that the higher investment in research does not fade upon listing. While some 50 companies start reporting R&D after the IPO, a similar number stops reporting it, so that the total number remains around 150. Interestingly, the correlation between reporting foreign sales and reporting R&D expenditure is extremely low.

4.2 Differences across markets

Beyond documenting substantial post-IPO changes, Table 8 also shows substantial differences across markets in the post-IPO behavior. In fact, one clear result is that companies listed on the Neuer Markt grow much more than those listed on the Nouveau Marché. For instance, sales and employment grow almost twice as much for Frankfurt-based as for Paris-based companies. The same holds for assets and equity. Another important difference between the two markets holds for growth rates. Before going public, companies were growing at a similar pace on both markets. After the IPO, however, the growth rate for sales, assets (total, tangible, and intangible), and employment increases much more in Frankfurt than in Paris, where they increase significantly only for total and tangible assets. The capital structure, which was very similar across markets at IPO, also becomes different. Companies listed in Frankfurt decrease their leverage, which becomes a third of its pre-IPO level, more than companies listed in Paris. The stronger reduction in leverage in Frankfurt is largely due to the higher amount of capital raised, since the level of debt increases more than in Paris. For companies listed in Frankfurt the share of long-term debt halves, while it increases for companies listed in Paris. ROA more than halves (significantly) for companies listed on the Nouveau Marché, but the decrease is insignificant for those on the Neuer Markt. Investment increases more substantially for companies listed on the Neuer Markt, both in levels and in growth rate, especially for intangibles. R&D expenditure remains more than twice as large in Frankfurt than in Paris.

Table 4 showed that the 'new' markets do not differ systematically in terms of sectoral composition. We further explore these differences in Table 9, where we check if sectoral composition may explain the different performance across markets. Table 9(a) reports the results of a Wilcoxon signed-rank test for difference in pre- and post-IPO median values, where we break the sample into the three largest sectors: ITSIS (IT services, software, and Internet), media and entertainment, technology. These sectors account for more than 80% of total firms and total capitalization. The test is instructive. While there are post-IPO variations across sectors, these are not systematic

[17] A word of caution: some French companies include intra-group sales in foreign sales, probably in order to inflate their level. We are not able to disentangle these sales. While only 63 firms report foreign sales *both* before and after the IPO, 93 companies start reporting foreign sales after the IPO. It is likely that they had either null or negligible foreign sales beforehand, which would mean a post-IPO increase in the number of exporting companies of about 50%. At the same time, however, 90 companies stop reporting foreign sales, so that the net change is negligible.

and cannot explain the observed differences across markets. Table 9(b) further compares sector and market effects by looking at how firms in the *same* sector behave in different markets, with a Wilcoxon signed-rank test for the difference in pre- and post-IPO median values. Columns 2-7 of Table 9(b) look at firms in the ITSIS sector, and Columns 9-15 at firms in the technology sector. The result is that companies in the same sector behave differently in different markets.[18] The faster growth of Frankfurt-listed companies turns out to occur across sectors, and therefore not to be due to sectoral composition.

4.3 Differences with companies listing on the main markets

In Panels B and C of Table 7 we compare the effect of the IPO on companies listing on the 'new' markets with the effect on those listing on the main markets in the same period. A comparison with Table 8 shows that both types of companies increase their growth after going public, but this effect is much weaker for companies in the main markets. While for main markets we do not possess pre-IPO data, we can still compare post-IPO values with values at IPO. Sales and assets grow by less than 50%, and employees by a modest 10%. Equity increases by about 40%. All these values are substantially lower than those reported in Table 8 for firms listing on the 'new' markets. Another important difference is the very small decrease in profitability for companies listing on main markets. When we look at post-IPO growth rates, we see that they are clearly lower for companies listing on the main markets. Interestingly, the one dimension in which the two types of companies do not differ is the capital structure, which becomes strikingly similar after the IPO. Together with the dynamics of assets, we interpret this as a sign of the different borrowing capacity and investment behavior of the two types of companies.

5 What Drives Post-IPO Growth?

Section 4 has shown that companies listing on the 'new' markets experience substantial post-IPO growth, and that this growth, however measured, differs across companies and across markets. In particular, the ability to raise capital, invest it in tangible and intangible assets, and expand sales and employment is more pronounced for companies listing on the Neuer Markt. These companies also exhibit a greater ability to increase sales and employment. Since companies were very similar at the time of the IPO, such differences are unlikely to be attributable to differences in observed initial conditions. These results therefore call for a more rigorous analysis.

For this, we investigate the determinants of firms' post-IPO growth with cross-sectional regressions which relate growth rates of different measures of corporate size to a number of explanatory variables. We concentrate on two measures of corporate growth, sales and assets. Sales represent the main measure of corporate maturity for innovative companies, since the ability to bring products to markets and sell them is a crucial step to ensure their very survival (Audretsch (1995)). However, reaching a high level of sales requires substantial investments in the commercialization

[18] As a further check, we construct the equivalent of Table 5 for the firms in ITSIS and technology sectors, to see whether they had been different at the time of listing. This turn out not to be the case, and is confirmed by a Kruskal-Wallis signed-rank test.

of products. These investments may take time, and we therefore also look at the growth of assets as a measure of intermediate steps in corporate growth.

We look at several explanatory variables, which are all measured at IPO. First, we look at age. Age is a major indicator of corporate maturity, especially for innovative firms which need to develop new products or processes and bring them to market (Klepper (1996)). Second, we look at the capital structure, which we measure with leverage. The effect of leverage on corporate growth is difficult to predict. Firms which are more highly leveraged have fewer resources to invest, need to service their debt, and could therefore grow less. On the other hand, higher leverage could reflect past investments, and thus could be a sign of future growth. Third, we look at profitability at the time of the IPO, which we measure with either ROA or ROS. Fourth, we look at capital raised as a measure of the resources raised at IPO. Capital raised equals the amount of equity raised at IPO normalized by the company's total assets in order to obtain a measure comparable across firms.

We then use several measures of ownership structure. A large theoretical literature which predicts that ownership structure should influence corporate performance, in particular for young, entrepreneurial firms (see Shleifer and Vishny (1997)). Ownership structure has in fact been found to be an important determinant of post-IPO corporate performance of U.S. firms by Barry et. al. (1990) and Mikkelson et. (1997). We obtain ownership data from the issuing prospectuses, which list all pre-IPO shareholders. Based on this information, we have identified shareholders according to their category. For each company, we then identify all founders, managers, (corporate) venture capitalists, strategic investors, and purely financial investors (like companies providing bridge or mezzanine finance). To do so we have used information from the prospectus, from venture capital directories, and from corporate websites or other public information sources. Our measure for founders includes holdings by their families and by holding companies controlled by the founders. Before the IPO the mean shareholding of founders equals 54.6%. After the IPO it falls to 39.4%. The figures for venture capitalists and strategic investors are 11.9% and 9.4% (pre-IPO) and 7.8% and 6.9% (post-IPO), respectively. The stake of managers falls from 8.3% to 6.0%.

On the basis of these data, we construct a number of dummy variables: founders takes value one if the company's founders retain a holding greater than 50% after the IPO, managers takes value one if the managers retain a holding of more than 20%, venture capital and corporate venture capital take value one if these investors retain a holding of more than 10%.[19] These thresholds are the mean post-IPO values of the respective categories, except for founders.[20] Alternative measures, such as the percentage sales of the initial stakes, or different threshold levels, yield very similar results.

We also construct several dummy variables. We use a country dummy, Germany, to isolate the effect to list on the Neuer Markt. We use a dummy for firms which declare foreign sales at IPO to control for the possibility that firms already engaged in commercialization outside their

[19] We include in corporate venture capital also strategic investors, due to the similarities between these two types of investors. When the IPO is a carve-out we do not follow this procedure, since the divestiture of a division is likely to be different from the listing of start-up company.

[20] To make our measure of ownership as precise as possible, we also collect from stock exchanges information on the Śgreenshoeš over allotment option. This option allows underwriters to accommodate additional demand for shares, and is exercised in the aftermath of the IPO. We construct our post-IPO ownership measures taking into account the actual utilization of the greenshoe option for all companies (except five for which we could not obtain such information, and for which we assumed the option has not been exercised.

domestic markets may be able to grow faster after the IPO. The dummy US GAAP is used to identify companies which choose to report their accounts in the issuing prospectus using the US Generally Accepted Accounting Standards. We use this variable as a proxy for the the willingness to reach a broader pool of investors. Studies like that of Leuz and Verrecchia (2000) have shown the adoption of accounting standards to affect the cost of capital, and therefore firms' ability to raise external finance. Finally, sector dummies are included to control for possible sectoral effects.

The nature of our data brings us to use simple cross-sectional analysis. The short extent of post-IPO data prevents us from adopting the panel approach used by Pagano, Panetta, and Zingales (1998) among others. Given the high variability of our data we choose an estimation method that performs an initial screening and eliminates gross outliers, weighing observations by absolute residuals.

5.1 Growth of sales

We first look at the growth rate of sales. Our preferred specification is the following:

$$\text{Growth(sales)} = \beta_0 + \beta_1 \text{ Age} + \beta_2 \text{ Leverage} + \beta_3 \text{ Capital raised} + \beta_4 \text{ Foreign sales} + \beta_{5j} \text{ Owners} + \beta_6 \text{ Germany} + \beta_{7k} \text{ Sector} + \epsilon_i$$

where our dependent variable is the average growth rate of sales over the two years following the IPO, and ϵ_i is the error term. We use j to index different types of shareholders, and k to index different sectors. This equation reflects a simple, standard model of corporate growth, whereby firms' 'leap forward' after the IPO depends on its age, financial structure, ownership structure, sector and country.

