

Economies of scope and IPO activity in Europe

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Abstract

Initial public offering (IPO) activity in Europe has recently come to a near-halt and, similarly to the US, this decline has been more pronounced among small firm IPOs. Three alternative explanations have been proposed: the *economies of scope* hypothesis states that getting big fast has become more important, resulting in small firms being acquired; *the regulatory overreach* hypothesis, which states that small firms are remaining private due to an increase in the regulatory costs borne by publicly traded firms; and the *market conditions* hypothesis, which states that poor stock market levels have resulted in low IPO volume. Although Europe is characterized by more fragmented regulation and by the existence of second markets with lower compliance costs, we argue that the decline in the number of IPOs is partly attributable to the economies of scope explanation. The Panic of 2008 and the Eurozone crisis of 2011 have also temporarily depressed IPO volume, consistent with the market conditions hypothesis. We present evidence of an increased difficulty for small firms to remain profitable, their underperformance, and their higher propensity to be acquired soon after the IPO, relative to large firms. We document that these patterns persist even among second market IPOs, where the regulatory overreach hypothesis does not apply. Controlling for the impact of market valuations, we investigate IPO activity in a time-series setting and unveil a downward trend in European IPOs over time.

Keywords: IPOs; IPO volume; trade sales; M&A; economies of scope; financial regulation; European markets

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1. Introduction

Initial public offering (IPO) activity in Europe has recently come to a near-halt, due to the Panic of 2008 and the Eurozone crisis of 2011. The 280 companies going public on the London, Euronext, Frankfurt, and Milan stock exchanges from 2008 to 2011 is lower than the 353 companies going public in 2007 alone. An analogous dearth of IPOs has occurred in the US, as documented in Gao, Ritter and Zhu (2012). Gao et al. discuss three hypotheses that have been proposed to explain the low volume of IPOs in the US during 2001-2011.

First, the Sarbanes-Oxley Act (hereafter, SOX) of 2002 made going and staying public more costly, due to additional compliance requirements; and the reduction in bid-ask spreads from 1994-2001 and Regulation FD in 2000 led to a reduction in analyst coverage for smaller firms that decreased the attractiveness of going public. Supporters of the “regulatory overreach” hypothesis argue that the combination of these effects significantly lowered the market valuation of small publicly traded firms, discouraging other IPOs.

Second, lower stock market valuations after the collapse of the technology bubble starting in March 2000 have reduced the attractiveness of going public. Supporters of the “market conditions” hypothesis argue that the drop in IPO activity is just temporary.

Third, the “economies of scope” hypothesis states that due to an ongoing change in the economy, small firms are worth more as part of a larger organization that can realize economies of scope and scale. Thus, they find it more convenient to get big fast by selling out in a trade sale (merging) rather than going public and remaining independent. The economies of scope hypothesis is based on the evidence that the decline in IPOs has been most pronounced among small firms, and that small firms have been increasingly unable to be profitable. The economies of scope hypothesis views the decline in IPO activity as a consequence of a change in the attractiveness of being big rather than small, rather than the attractiveness of being private rather than public.

This paper sheds light on the decline of European IPO activity and tests the different hypotheses laid out in Gao et al. (2012). Similarly to the US, we find that the decline in IPO activity has been mainly driven by small firms. In the main markets of the four largest European economies, the percentage of IPOs by small firms, where small firms are defined as those with less than €30 million in pre-IPO annual sales using 2011 purchasing power, has dropped to an annual average of 25.4% in 2001-2011 from an annual average of 38.2% in the six years 1995-2000 preceding the bursting of the technology bubble. Small firms may have suffered more than others from higher compliance costs, as argued by the regulatory overreach hypothesis. On the other hand, the IPO drought may be due to an ongoing change in the economy whereby small firms receive higher valuations in trade sales (acquisitions by strategic buyers) than in public markets, because they can create greater profits as part of larger organizations rather than as small independent firms. Europe is a privileged setting in which to examine the economies of scope hypothesis. We take advantage of the presence of second markets for small companies, exempt from regulatory changes, to test whether the

predictions of the regulatory overreach, market conditions, and economies of scope hypotheses hold in an environment where regulatory overreach is not as important.