The regression confirms that companies listed on the Neuer Markt increase their sales more than the those listed elsewhere, confirming the existence of a market-specific effect. Table 10 reports our results, which corroborates our previous finding of Table 9, namely that the sales growth rates does not depend on sectors. The regression also sheds further light on the determinants of corporate growth. First, companies that sell on foreign markets, and are therefore willing to expand their market abroad, do not grow more than the others. As expected, age adversely affects growth, so that younger firms (which are also smaller) grow faster. Companies which are more highly leveraged experience a slower growth rate in the two years after the IPO. One possible explanation might be that highly leveraged firms are those which suffer most from borrowing constraints, since they already stretched their borrowing capacity. Therefore they will be slower than others in rebalancing their capital structure and expand investment. Since unfolding oneŠs innovative potential and reach the commercialization stage takes time, slower growth follows.

One would expect the amount of equity raised at IPO to be particularly important for the post-IPO growth rate of listing companies. In fact, we have seen that these companies are highly leveraged and further increase their debt after the IPO. We find the effect of the amount of capital raised (normalized by assets) on sales growth to be positive and statistically significant at the 1% confidence level. It is also an economically large effect, since an increase of one standard deviation in the normalized capital raised increases the growth rates of sales by 74 percentage points. This result is compatible with two different interpretations. Companies that grow faster after the IPO might be the ones whose sales were growing fast even before the IPO. Their pre-IPO performance,

being a signal of good quality, would positively affect the amount of equity they can raise at IPO. In this case there is no direct link between post-IPO sales growth rate and amount of equity raised. A second possible explanation, however, is that companies that raise a higher amount of equity at IPO obtain more resources to foster the development of their products and their commercialization. When we control for the pre-IPO level of the growth rate of sales in an unreported regression, we confirm the positive effect on sales of the amount of capital raised, thus supporting the second interpretation.

Table 10 shows another interesting results: ownership matters. The way ownership enters is not direct, though. When we control for the ownership structure solely by including a dummy which takes value one when different categories of shareholders are present, we do not find any significant result. Interestingly, this is true also for the presence of a venture capitalist (or a corporate venture capitalist), contrary to the findings of Barry et. al. (1990), but consistent with those of Mikkelson et. (1997), both for U.S. companies. It also confirms the results of Bottazzi and Da Rin (2002), which use the levels of sales and assets for European venture-backed companies listed on the 'new' markets.

Things change once we employ a more refined measure of ownership. Interestingly, we find that corporate venture capitalists that retain more than the sample mean ownership share contribute to a higher growth rate of sales. Venture capitalists, instead, do not affect sales growth even with this more refined ownership measure. One possible interpretation of this result is that in Europe venture capital has a weaker effect on the maturation of investee firms than that documented for the U.S. by Hellmann and Puri (2000, 2002). However alternative interpretations, such as a lower quality of European innovative or the presence of unobservable factors driving corporate performance, are also possible (see Bottazzi and Da Rin (2002) for a discussion). Companies grow faster also when their founders retain majority ownership after the IPO, and when managers retain more than the mean sample ownership. This confirms and refines the findings of Jain and Kini (1994), who employ a coarser measure of ownership, i.e. the median stake retained collectively by all pre-IPO owners, and find a positive effect on measures of operating performance.

5.2 Growth of assets

We then turn to another measure of corporate growth, total assets. Here we estimate the following equation:

$$\text{Growth(assets)} = \beta_0 + \beta_1 \text{ Age} + \beta_2 \text{ Leverage} + \beta_3 \text{ Capital raised} + \beta_4 \text{ ROA} + \beta_{5j} \text{ Owners} + \beta_6 \text{US GAAP} + \beta_7 \text{ Germany} + \beta_{8k} \text{ Sector} + \epsilon_i$$

where Growth(assets) is the average growth rate of assets over the two years following the IPO. The variables are defined as before, and US GAAP is a dummy variable which takes value one if a company adopts US GAAP accounting standards. We estimate this equation using two stage least squares since most of the variability of the equation is due to the variability of the amount of assets at IPO, and this variable normalizes both the change in assets on the left hand side, and the amount of equity raised at IPO on the right hand side. We instrument the variable capital raised with a dummy that equals one when firms declare in their IPO prospectus to be performing R&D. This choice of instrument is justified by the significance of the R&D dummy in explaining

the amount raised normalized by assets. The choice of this instrument is supported by a Sargan identification test. The results are reported in Table 11.

In this regression we control for the accounting standard adopted by the companies as they imply different reporting regime for assets in the balance sheet. We use it since the choice of accounting standards for European companies has been shown to have relevant economic consequences (Leuz and Verrecchia (2000)). However this variable is not statistically significant. In this cross sectional regression neither sectors nor ownership structure are not statistically significant. The only relevant explanatory variables are the amount of capital raised at IPO and profitability (measured by ROA). This result seems to suggest that companies go public to finance subsequent investment in tangible and intangible assets, in contrast to the results obtained by Pagano, Panetta and Zingales (1998) for firms which go public on the (Italian) main market.

5.3 The determinants of capital raised

Both our regressions on corporate growth identify the amount of capital raised at IPO as a key variable for explaining the growth rate of both sales and assets. Therefore we explore its own determinants. The cross sectional estimate is based on the following equation:

$$\text{Amount raised} = \beta_0 + \beta_1 \text{ Age} + \beta_2 \text{ Leverage} + \beta_3 \text{ Foreign sales} + \beta_4 \text{ R\&D} + \beta_{5j} \text{ Owners} + \beta_6 \text{ US GAAP} + \beta_{7i} \text{ Year} + \beta_8 \text{ Telecom 1999} + \beta_9 \text{ Sales growth pre-IPO} + \beta_{10k} \text{ Sector} + \epsilon_i$$

where the variables are define as before, and where we use i to index the years 1999 and 2000, when valuations for high-growth technology companies were particularly high. The dummy Telecom 1999 takes value one for telecom companies listed in 1999. The variable sales growth pre-IPO is the average value of sales growth in the two years preceding the IPO. The results of the robust regression are reported in Table 12.

Like our previous estimates we control for sectors without finding any significance. The possibility that the amount raised at IPO by highly leveraged firms is lower is not confirmed, as leverage is not significant. Age is instead statistically significant and has the expected sign: the younger the company, the higher the amount raised at IPO. Moreover, the higher the growth rate of sales in the two years before the IPO the higher is the amount raised at IPO. Interestingly, the presence of (corporate) venture capital does not affect companies' capacity to raise funds from the market, as they probably do not exercise the certification of quality effect that has been found for the U.S. (Meggison and Weiss (1991)). The only ownership dummy that is significant (but only at the 10% level) is the one representing founders which have retained a majority stake after the IPO. This may reflect the fact that for these companies the share of ownership sold to the market is lower. An interesting result is also that R&D performing firms raise more funds from the market, possibly reflecting a perception of higher quality by the market.

The control for the effect of accounting standards is motivated by the ongoing policy debate over the effectiveness of accounting standards. US Generally Accepted Accounting Principles (US GAAP) are widely accepted internationally and are therefore a way to increase the pool of potential investors. Both US-GAAP and IAS are frequently viewed as the benchmark for high-quality global standards, though their relative merits are controversial (e.g. Levitt (1998) McGregor (1999)). By controlling for the adoption of US-GAAP and IAS we thus investigate whether firms

exhibit measurable differences in proxies for information asymmetry and market liquidity, two constructs that are of primary concern in securities and accounting regulation (Leuz (2002), Levitt (1998)). The idea is that if US GAAP or IAS financial statements are superior in providing relevant information to the capital markets, then ceteris paribus, firms employing US GAAP or IAS should experience lower information asymmetry and should be able to increase the amount raised at IPO. Alternatively, the adoption of these standards could also help firms attract international investors which would otherwise shun their IPO, thus increasing the amount of funds they can raise.

Our findings suggest that the choice of accounting standard is in fact a primary factor in determining the ability of these firms to raise capital at IPO. More specifically, it is only US-GAAP to have a significant effect on capital raised. We also control for the high valuation of the firms that stock market have experienced in the period under consideration. Two year dummies control for firms listed in 1999 and in 2000. The time effect is positive an significant as expected. That effect is stronger for telecom firms as the variable tlc99 that consider the interaction between the sector and the time dummy show. Finally, since US-GAAP is adopted by only six firms outside the Neuer Markt, we check the robustness of our results by considering only Neuer Markt listed companies. These adopt all three possible accounting standards: US-GAAP (143 companies), IAS (123 companies), German or other national standards (72 companies). Table 13 shows that our main result holds also in this context.

6 Conclusion

The opening of Europe's 'new' stock markets has dramatically changed the opportunities for European innovative firms to go public. In this paper we provide the first systematic assessment of this important experiment in regulation. We base our analysis on a large number of measures of firm performance and strategy which extend to several pre- and post-listing years, and which we derive from a hand collected database of virtually all companies listed on the Nouveau Marché, the Neuer Markt and the Nuovo Mercato.

We find listing companies to be younger and smaller than those listing on the ŚmainŠ markets, to be growing fast, and to invest extensively in research and development, thus conforming to the target of these markets. Interestingly, these companies are highly leveraged and unable to further expand their bank credit, consistent with a situation of credit rationing. This possibility is also supported by the sharp post-IPO increase in both debt and expenditure in fixed assets and R&D, which could reflect a situation of expanded borrowing capacity and increased investment. After the IPO companies experience a dramatic change, rebalancing their capital structure, increasing their debt, accelerating grow and becoming less profitable.

While companies were fairly similar at the time of listing, after the IPO they become very different. A large part of this variation occurs at the level of the market: companies listing on the Neuer Markt increase sales, assets and employment more than twice as those listed on the Nouvau Marché. We find these difference to be largely due to firms' ability to raise capital at IPO, again consistent with the existence of credit constraints.

Our main results is that the adoption of accounting standards is a major determinant of firms' ability to raise capital. In fact, the mandated adoption of interational accounting standards explains

a large part of the success of the Neuer Markt relative to the Nouveau Marché. The conclusion is that appropriate disclosure regulations (and their enforcement) may be crucial for the success of 'new' markets, within or outside Europe.

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Table 1: Europe's 'new' stock markets

	Nasdaq	Paris	Frankfurt	Milan	Easdaq	TechMARK	Nordic	Stockholm	Zurich
Open since	*1971*	*1996*	*1997*	*1999*	*1997*	*1999*	*2000*	*1999*	*1999*
Number of IPOs	4,876	176	356	45	62	81	150	22	17
Listed companies	4109	164	326	45	49	243	54	20	15
Funds raised	293,364	2,966	21,611	4,042	2,300	817.5	695	n.a.	n.a.
Market capitalization	2,899,000	15,011	49,933	14,801	8,000	669,500	315	291	2,537
Market capit. / GDP	24.5%	1.02%	2.41%	1.16%	n.a.	2.61%	<0.01%	<0.01%	<0.01%

Figures from stock exchange information. Listed companies and capitalization at end December 2001, number of IPOs and amount of funds raised from the opening of the market (from 1990 for Nasdaq) through 2001. Funds raised and capitalization in millions of euros (millions of dollars for Nasdaq). Smaller 'new' markets are the Developing Companies Market (set up in 1997 in Dublin, listing 4 companies with a market capitalization of 4 million euros), the Helsinki New Market (set up in 1998, listing 16 companies with a market capitalization of 437 million euros), and the KVX (set up in 2000 in Copenhagen, listing 13 companies with a capitalization of 1,000 million euros.

Table 2: Admission and listing requirements on Europe's 'new' markets

	(a) Admission requirements
Pre-IPO equity:	$\geq$ 1.5 million euros
Age:	3 years (waivable by the admission committee)
IPO volume:	$\geq$ 5 million euros $\geq$ 100,000 shares to be issued
Free float:	$\geq$ 20% of the nominal capital $\geq$ 50% of IPO volume must come from a capital increase
Shares	No restrictions to free negotiability
Lock-up period:	Ranges from six months to one year
	(b) Listing requirements
Disclosure rules:	Timely disclosure of quarterly, semiannual, annual reports
Designated sponsor:	At least one

Source: Stock exchanges.

Table 3: IPOs on the 'new' markets

	Total		Paris		Frankfurt		Milan	
1996	16	*(15)*	16	*(15)*	-	-	-	-
1997	32	*(30)*	19	*(18)*	13	*(12)*	-	-
1998	88	*(85)*	44	*(42)*	44	*(43)*	-	-
1999	174	*(174)*	31	*(31)*	136	*(136)*	7	*(7)*
2000	217	*(217)*	55	*(55)*	132	*(132)*	30	*(30)*
2001	18	*(17)*	4	*(3)*	10	*(10)*	4	*(4)*
Total	545	*(538)*	169	*(164)*	335	*(333)*	41	*(41)*
Cross listings	51	*(51)*	6	*(6)*	45	*(45)*	0	(0)
Dual listings	38	*(38)*	12	*(12)*	24	*(24)*	2	(2)

Numbers in brackets refer to IPOs in our sample. We do not consider the IPOs of 19 financial companies. Cross listings are listings of companies headquartered outside the courntry of the stock exchange where they list. Dual listings are listings of companies already listed elsewhere.

Table 4: Listing companies: Sectoral distribution

	Total		Paris		Frankfurt		Milan	
	(1)	*(2)*	(1)	*(2)*	(1)	*(2)*	(1)	*(2)*
Biomedical	44	*6.4%*	10	*0.8%*	32	*4.8%*	2	*0.8%*
ITSIS	300	*64.6%*	86	*4.5%*	189	*53.3%*	25	*6.8%*
Technology	86	*11.2%*	27	*1.5%*	56	*9.4%*	3	*0.3%*
Media & Entertainment	59	*6.1%*	14	*0.9%*	41	*4.3%*	4	*0.9%*
Telecom	30	*11.0%*	15	*1.0%*	12	*2.6%*	3	*7.4%*
Traditional	19	*0.7%*	12	*0.3%*	3	*0.3%*	4	*0.1%*
Total	538	*100%*	164	*9%*	333	*74.7%*	41	*16.3%*

Sectoral attributions are based on Datastream sectoral codes. (1) number of companies; (2) weight in total capitalization.

Table 5: Listing companies: summary statistics at IPO

All variables are measured at the time of the IPO and are taken from issuing prospectuses and from stock exchanges. When a variable is not reported in the prospectus, we take it from the latest pre-IPO annual report. Financial variables are in millions of euros. Debt is the sum of book value of short and long term liabilities. Debt to banks is the sum of liabilities to banks. Short-term (long-term) debt are liabilities with a remaining maturity of up to (over) one year. Equity is total shareholders' equity. Leverage is debt over debt plus equity. There are five French companies and 21 German companies with negative equity at IPO; their inclusion makes debt/equity and leverage more volatile but barely affects median values. Capex is capital expenditure, i.e. expenditure in plant, property, and equipment. Operating margin is earning before interest, taxes, depreciation and amortization. When sales, capex, and operating margin at IPO are reported in the prospectus for the period between the beginning of the year until the IPO, they are annualized. Return on assets is operating margin over total assets, both measured at IPO. Return on sales is operating margin over sales, both measured at IPO. Age is the number of months elapsed since the creation of the company. Foreign sales are sales outside the company's home country. The foreign sales share is the ratio of foreign sales to total sales, while the foreign sales dummy indicates whether the company declares in the prospectus that it already sells abroad, irrespective of whether it also reports foreign sales figures. The R&D dummy equals one for firms which engage in R&D, define as those which declare R&D expenditure, employment of personnel in R&D, or active pursuit of R&D programs. R&D intensity equals R&D expenditure divided by sales. R&D per employee equals R&D expenditure divided by employees, and R&D labor share equals the number of employees in R&D over total employees. Capital raised at IPO equals the amount of newly issued shares (including the 'greenshoe' over allotment option) multiplied by the issue price. Data about the actual utilization of the 'greenshoe' overalltment option are from stock exchanges. We obtain the issue price from the stock exchanges.

5(a) - All markets

Variable	Mean	Std. Dev.	Median	Min	Max	Obs.
Panel A: Financial variables						
Sales	44.9	173.0	12.9	0	3260	536
Assets	41.7	183.0	13.6	0.1	3990	538
Tangible assets	36.5	192.0	11.9	0	3990	461
Intangible assets	6.5	30.2	0.7	0	450	468
Debt	18.9	40.4	6.7	0.1	434	538
Debt to banks/Debt	24%	23%	18%	0%	96%	360
Short term debt/Debt	65%	32%	75%	0%	96%	289
Long-term debt/Debt	22%	27%	12%	0%	100%	314
Equity	14	29.3	4.5	0	341.0	511
Debt/Equity	152	2,758.0	1.38	0	60,839	508
Debt/Tangible Assets	6.80	88.83	.64	0.01	1,470	458
Leverage	0.56	0.27	0.58	0	0.99	508
Capex	-39.7	990.0	1.1	-20,400.0	1,320.0	428
Operating margin	4.5	26.9	1.2	-101	349	536
Return on assets	-57%	5,149%	9%	-104,709%	56,441%	536
Return on sales	143%	1,582%	7%	-2,421%	29,433%	530
Panel B: Non-financial variables						
Age	128	132	100	2	1124	534
Employees	218	315	112	2	2992	526
Foreign sales dummy	0.61	0.48	1.00	0	1.00	478
Foreign sales share	39%	32%	29%	0.1%	100%	153
R&D dummy	.67	.48	1.00	0	1.00	451
R&D expenditure	2.7	3.8	1.2	0	22.5	192
R&D intensity	35%	119%	9%	0%	1,382%	189
R&D per employee	0.02	0.03	0.01	0	0.28	188
R&D labor share	28%	18%	25%	0%	77%	132
Panel C: Growth rates						
Sales	17,719%	355,789%	27%	-100%	7,924,999%	497
Assets	1,612%	21,412%	34%	-100%	455,402%	504
Tangible assets	2,454%	38,116%	34%	-100%	745,935%	389
Intangible assets	12,681%	86,442%	25%	-100%	938,023%	393
Debt	546%	6,490%	20%	-100%	140,081%	501
Employees	101%	468%	40%	-77%	9,250%	444
R&D expenditure	891%	8,792%	35%	-100%	99,926%	129
Panel D: IPO variables						
Capital raised at IPO	5,280	13,100	51.8	0	101,000	528
Free float	31.3%	11.4%	29.3%	6.3%	100.0%	528
(% from new shares)	78.8%	18.8%	83.2%	0.0%	1.00%	528
(% from old shares)	15.3%	18.1%	9.9%	0.0%	1.00%	528
(% from 'greenshoe')	5.9%	6.3%	5.7%	0.0%	52.6%	528

5(b) - Paris (Nouveau Marché)