We find that the decline in the number of small firm IPOs in Europe is only partly attributable to general market conditions. The decline in the number of IPOs in 2001-2003 and in 2008-2011 occurred in conjunction with unfavorable market conditions. However, our evidence suggests that the economies of scope motivation is also important. First, the profitability of small firm IPOs has declined over time, and has been persistently lower than for large firm IPOs. Among small firm IPOs, the percentage that are profitable in the three years after going public has declined from 67.1% in 1995-2000 to 44.4% in 2001-2011, while the downtrend has been less pronounced for large firm IPOs (from 91.3% to 80.1%). The pattern of low profitability for small firms also persists among seasoned listed companies. Second, the long-run performance of small company IPOs has been poor for public-market investors. The average 3-year buy-and-hold return for investors buying at the closing market price following the first 21 days of trading, has been -2.9% for small company IPOs from 1995-2008, in contrast to +14.6% for large company IPOs. European IPOs from 1995-2008 have given investors an equally weighted average 3-year buy-and-hold return of only 2.5%, less than 1% per year on an annualized basis.

This evidence is consistent with that in Vismara et al. (2012), who examine European IPOs from 1995-2006. They report a negative abnormal performance for IPOs on European second markets: the average 3-year buy-and-hold abnormal return for main market IPOs has been +12.3%, whereas the average for second market IPOs has been -19.0%.¹ Third, while European IPO activity has fallen, the number of merger and acquisition (M&A) deals has risen, suggesting an increased preference for external growth by means of trade sales rather than internal growth financed by equity issues. The propensity to be acquired soon after the IPO has increased among small companies over the last decade. This is consistent with the desire to get big fast posited by the economies of scope hypothesis. Moreover, inconsistent with the regulatory overreach explanation, we find that the fraction of non-European companies listing in Europe has not been affected by regulatory changes, and listed companies are not going private more frequently in an attempt to avoid the higher compliance costs of staying public.

Finally, we test our explanation in a multiple regression with the quarterly volume of IPOs scaled by real gross domestic product (GDP) as the dependent variable. Our results support the market conditions hypothesis, as the level of general stock market valuations is found to be a primary determinant of IPO activity. However, we also find a negative time trend affecting IPO activity that is not attributable to poor market valuations. Consistent with the economies of scope hypothesis, this trend is driven by small firms. That is, the negative time trend that is unrelated to market conditions is stronger for small firm IPOs than large firm IPOs. Evidence in support of the economies of scope hypothesis persists also in second markets. Although facing considerably looser regulation, the number of companies going public on these markets has

¹ In their Table 5, Vismara et al. (2012) report mean 3-year buy-and-hold returns of 35.2% for main market IPOs and -0.7% for second market IPOs, before adjusting for the returns on the FTSE EuroMid index to compute abnormal returns.

significantly declined over time. This downtrend on the lightly regulated second markets confirms that increased compliance costs due to SOX-like regulatory changes are not the primary cause of the drop in IPO activity since 2000.

This paper can be viewed as a companion of the Gao et al. (2012) study, which focuses exclusively on US IPOs for its empirical evidence. Their theoretical analysis predicts a decline in the number of small company IPOs in all countries with high levels of economic development. Both the present analysis and the Gao et al. (2012) analysis attempt to explain long-term trends, while controlling for the shorter-term fluctuations in IPO volume associated with bull and bear markets. Despite substantial differences with the US environment, such as European regulatory fragmentation and the existence of second markets for small companies, we find evidence in support of the economies of scope hypothesis. The decline in the number of companies going public in the US has raised concerns about its effect on GDP and employment growth. Many public companies are indeed leaders in innovation and job creation, and the drop in IPOs may be detrimental for economic growth. The number of companies going public has also fallen in Europe, although until recently not as severely.

The remainder of this article is organized as follows. Section 2 describes securities regulation in Europe. Section 3 defines the testable hypotheses, and Section 4 presents the sample and the results. Section 5 focuses on the second markets for small companies. In Section 6, we report the results of time series regressions with the quarterly volume of IPOs scaled by real GDP as the dependent variable. Section 7 concludes.

2. Securities regulation in Europe

The introduction of the Sarbanes-Oxley Act in 2002 by US authorities served as a paradigm that influenced analogous regulatory changes in Europe. In the same year, the *Report of the High Level Group of Company Law Experts on a Modern Regulatory Framework for Company Law in Europe*², issued by the European Commission, recommended corporate governance practices that are similar to the SOX provisions. A number of member states responded by either issuing national corporate governance codes or revising the existing ones. Although the contents vary across countries, the codes are highly aligned with EU guidelines in recommending a balance of independent directors and non-independent directors, the separation of the CEO and chairman-of-the-board positions, formal and transparent procedures for the appointment of directors to the board, and effective internal control systems (Akyol et al., 2012).

Analogous regulatory changes have been implemented across EU member states at different points in time. The four countries that we focus on have put into force changes in their governance codes between 2002 and 2004. First, German authorities introduced *The German Corporate Governance Code* on February 26th,

² http://ec.europa.eu/internal_market/company/docs/modern/report_en.pdf.