Variable	Mean	Std. Dev.	Median	Min	Max	Obs.
Panel A: Financial variables						
Sales	23.3	51.8	10.8	0.0	486.0	161
Assets	22.2	61.3	10.7	0.1	739.0	162
Tangible assets	20.8	63.2	9.3	0.1	739.0	149
Intangible assets	2.8	7.2	0.3	0.0	55.3	153
Debt	11.8	27.5	5.4	0.02	309.0	162
Debt to banks/Debt	20%	19%	15%	0%	73%	102
Short term debt/Debt	60%	37%	73%	0%	100%	76
Long-term debt/Debt	17%	21%	8%	0%	94%	77
Equity	9.4	18.8	3.1	0.1	148.0	156
Debt/Equity	1.1	28.3	1.3	-315.4	62.0	156
Debt/Tangible Assets	11.21	120.40	0.64	0.01	1,470.00	149
Leverage	0.60	0.29	0.58	0.01	1.60	161
Capex	1.9	5.2	0.5	-0.4	35.2	94
Operating margin	4.5	28.6	1.4	-38.9	349.0	161
Return on assets	-573%	8,271%	15%	-104,710%	4,993%	161
Return on sales	39%	380%	12%	-1,400%	3,764%	158
Panel B: Non-financial variables						
Age	103	100	81	11	960	156
Employees	154	195	100	12	1,681	158
Foreign sales dummy	0.67	0.47	1.00	0	1.00	140
Foreign sales share	39%	33%	31%	0.1%	93%	43
R&D dummy	.52	.51	1	0	1	120
R&D expenditure	2.2	3.4	0.8	0	17.9	50
R&D intensity	60%	200%	9%	0	138%	49
R&D per employee	0.02	0.05	0.007	0	0.28	48
R&D labor share	26%	19%	22%	0%	70%	36
Panel C: Growth rates						
Sales	1,730%	1,914%	24%	-96%	224,100%	137
Assets	193%	90%	31%	-99%	10,200%	138
Tangible assets	108%	258%	20%	-99%	1,676%	110
Intangible assets	6,016%	39,428%	2%	-100%	388,475%	115
Debt	111%	303%	25%	-99%	234%	138
Employees	147%	900%	34%	-77%	92,500%	106
R&D expenditure	3,218%	17,640%	32%	-100%	99,900%	32
Panel D: IPO variables						
Capital raised at IPO	18.2	19.0	10.6	2.6	101.0	152
Free float	29.4%	1.08%	28.8%	8.9%	79.6%	152
(% from new shares)	81.3%	19.3%	85.1%	0.0%	1.00%	152
(% from old shares)	16.2%	19.5%	11.7%	0.0%	1.00%	152
(% from 'greenshoe')	2.5%	4.8%	0.0%	0.0%	13.4%	152

5(c) - Frankfurt (Neuer Markt)

Variable	Mean	Std. Dev.	Median	Min	Max	Obs.
Panel A: Financial variables						
Sales	55.8	214.0	13.6	0.0	3,260.0	333
Assets	50.1	225.0	15.3	0.1	3,990.0	333
Tangible assets	43.8	244.0	12.6	0.0	3,990.0	272
Intangible assets	8.7	38.8	0.8	0.0	450.0	275
Debt	21.0	43.2	7.2	0.1	434.0	335
Debt to banks/Debt	25%	24%	20%	0%	96%	232
Short term debt/Debt	66%	28%	72%	0%	100%	186
Long term debt/Debt	25%	28%	15%	0%	100%	210
Equity	15.6	29.0	5.5	0.1	238.0	314
Debt/Equity	-4,851.2	91,700.7	1.2	-1,669,442.0	60,839.0	311
Debt/Tangible Assets	1.10	4.05	0.61	0.01	62.05	269
Leverage	0.54	2.21	0.59	-33.60	12.33	333
Capex	10.3	77.6	1.2	-1.5	1,320.0	308
Operating margin	3.8	23.2	0.9	-101.0	348.0	334
Return on assets	14%	110%	5%	-549%	1,555%	334
Return on sales	209%	1,968%	5%	-673%	29,433%	332
Panel B: Non-financial variables						
Age	137	145	103	2	1,124	333
Employees	241	344	115	2	2,992	333
Foreign sales dummy	0.59	0.49	1.00	0	1.00	308
Foreign sales share	39%	32%	28%	0.1%	100%	107
R&D dummy	.72	.45	1	0	1	290
R&D expenditure	3.1	3.9	1.4	0	22.5	133
R&D intensity	23%	51%	10%	0	480%	131
R&D per employee	0.01	0.02	0.01	0	0.1	132
R&D labor share	29%	18%	26%	0	77%	96
Panel C: Growth rates						
Sales	26,100%	440,400%	31%	-100%	7,924,900%	324
Assets	998%	8,500%	39%	-99%	12,800%	328
Tangible assets	3,855%	47,800%	44%	-100%	745,935%	244
Intangible assets	17,757%	106,749%	42%	-99%	938,023%	241
Debt	287%	1,688%	20%	-99%	27,801%	326
Employees	88%	194%	42%	-50%	2,607%	305
R&D expenditure	130%	330%	38%	-98%	2,450%	92
Panel D: IPO variables						
Capital raised at IPO	64.9	188.0	34.4	1.3	308.8	335
Free float	32.4%	11.7%	29.6%	6.3%	100.0%	335
(% from new shares)	76.7%	18.6%	80.5%	0.0%	100.0%	335
(% from old shares)	15.5%	17.8%	10.6%	0.0%	98.0%	335
(% from 'greenshoe')	7.8%	6.2%	9.1%	0.0%	52.6%	335

5(d) - Milan (Nuovo Mercato)

Variable	Mean	Std. Dev.	Median	Min	Max	Obs.
Panel A: Financial variables						
Sales	42.0	67.7	21.7	0.0	386.0	41
Assets	50.2	79.1	25.4	0.08	380.0	41
Tangible assets	45.6	76.3	20.2	0.1	351.0	40
Intangible assets	5.5	8.2	1.7	0.0	31.8	40
Debt	31.3	54.1	13.3	0.0	311.0	41
Debt to banks/Debt	23%	25%	18%	0.0	92%	26
Short term debt/Debt	72%	36%	82%	0%	100%	27
Long-term debt/Debt	12%	26%	1%	0%	100%	27
Equity	18.5	53.6	6.4	0.0	341.0	41
Debt/Equity	9.8	27.3	2.2	0.04	166.0	41
Debt/Tangible Assets	28.64	162.4	0.74	0.02	1,026.60	40
Leverage	0.64	0.25	0.69	0.04	0.99	41
Capex	-783.0	4,010.0	1.5	-20,400.0	14.8	26
Operating margin	9.8	43.5	2.8	-22.4	274.0	41
Return on assets	1,386%	8,813%	11%	-423%	5,641%	41
Return on sales	5%	639%	14%	-2,421%	2,911%	40
Panel B: Non-financial variables						
Age	152	107	157	9	372	40
Employees	280	409	143	10	2,200	35
Foreign sales dummy	0.53	0.50	1.00	0	1.00	30
Foreign sales share	27%	29%	16%	0.5%	61%	3
R&D dummy	.70	.46	1	0	1	41
R&D expenditure	0.9	2.0	0.1	0	6.2	9
R&D intensity	67%	198%	1%	0	597%	9
R&D per employee	0.01	0.03	0	0	0.1	8
R&D labor share	0%	–	0%	0%	0%	1
Panel C: Growth rates						
Sales growth rate	3,000%	17,500%	1%	-99%	105,300%	36
Assets	12,000%	73,800%	1%	-99%	4,555,400%	38
Tangible assets	-590%	4,000%	0	-99%	19,600%	37
Intangible assets	340%	1,450%	0%	-99%	87,300%	37
Debt	4,448%	23,283%	0%	-99%	140,802%	37
Employees	66%	100%	27%	-62%	4,300%	33
R&D expenditure	-32%	70%	0%	-100%	77%	5
Panel D: IPO variables						
Capital raised at IPO	98.5	236.0	41.4	0.7	1,520.0	41
Free float	29.3%	10.1%	25.5%	200.%	57.4%	41
(% from new shares)	87.9%	14.1%	92.8%	50.3%	100.0%	41
(% from old shares)	9.1%	12.4%	0.0%	0.0%	49.7%	41
(% from 'greenshoe')	3.0%	6.1%	0.0%	0.0%	20.7%	41

Table 6: Listing companies: summary statistics at IPO, by year

All variables are measured at the time of the IPO and are taken from issuing prospectuses and from stock exchanges. When a variable is not reported in the prospectus, we take it from the latest pre-IPO annual report. Financial variables are in millions of euros. Debt is the sum of book value of short and long term liabilities. Debt to banks is the sum of liabilities to banks. Short-term (long-term) debt are liabilities with a remaining maturity of up to (over) one year. Equity is total shareholders' equity. Leverage is debt over debt plus equity. There are five French companies and 21 German companies with negative equity at IPO; their inclusion makes debt/equity and leverage more volatile but barely affects median values. Capex is capital expenditure, i.e. expenditure in plant, property, and equipment. Operating margin is earning before interest, taxes, depreciation and amortization. When sales, capex, and operating margin at IPO are reported in the prospectus for the period between the beginning of the year until the IPO, they are annualized. Return on assets is operating margin over total assets, both measured at IPO. Return on sales is operating margin over sales, both measured at IPO. Age is the number of months elapsed since the creation of the company. Foreign sales are sales outside the company's home country. The foreign sales share is the ratio of foreign sales to total sales, while the foreign sales dummy indicates whether the company declares in the prospectus that it already sells abroad, irrespective of whether it also reports foreign sales figures. The R&D dummy equals one for firms which engage in R&D, define as those which declare R&D expenditure, employment of personnel in R&D, or active pursuit of R&D programs. R&D intensity equals R&D expenditure divided by sales. R&D per employee equals R&D expenditure divided by employees, and R&D labor share equals the number of employees in R&D over total employees. Capital raised at IPO equals the amount of newly issued shares (including the 'greenshoe' over allotment option) multiplied by the issue price. Data about the actual utilization of the 'greenshoe' overalltment option are from stock exchanges. We obtain the issue price from the stock exchanges.

6(a) - All markets

Variable	1996	1997	1998	1999	2000	2001
Number of IPOs	16	32	88	174	217	18
(of which in the database:)	*(15)*	*(30)*	*(85)*	*(174)*	*(217)*	*(17)*
End-year market capitalization	606	1734	8,629	52,187	103,812	61,176
End-year average market capitalization	34	83	156	676	772	392
Panel A: Financial variables						
Sales	12.1	12.2	17.2	13.4	10.4	14.2
Assets	12.2	17.6	18.2	12.2	13.7	11.9
Tangible assets	11.9	23.5	17.0	9.9	11.5	11.9
Intangible assets	0.6	1.9	0.6	0.5	0.8	0.6
Debt	6.8	5.6	9.1	6.4	5.9	9.8
Debt to banks/Debt	18%	28%	22%	17%	14%	10%
Short term debt/Debt	14%	66%	71%	72%	81%	78%
Long term debt/Debt	8%	16%	10%	11%	13%	17%
Equity	6.8	5.7	4.5	3.3	4.1	5.2
Debt/Equity	99%	137%	112%	133%	156%	178%
Debt/Tangible assets	0.65	0.59	0.60	0.62	0.69	0.67
Leverage	0.5	0.6	0.5	0.6	0.6	0.6
Capex	0.6	1.5	1.4	1.1	1.1	0.7
Operating margin	7.0	2.0	1.9	1.1	7.4	2.5
Return on assets	3%	15%	14%	10%	6%	24%
Return on sales	5%	12%	9%	7%	4%	18%
Panel B: Non-financial variables						
Age	82	99	122	102	78	183
Employees	65	103	123	112	115	102
Foreign sales dummy	.61	.69	.56	.55	.67	.80
Foreign sales share	16%	8%	2%	0%	10%	8%
R&D dummy	.50	.30	.68	.68	.66	.74
R&D expenditure	3.2	3.9	1.3	1.0	1.1	0.9
R&D intensity	59%	6%	8%	10%	16%	4%
R&D per employee	0.03	0.01	0.01	0.01	0.01	0.01
R&D labor share	0.23	0.16	0.26	0.25	0.27	0.11
Panel C: Growth rates						
Sales	11%	27%	25%	31%	28%	6%
Assets	46%	36%	32%	48%	26%	33%
Tangible assets	15%	21%	28%	44%	25%	39%
Intangible assets	9%	4%	2%	59%	17%	27%
Debt	143%	28%	17%	19%	24%	6%
Employees	32%	27%	27%	19%	24%	6%
R&D expenditure	-	-3%	38%	35%	47%	29%
Panel D: IPO variables						
Capital raised at IPO	8,2	7.2	14.3	29.1	39.1	24.2
Free float	35%	38%	31%	33%	29%	29%
Listing companies born post-NM	9	30	29	18	8	1

6(b) - Paris (Nouveau Marché)

Variable	1996	1997	1998	1999	2000	2001
Number of IPOs	16	19	44	31	55	4
(of which in the database:)	*(15)*	*(18)*	*(42)*	*(31)*	*(55)*	*(3)*
End-year market capitalization	607	1,073	2,485	8,376	16,931	6,776
End-year average market capitalization	34	28	35	80	110	43
Panel A: Financial variables						
Sales	12.1	10.8	12.6	12.9	8.3	17.8
Assets	12.2	10.3	13.2	8.1	8.7	12.2
Tangible assets	11.9	10.0	12.0	7.9	7.5	12.1
Intangible assets	0.6	0.2	0.3	0.3	0.2	0.1
Debt	6.7	4.5	7.7	5.4	4.7	8.3
Debt to banks/Debt	17%	22%	16%	15%	8%	11%
Short term debt/Debt	13%	44%	74%	93%	81%	-
Long term debt/Debt	7%	9%	8%	6%	3%	-
Equity	6.6	3.5	4.5	2.4	2.3	6.7
Debt/Equity	0.9	1	1.2	2.1	2.4	1.6
Debt/Tangible assets	0.64	0.55	0.60	0.77	0.62	0.62
Leverage	0.4	0.5	0.5	0.7	0.7	0.6
Capex	0.6	0.4	0.6	0.4	0.5	0.6
Operating margin	0.7	1.6	1.9	1.6	1.1	3.6
Return on assets	3%	15%	13%	21%	19%	24%
Return on sales	5%	12%	11%	14%	12%	18%
Panel B: Non-financial variables						
Age	82	81	87	83	63	108
Employees	65	79	90	127	112	102
Foreign sales dummy	.61	.70	.62	.70	.71	.50
Foreign sales share	16%	13%	6%	14%	2%	-
R&D dummy	.50	.25	.66	.55	.47	.40
R&D expenditure	-	1.2	1.1	0.3	0.2	-
R&D intensity	-	6%	15%	3%	21%	-
R&D per employee	0.3	0.01	0.01	0.02	0.01	-
R&D labor share	0.22	0.27	0.29	0.23	0.20	-
Panel C: Growth rates						
Sales	1%	22%	28%	27%	26%	0%
Assets	45%	33%	48%	1%	15%	30%
Tangible assets	14%	40%	35%	10%	12%	29%
Intangible assets	9%	2%	0%	0%	50%	14%
Debt	143%	28%	20%	17%	31%	11%
Employees	32%	36%	34%	28%	57%	14%
R&D expenditure	-	28%	24%	50%	50%	-
Panel D: IPO variables						
Capital raised at IPO	8.2	6.3	7.4	11.1	22.1	64.8
Free float	34%	36%	28%	30%	27%	21%
Listing companies born post-NM	9	11	8	7	-	-

6(c) - Frankfurt (Neuer Markt)

Variable	1996	1997	1998	1999	2000	2001
Number of IPOs	-	13	44	136	132	10
(of which in the database:)	-	*(12)*	*(43)*	*(136)*	*(132)*	*(10)*
End-year market capitalization	-	661	6,144	41,466	71,351	45,877
End-year average market capitalization	-	55	120	261	243	141
Panel A: Financial variables						
Sales	-	54.5	33.8	13.3	11.4	14.2
Assets	-	60.5	19.7	13.5	14.1	11.6
Tangible assets	-	53.4	19.3	10.6	12.1	11.5
Intangible assets	-	2.4	0.6	0.6	0.9	1.7
Debt	-	22	10.4	6.3	5.9	12.4
Debt to banks/Debt	-	60%	25%	20%	17%	9%
Short term debt/Debt	-	70%	70%	60%	70%	70%
Long term debt/Debt	-	24%	13%	14%	18%	23%
Equity	-	17.2	5.5	3.5	5.4	4.7
Debt/Equity	-	2.4	1	1.2	1.3	2.2
Debt/Tangible assets	-	0.58	0.60	0.56	0.67	0.75
Leverage	-	0.7	0.5	0.6	0.6	0.7
Capex	-	4.3	2.1	1.1	1.1	0.9
Operating margin	-	2.7	1.8	0.9	0.2	2.1
Return on assets	-	7%	15%	7%	2%	21%
Return on sales	-	12%	8%	6%	2%	14%
Panel B: Non-financial variables						
Age	-	140	177	103	78	185
Employees	-	190	214	105	115	102
Foreign sales dummy	-	.67	.47	.51	.70	-
Foreign sales share	-	0	0	0	0.1	0.1
R&D dummy	-	.33	.46	.71	.73	-
R&D expenditure	-	3.2	1.8	1.4	1.4	0.9
R&D intensity	-	6%	5%	11%	19%	04%
R&D per employee	-	0.01	0.004	0.01	0.02	0.01
R&D labor share	-	0.1	0.2	0.2	0.3	0.1
Panel C: Growth rates						
Sales	-	44%	23%	30%	35%	19%
Assets	-	47%	21%	51%	37%	38%
Tangible assets	-	21%	8%	47%	44%	81%
Intangible assets	-	40%	40%	70%	30%	150%
Employees	-	27%	23%	40%	48%	45%
Debt	-	23%	12%	18%	26%	7%
R&D expenditure	-	-35%	58%	34%	47%	28%
Panel D: IPO variables						
Capital raised at IPO	-	28.4	22.7	31.9	45.0	22.5
Free float	-	41.3%	33.3%	33.4%	30.4%	32.1%
Listing companies born post-NM	-	19	21	11	8	1

6(d) - Milan (Nuovo Mercato)

Variable	1996	1997	1998	1999	2000	2001
Number of IPOs	-	-	-	7	30	4
(of which in the database:)	-	-	-	*(7)*	*(30)*	*(4)*
End-year market capitalization	-	-	-	2,345	15,529	8,522
End-year average market capitalization	-	-	-	335	420	208
Panel A: Financial variables						
Sales	-	-	-	33.9	19.4	11.6
Assets	-	-	-	32.9	21.9	34.6
Tangible assets	-	-	-	29.3	17.5	29.7
Intangible assets	-	-	-	1.6	1.8	4.1
Debt	-	-	-	21.7	13.9	9.8
Debt to banks/Debt	-	-	-	25%	18%	21%
Short term debt/Debt	-	-	-	89%	88%	77%
Long term debt/Debt	-	-	-	1%	1%	7%
Equity	-	-	-	6.2	5.7	24.1
Debt/Equity	-	-	-	2.5	2.2	1.7
Debt/tangible assets	-	-	-	0.73	0.79	0.67
Leverage	-	-	-	0.7	0.7	0.6
Capex	-	-	-	1.4	1.6	0.5
Operating margin	-	-	-	0.7	2.8	13.1
Return on assets	-	-	-	10%	7%	35%
Return on sales	-	-	-	-	13%	21%
Panel B: Non-financial variables						
Age	-	-	-	179	156	259
Employees	-	-	-	200	143	140
Foreign sales dummy	-	-	-	-	.50	.66
Foreign sales share	-	-	-	0.5	0	0
R&D dummy	-	-	-	-	.66	.44
R&D expenditure	-	-	-	0.05	0.3	-
R&D intensity	-	-	-	0.002	0.03	-
R&D per employee	-	-	-	0	0.002	-
R&D labor share	-	-	-	-	0	-
Panel C: Growth rates						
Sales	-	-	-	42%	0%	0%
Assets	-	-	-	30%	0%	0%
Tangible assets	-	-	-	30%	0%	0%
Intangible assets	-	-	-	14%	0%	0%
Debt	-	-	-	43%	0%	0%
Employees	-	-	-	50%	30%	13%
R&D expenditure	-	-	-	-70%	50%	-
Panel D: IPO variables						
Capital raised at IPO	-	-	-	26.6	44.7	41.4
Free float	-	-	-	41.5%	26.6%	28.4%
Listing companies born post-NM	-	-	-	3	-	-

Table 7: Going public on a main market

All data are taken from Datastream. In Panel A all variables are measured at the end of the IPO (fiscal) year. In Panel B we report values for the two years after the IPO, and in Panel C the growth rate between the IPO year and the two years afterwards. Financial variables are in millions of euros. Debt is the sum of book value of short and long term liabilities. Equity is total shareholders' equity. Leverage is debt over debt plus equity. Operating margin is earning before interest, taxes, depreciation and amortization. Return on assets is operating margin over total assets. Return on sales is operating margin over sales.

Variable	Mean	Std. Dev.	Median	Min	Max	Obs.
Panel A: values at IPO						
Sales	1,919.0	5,501.0	139,14	0.0	33,800.0	131
Assets	4,484.0	15,600.0	122,43	0.0	98,400.0	125
Tangible assets	1,662.0	8,141.0	24,.20	0.0	68,400.0	135
Intangible assets	210.0	879.0	5.71	0.0	8,165.0	135
Debt	1,203	6,112.0	18.06	0.0	56,400.0	135
Equity	820.0	2,788.0	50.60	0.0	21,400.0	127
Debt/Equity	1.54	4.43	0.41	0.0	40.86	130
Debt/Tangible Assets	9.62	86.82	0.76	0.0	1001.15	133
Leverage	0.34	0.28	0.30	0.0	0.97	130
Operating margin	407.0	2,013.0	16.79	-825.0	16,700.0	129
Return on assets	12,38%	16,56%	12,51%	-63,41%	69,15%	116
Return on sales	-5,15%	139,99%	10,98%	-1365%	132%	110
Employees	15,518	5323,993	970	3	433,939	113
Panel B: values post-IPO						
Sales	2,430.0	6,419.0	186,48	0.0	33,400.0	119
Assets	5,534.0	19,100.0	202.01	1.24	122,000.0	108
Tangible assets	1,984.0	9,569.0	39.76	0.0	68,800.0	119
Intangible assets	2,525.0	696.0	11.62	0.0	4,8812.0	115
Debt	1,300.0	700.0	30.0	0.0	73,000.0	119
Equity	893.0	2,946.0	72.98	0.80	22,300.0	116
Debt/Equity	1.22	3.49	0.47	0.0	36,96	120
Debt/Tangible Assets	3.13	7.84	0.82	0.0	53.30	116
Leverage	0.34	0.22	0.32	0.0	0.97	120
Operating margin	470.0	2,006.0	18.2	-10.70	15,600.0	107
Return on assets	11,51%	15,98%	11,64%	-96.56%	49.95%	111
Return on sales	10.49%	30.57%	10.49%	-230%	71%	106
Employees	16,325	55,607	1,082	21	456,578	118
Panel C: Growth rates post-IPO						
Sales	55.56%	15.20%	17.43%	-19.96%	1,412%	115
Assets	65.99%	132.26%	16.21%	-20.41%	648%	108
Tangible assets	27.15%	61.55%	11.54%	-100%	415%	118
Intangible assets	412.10%	1,292%	24.27%	-100%	8,652%	115
Debt	257.55%	1,404%	16.90%	-100%	13,824%	115
Employees	593,55%	565,14%	10.22%	-27.23%	52,185%	110

Table 8: Going public on a 'new' market: Company-level effects

The table reports the results of a Wilcoxon rank-sum test for the difference in median values. Values which differ at a level of confidence of at least 5% are in bold. Pre(-IPO) values are the mean of the two pre-IPO years (if only one pre-IPO value is available we report that one). Post(-IPO) values are the mean of the two post-IPO values (if only one post-IPO value is available we report that one). In brackets we report the number of pre-post pairs on which each test is based. Data are taken from issuing prospectuses (pre-IPO values) and from annual reports (post-IPO values). Financial variables are in millions of euros. Debt is the sum of book value of short and long term liabilities. Debt to banks is the sum of liabilities to banks. Short-term (long-term) debt are liabilities with a remaining maturity of up to (over) one year. Equity is total shareholders' equity. Leverage is debt over debt plus equity. Capex is capital expenditure, i.e. expenditure in plant, property, and equipment. Operating margin is earning before interest, taxes, depreciation and amortization. Return on assets is operating margin over total assets. Return on sales is operating margin over sales. Foreign sales are sales outside the company's home country. The foreign sales share is the ratio of foreign sales to total sales. The R&D dummy equals one for firms which engage in R&D, define as those which declare R&D expenditure, employment of personnel in R&D, or active pursuit of R&D programs. R&D intensity equals R&D expenditure divided by sales. R&D per employee equals R&D expenditure divided by employees, and R&D labor share equals the number of employees in R&D over total employees.

	All 'new' markets			Paris			Frankfurt		
Variable	*Pre*		*Post*	*Pre*		*Post*	*Pre*		*Post*
Panel A: Financial variables									
Sales	**12.2**	*(404)*	**28.3**	**7.2**	*(108)*	**18.5**	**9.2**	*(260)*	**33.8**
Assets	**11.9**	*(390)*	**50.9**	**6.5**	*(95)*	**26.8**	**6.9**	*(258)*	**61.6**
Tangible assets	**6.1**	*(250)*	**43.1**	**5.1**	*(62)*	**23.6**	**6.3**	*(180)*	**47.3**
Intangible assets	**0.2**	*(263)*	**6.0**	**0.2**	*(68)*	**2.3**	**0.1**	*(185)*	**8.0**
Debt	**4.0**	*(359)*	**14.5**	**3.5**	*(94)*	**8.7**	**4.1**	*(257)*	**15.5**
Debt to banks/Debt	**25%**	*(216)*	**17%**	21%	*(49)*	17%	**26%**	*(162)*	**18%**
Short term debt/Debt	**71%**	*(173)*	**87%**	77%	*(33)*	78%	**70%**	*(137)*	**87%**
Long term debt/Debt	**23%**	*(164)*	**15%**	**16%**	*31*	**22%**	**26%**	*(130)*	**13%**
Equity	**1.9**	*(324)*	**34.3**	**1.5**	*(90)*	**11.5**	**1.9**	*(226)*	**41.8**
Debt/Equity	**2.5**	*(352)*	**0.5**	**2.2**	*(91)*	**0.8**	**2.6**	*(253)*	**0.4**
Debt/Tangible assets	**0.76**	*(247)*	**0.39**	**0.74**	*(62)*	**0.51**	**0.77**	*(178)*	**0.33**
Leverage	**0.74**	*(319)*	**0.31**	**0.77**	*(86)*	**0.43**	**0.75**	*(224)*	**0.28**
Capex	**0.5**	*(260)*	**6.4**	**0.3**	*(37)*	**1.8**	**0.6**	*(216)*	**7.7**
Operating margin	0.5	*(358)*	1.5	0.8	*(92)*	1.5	0.3	*(256)*	1.6
Return on assets	**8%**	*(353)*	**4%**	**14%**	*(90)*	**6%**	6%	*(254)*	3%
Return on sales	5%	*(351)*	5%	10%	*(89)*	7%	4%	*(253)*	3%
Panel B: Non-financial variables									
Employees	**72**	*(313)*	**213**	**75**	*(80)*	**171**	**65**	*(226)*	**217**
Foreign sales share	**0.32**	*(63)*	**0.43**	**0.35**	*(26)*	**0.45**	**0.31**	*(36)*	**0.37**
R&D expenditure	**1.6**	*(89)*	**3.7**	**0.8**	*(22)*	**1.8**	**2.0**	*(67)*	**4.9**
R&D intensity	12%	*(96)*	11%	11%	*(23)*	8%	13%	*(71)*	14%
R&D per employee	0.01	*(78)*	0.02	0.01	*(16)*	0.01	0.10	*(61)*	0.10
R&D labor share	27%	*(26)*	23%	20%	*(10)*	35%	31%	*(16)*	33%
Panel C: Growth rates									
Sales	**44%**	*(369)*	**70%**	47%	(104)	46%	**44%**	(256)	**93%**
Assets	**64%**	*(360)*	**167%**	**58%**	(94)	**93%**	**69%**	(257)	**210%**
Tangible assets	**58%**	*(237)*	**174%**	**51%**	(58)	**85%**	**61%**	(171)	**207%**
Intangible assets	**76%**	*(249)*	**542%**	53%	*(65)*	173%	**92%**	(174)	**796%**
Debt	**49%**	*(356)*	**71%**	54%	*(93)*	47%	**48%**	*(255)*	**85%**
Employees	**40%**	*(304)*	**60%**	36%	(73)	38%	**40%**	(224)	**65%**
R&D expenditure	41%	*(84)*	65%	23%	(20)	13%	42%	(64)	77%

Table 9: Going public on a 'new' market: sector and market effects

The table reports the results of a Wilcoxon rank-sum test for the difference in median values. Values which differ at a level of confidence of at least 5% are in bold. Pre(-IPO) values are the mean of the two pre-IPO years (if only one pre-IPO value is available we report that one). Post(-IPO) values are the mean of the two post-IPO values (if only one post-IPO value is available we report that one). In brackets we report the number of pre-post pairs on which each test is based. Data are taken from issuing prospectuses (pre-IPO values) and from annual reports (post-IPO values). Financial variables are in millions of euros. Debt is the sum of book value of short and long term liabilities. Debt to banks is the sum of liabilities to banks. Short-term (long-term) debt are liabilities with a remaining maturity of up to (over) one year. Equity is total shareholders' equity. Leverage is debt over debt plus equity. Capex is capital expenditure, i.e. expenditure in plant, property, and equipment. Operating margin is earning before interest, taxes, depreciation and amortization. Return on assets is operating margin over total assets. Return on sales is operating margin over sales. Foreign sales are sales outside the company's home country. The foreign sales share is the ratio of foreign sales to total sales. The R&D dummy equals one for firms which engage in R&D, define as those which declare R&D expenditure, employment of personnel in R&D, or active pursuit of R&D programs. R&D intensity equals R&D expenditure divided by sales. R&D per employee equals R&D expenditure divided by employees, and R&D labor share equals the number of employees in R&D over total employees.

Table 9(a): Sector effects, pooled sample

	ITSIS			Media & Entert.			Technology		
Variable	Pre		Post	Pre		Post	Pre		Post
Panel A: Financial variables									
Sales	**10.9**	*(225)*	**25.6**	**17.7**	*(44)*	**47.3**	**17.6**	*(70)*	**36.7**
Assets	**9.8**	*(215)*	**50.2**	**18.8**	*(43)*	**94.1**	**16.5**	*(66)*	**49.9**
Tangible assets	**5.0**	*(145)*	**42.2**	**11.9**	(30)	**73.7**	**7.3**	(38)	**42.2**
Intangible assets	**0.2**	*(152)*	**8.2**	**0.3**	*(30)*	**8.3**	**0.3**	*(40)*	**2.1**
Debt	**3.2**	*(200)*	**14.0**	**4.3**	*(38)*	**17.1**	**5.7**	*(61)*	**22.6**
Debt to banks/Debt	**21%**	*(119)*	**12%**	27%	*(27)*	25%	29%	*(35)*	24%
Short term debt/Debt	**79%**	*(90)*	**93%**	58%	*(12)*	77%	63%	*(34)*	67%
Long term debt/Debt	**20%**	*(86)*	**2%**	5%	*(12)*	26%	35%	*(31)*	26%
Equity	**1.6**	*(174)*	**34.8**	**2.5**	*(38)*	**55.9**	**2.3**	*(62)*	**32.9**
Debt/Equity	**2.8**	*(197)*	**0.4**	**2.4**	*(37)*	**0.5**	**2.2**	*(61)*	**0.6**
Debt/Tangible assets	**0.75**	*(142)*	**0.34**	**0.67**	*(30)*	**0.41**	**0.76**	*(38)*	**0.41**
Leverage	**0.7**	*(174)*	**0.3**	**0.7**	*(38)*	**0.3**	**0.7**	*(61)*	**0.4**
Capex	**0.4**	*(152)*	**6.1**	**0.4**	*(25)*	**12.9**	**1.0**	*(48)*	**7.5**
Operating margin	0.5	*(201)*	0.9	1.0	*(39)*	4.0	**0.7**	*(59)*	**3.3**
Return on assets	**9%**	*(198)*	**2%**	**9%**	*(38)*	**6%**	8%	*(58)*	7%
Return on sales	**5%**	*(197)*	**2%**	6%	*(38)*	8%	6%	*(59)*	7%
Panel B: Non-financial variables									
Employees	**72**	*(186)*	**231**	**35**	*(33)*	**127**	**82**	*(50)*	**213**
Foreign sales share	**18%**	*(32)*	**37%**	50%	*(13)*	29%	64%	*(13)*	55%
R&D expenditure	**1.3**	*(45)*	**4.7**	0.4	*(4)*	1.1	**2.3**	*(20)*	**3.5**
R&D intensity	14%	(48)	16%	14%	(4)	4%	10%	*(23)*	6%
R&D per employee	0.01	(42)	0.01	0.01	(2)	0.01	0.01	*(18)*	0.0001
R&D labor share	34%	(12)	31%	24%	(4)	40%	17%	*(5)*	19%
Panel C: Growth rates									
Sales	**48%**	*(208)*	**79%**	**18%**	*(38)*	**121%**	26%	*(31)*	55%
Assets	**66%**	*(202)*	**203%**	**64%**	*(38)*	**215%**	**38%**	*(60)*	**124%**
Tangible assets	**60%**	*(140)*	**178%**	**55%**	*(28)*	**207%**	**48%**	*(35)*	**122%**
Intangible assets	**68%**	*(145)*	**631%**	27%	*(29)*	614%	139%	*(36)*	149%
Debt	**50%**	*(199)*	**88%**	60%	*(37)*	113%	**30%**	*(60)*	**58%**
Employees	**48%**	*(179)*	**67%**	**31%**	*(32)*	**65%**	**22%**	*(49)*	**35%**
R&D	48%	*(44)*	88%	-	-	-	21%	*(18)*	50%

Table 9(b): ITSIS sector effects, by market

Sector	ITSIS						Technology					
Market	Paris			Frankfurt			Paris			Frankfurt		
Variable	Pre		Post	Pre		Post	Pre		Post	Pre		Post
Panel A: Financial variables												
Sales	**10.1**	*(63)*	**16..0**	**10.8**	*(157)*	**29.3**	**10.5**	*(19)*	**20.2**	**21.0**	*(46)*	**69.9**
Assets	**5.4**	*(46)*	**33.1**	**9.3**	*(155)*	**53.5**	**11.2**	*(19)*	**26.8**	**9.9**	*(54)*	**87.4**
Tangible assets	**4.9**	*(31)*	**23.8**	**4.8**	*(110)*	**44.0**	**7.3**	*(9)*	**24.9**	**7.6**	*(28)*	**57.5**
Intangible assets	**0.2**	*(35)*	**3.1**	**0.1**	*(113)*	**9.3**	**0.5**	*(10)*	**1.4**	**0.1**	*(28)*	**2.3**
Debt	**3.2**	*(45)*	**9.2**	**2.9**	*(152)*	**14.3**	**4.6**	*(15)*	**14.6**	**6.4**	*(54)*	**24.0**
Debt to banks/Debt	17%	*(18)*	13%	**24%**	*(99)*	**12%**	26%	*(11)*	31%	30%	*(24)*	23%
Short term debt/Debt	76%	*(10)*	84%	**78%**	*(79)*	**93%**	58%	*(7)*	66%	63%	*(23)*	68%
Long term debt/Debt	21%	*(9)*	7%	**20%**	*(76)*	**8%**	6%	*(7)*	13%	36%	*(24)*	33%
Equity	**1.2**	*(40)*	**10.5**	**1.5**	*(152)*	**38.6**	**1.4**	*(15)*	**9.8**	**2.9**	*(45)*	**36.3**
Debt/Equity	**2.2**	*(43)*	**0.5**	**2.8**	*(151)*	**0.4**	**2.3**	*(15)*	**1.1**	**2.1**	*(45)*	**0.4**
Debt/Tangible assets	**0.75**	*(31)*	**0.47**	**0.74**	*(108)*	**0.33**	**0.70**	*(9)*	**0.59**	**0.79**	*(28)*	**0.33**
Leverage	**0.7**	*(43)*	**0.4**	**0.7**	*(151)*	**0.3**	**0.7**	*(15)*	**0.5**	**0.7**	*(45)*	**0.3**
Capex	**0.2**	*(18)*	**1.9**	**0.4**	*(131)*	**6.6**	**0.6**	*(5)*	**2.5**	**1.2**	*(41)*	**8.3**
Operating margin	0.9	*(44)*	1.4	0.3	*(153)*	0.3	0.5	*(14)*	2.4	**0.6**	*(43)*	**3.5**
Return on assets	**19%**	*(43)*	**7%**	6%	*(151)*	0.4%	11%	*(14)*	11%	6%	*(43)*	6%
Return on sales	12%	*(42)*	9%	**4%**	*(151)*	**0.3%**	6%	*(14)*	8%	5%	*(42)*	7%
Panel B: Non-financial variables												
Employees	**87**	*(45)*	**254**	**61**	*(136)*	**228**	**67**	*(11)*	**149**	**89**	*(39)*	**219**
Foreign sales share	**9%**	*(9)*	**41%**	**21%**	*(23)*	**32%**	**58%**	*(5)*	**69%**	55%	*(6)*	39%
R&D expenditure	**0.8**	*(8)*	**3.1**	**1.8**	*(37)*	**5.8**	0.9	(6)	1.8	**3.2**	*(14)*	**5.5**
R&D intensity	**0.11**	*(9)*	**0.16**	0.15	*(39)*	0.14	**0.11**	*(8)*	**0.05**	**0.08**	*(19)*	**0.07**
R&D per employee	0.006	*(8)*	0.01	0.01	*(34)*	0.19	0.09	(3)	0.01	0.01	(15)	0.01
R&D labor share	33%	*(3)*	28%	33%	*(9)*	24%	13%	(2)	14%	16%	*(3)*	19%
Panel C: Growth rates												
Sales	48%	*(51)*	42%	**50%**	*(153)*	**95%**	71%	*(19)*	37%	**25%**	*(44)*	**61%**
Assets	**58%**	*(45)*	**111%**	**77%**	*(153)*	**229%**	**32%**	*(15)*	**121%**	**44%**	*(44)*	**129%**
Tangible assets	49%	*(30)*	95%	**69%**	*(106)*	**210%**	43%	*(8)*	88%	**49%**	*(26)*	**135%**
Intangible assets	61%	*(34)*	121%	**86%**	*(107)*	**805%**	11%	*(9)*	52%	426%	*(25)*	149%
Debt	59%	*(44)*	51%	**43%**	*(152)*	**99%**	17%	*(15)*	60%	37%	*(44)*	54%
Employment	38%	*(40)*	45%	51%	*(106)*	71%	21%	*(10)*	37%	**22%**	*(39)*	**33%**
R&D expenditure	108%	*(8)*	40%	42%	*(8)*	95%	14%	*(5)*	51%	21%	*(5)*	39%

Table 10: Robust regression—dependent variable sales growth rate

Independent variable	Coefficient		*Std. Error*
Germany	0.5408	***	*(0.1341)*
Foreign sales	-0.0629		*(0.1218)*
Age	-0.0012	***	*(0.0004)*
Leverage	-0.1001	***	*(0.0273)*
Capital raised	0.0019	***	*(0.0004)*
Founders	0.2280	*	*(0.1308)*
Managers	0.4152	**	*(0.2031)*
Venture capital	0.1099		*(0.1479)*
Corporate venture capital	0.6610	**	*(0.3762)*
Constant	0.3641		*(0.3101)*
Number of obs.	355		
$F(14, 340)$	5.32		
P-value	0.000		

All independent variables measured at the time of the IPO. The dependent variable is the average growth rate of sales over the two year following the IPO. Germany is a country dummy which takes value one for companies listed on the Neuer Markt. Foreign sales is a dummy which equals one if the company declares in the prospectus to be selling ooutside its domestic market. Age measures the number of months from the creation of the firm to the IPO. Leverage is debt divided by the sum of debt and shareholders' equity. Capital raised is the amount of equity raised at IPO normalized by the company's total assets at year end. For ownership we consider a number of dummy variables: founders takes value one if the company's founders (including family members and founder-controlled chinese boxes) retain a stake greater than 50% after the IPO; managers takes value one if the company's managers retain a holding of more than the mean sample value (20%), venture capital and corporate venture capital take value one if these investors retain a holding of more than the mean sample value 10%. Corporate venture capital includes strategic investors, unless the IPO results from a carve-out., and we also add dummy variables for the sectors of activity. We use, but do not report, dummy variables for the sectors of activity. Standard errors in parenthesis. Values significant at the 1%, 5% and 10% level are identified by *,**, ***.

Table 11: IV 2SLS regression—dependent variable assets growth rate

Independent variable	Coefficient		*Std. Error*
Age	-0.0213		*(0.0309)*
Leverage	-0.2183		*(0.5504)*
Capital raised	3.1991	***	*(1.0144)*
ROA	2.1737	***	*(0.5708)*
Founders	3.6024		*(9.6542)*
Managers	-15.8790		*(12.6149)*
Venture capital	-9.2657		*(13.7068)*
Corporate venture capital	-4.4948		*(9.5178)*
US GAAP	13.9243		*(17.0277)*
Constant	-26.9279		*(24.9801)*
Number of obs.	344		
$F(14, 329)$	6.86		
Adj R-squared	.87		
P-value	0.000		

All independent variables measured at the time of the IPO. The dependent variable is the average growth rate of assets over the two year following the IPO. Age measures the number of months from the creation of the firm to the IPO. Leverage is debt divided by the sum of debt and shareholders' equity. Capital raised is the amount of equity raised at IPO normalized by the company's total assets at year end. ROA, return on assets, is operating margins divided by end-of-year assets. For ownership we consider a number of dummy variables: founders takes value one if the company's founders (including family members and founder-controlled chinese boxes) retain a stake greater than 50% after the IPO; managers takes value one if the company's managers retain a holding of more than the mean sample value (20%), venture capital and corporate venture capital take value one if these investors retain a holding of more than the mean sample value 10%. Corporate venture capital includes strategic investors, unless the IPO results from a carve-out. We also add dummy variables for the sectors of activity. US GAAP is a dummy which takes value 1 if a company adopts the US GAAP accounting standard. We use, but do not report, dummy variables for the sectors of activity. Standard errors in parenthesis. Values significant at the 1%, 5% and 10% level are identified by *,**, ***.

Table 12: Robust regression—dependent variable capital raised

Independent variable	Coefficient		*Std. Err.*
Age	-0.0014	*	*(0.0007)*
Leverage	0.0285		*(0.0484)*
Foreign sales	-0.2237		*(0.2267)*
R&D	0.5085	**	*(0.2319)*
Founders	-0.3944	*	*(0.2253)*
Managers	-0.2082		*(0.3565)*
Venture capital	-0.2225		*(0.2525)*
Corporate venture capital	0.7146		*(0.6996)*
US GAAP	0.7558	***	*(0.2370)*
Dummy 1999	0.7633	***	*(0.2903)*
Dummy 2000	1.3676	***	*(0.2901)*
Dummy telecom 1999	2.3929	**	*(1.1033)*
Sales growth rate	0.0014	***	*(0.0004)*
Constant	1.1372	**	*(0.5775)*
Number of obs.	353		
$F(18, 334)$	4.43		
P-value	0.000		

All independent variables measured at the time of the IPO. The dependent variable is the amount of capital raised at IPO normalized by the company's total assets at year end. Age measures the number of months from the creation of the firm to the IPO. Leverage is debt divided by the sum of debt and shareholders' equity. Foreign sales is a dummy which equals one if the company declares in the prospectus to be selling ooutside its domestic market. R&D is a dummy variable that takes value 1 when a company declares in the IPO prospectus to be performing R&D. For ownership we consider a number of dummy variables: founders takes value one if the company's founders (including family members and founder-controlled chinese boxes) retain a stake greater than 50% after the IPO; managers takes value one if the company's managers retain a holding of more than the mean sample value (20%), venture capital and corporate venture capital take value one if these investors retain a holding of more than the mean sample value 10%. Corporate venture capital includes strategic investors, unless the IPO results from a carve-out. We add dummy variables for the sectors of activity. US GAAP is a dummy which takes value 1 if a company adopts the US GAAP accounting standard. Dummy 1999 and 2000 are time dummies. The dummy Telecom 1999 takes value one for telecom companies listed in 1999. Sales growth rate is the average value of sales growth in the two years preceeding the IPO. We use, but do not report, dummy variables for the sectors of activity. Standard errors in parenthesis. Values significant at the 1%, 5% and 10% level are identified by *,**, ***.

Table 13: Robust regression—dependent variable capital raised (Neuer Markt)

Independent variable	Coefficient		*Std. Err.*
Age	-0.0015		*(0.0010)*
Leverage	0.0731		(0.0577)
Foreign sales	-0.5594	*	*(0.3298)*
R&D	0.4985		(0.3527)
Founders	0.0109		*(0.3182)*
Managers	0.2055		*(0.5010)*
Venture capital	-0.1163		*(0.3643)*
Corporate venture capital	0.1227		*(1.1639)*
US GAAP	0.5874	**	*(0.3138)*
Dummy 1999	0.7358	*	*(0.4363)*
Dummy 2000	1.6267	***	*(0.4565)*
Dummy telecom 1999	1.7111		(1.6553)
Sales growth rate	5.67e-06		(0.00003)
Constant	2.2957		*(1.727)5*
Number of obs.	248		
$F(18, 229)$	2.55		
P-value	0.0007		

All independent variables measured at the time of the IPO. The dependent variable is the amount of capital raised at IPO normalized by the company's total assets at year end. Age measures the number of months from the creation of the firm to the IPO. Leverage is debt divided by the sum of debt and shareholders' equity. Foreign sales is a dummy which equals one if the company declares in the prospectus to be selling ooutside its domestic market. R&D is a dummy variable that takes value 1 when a company declares in the IPO prospectus to be performing R&D. For ownership we consider a number of dummy variables: founders takes value one if the company's founders (including family members and founder-controlled chinese boxes) retain a stake greater than 50% after the IPO; managers takes value one if the company's managers retain a holding of more than the mean sample value (20%), venture capital and corporate venture capital take value one if these investors retain a holding of more than the mean sample value 10%. Corporate venture capital includes strategic investors, unless the IPO results from a carve-out. We add dummy variables for the sectors of activity. US GAAP is a dummy which takes value 1 if a company adopts the US GAAP accounting standard. Dummy 1999 and 2000 are time dummies. The dummy Telecom 1999 takes value one for telecom companies listed in 1999. Sales growth rate is the average value of sales growth in the two years preceeding the IPO. We use, but do not report, dummy variables for the sectors of activity. Standard errors in parenthesis. Values significant at the 1%, 5% and 10% level are identified by *,**, ***.