2002; in the UK, *The Combined Code* was passed on July 23rd, 2003; French authorities approved *The Law on Financial Securities of 2003* on August 1st, 2003; finally, the *Legislative Decree no. 310/2004* was enacted in Italy on January 1st, 2004. Such staggered implementation offers better identification of the regulatory effects than a single regulatory event such as SOX (Christensen et al., 2012).

However, ‘SOX-equivalent’ regulations do not apply to all the companies going public in Europe, where stock exchanges are organized in segments, with a main market and one or more second markets that are typically designed to meet the needs of small and young companies (Vismara et al., 2012). These second markets are present in all of the four countries we consider, and have been used instead of the main markets by the majority of companies going public over the last decade in these four countries. From 1995 to 2011, 3,055 IPOs took place on second markets and 893 on main markets. These ‘exchange-regulated markets’ are characterized by looser regulation, as defined by the European Financial Services Directive, and are not affected by regulatory changes at a national level³.

3. Testable hypotheses

A private firm in the US was much more likely to have been acquired than to go public over the last decade (Bayar and Chemmanur, 2011). The regulatory overreach hypothesis explains this pattern as a consequence of post-SOX compliance costs, which are posited to have been detrimental to the market value of small publicly traded firms, and a lack of analyst coverage, due to the 2003 Global Settlement and the effects of decimalization. Conversely, the economies of scope hypothesis ascribes the drop in small firm IPOs to the higher earnings that can be realized as part of a larger organization rather than as a small independent company, whether the company is public or private. In this section, we present a number of testable hypotheses that emanate from the economies of scope explanation.

3.1 Profitability

The economies of scope hypothesis asserts that, in a dynamic setting where profitable growth opportunities may be lost if they are not quickly seized, a larger organization is able to earn higher profits because it can realize economies of scope and bring new technologies to market faster. Consistent with this perspective, we expect small firms to be less profitable after the IPO than is the case for large firms.

³ All the second markets of the four stock exchanges that we study here are now categorized as “exchange-regulated”. The main effect is that the national listing authorities (equivalent to the US Securities and Exchange Commission) are not required to approve a firm’s prospectus when its listing does not involve a public offer. In practice, shares are issued exclusively to qualified institutional buyers (QIBs), but there are no restrictions on the ability of the QIBs to resell the shares to individual investors. This model is typically associated with London’s popular Alternative Investment Market (AIM), and was emulated by the other stock markets in Continental Europe when trying to (re)launch second-tier markets such as the Alternext by Euronext, the Freiverkehr in Germany (Frankfurt), and the MAC in Italy (Milan).

Hypothesis 1: Over the last decade, the percentage of firms that are profitable in the years following the IPO decreases more among small than large companies.

3.2 Long-run performance

There is no direct implication of the economies of scope hypothesis on the relative long-run performance of small firm IPOs with respect to large firm IPOs. Low returns due to an unanticipated decrease in earnings of small companies could be either caused by increased compliance costs or by an unanticipated deterioration in profitability relative to large firms. However, if the costs brought by stricter regulation were unanticipated, companies that were already public when these changes occurred would see low returns, regardless of their size, as investors incorporated the effects into market prices. If the unanticipated increase in costs was greater for small firms on a percentage basis, as has been documented in the US (Iliev, 2010), then small firms would have lower returns. In contrast, an unanticipated decline in the profitability of small firms due to a technological change, as argued by the economies of scope hypothesis, would result in low returns only for small firms.

Hypothesis 2: Over the last decade, the long-run returns for small firms are lower than the long-run returns for large firms.

3.3 Foreign listings

If higher compliance costs due to stricter regulation had been detrimental for European public markets' attractiveness, as argued by the regulatory overreach hypothesis, we would expect a drop in the number of foreign companies going public once European countries began to implement regulatory changes.

Hypothesis 3: Over the last decade, there is no significant decrease in the market share of foreign IPOs in European markets.

3.4 Survival rates and M&A activity

A decline in the value of small independent firms relative to large firms, according to the economies of scope hypothesis, should have two effects. First, M&A activity should rise, since small private firms would get better valuations in trade sales, in which they become part of a larger organization, than in IPOs; second, small companies that do go public should exhibit an increased propensity to take part in M&A deals, either being acquired or making acquisitions. Conversely, if high compliance costs brought by SOX-like regulatory changes are the main reason for why being a small publicly traded firm has become less attractive, we would expect an increase in the fraction of recent IPOs that subsequently leave the market and go private in an

attempt to avoid such costs. The economies of scope hypothesis thus produces the following testable hypotheses:

Hypothesis 4: Over the last decade, while the number of IPOs decreases, small firm M&A activity does not.

Hypothesis 5: Over the last decade, the percentage of small firms that are acquired after their IPO increases.

Hypothesis 6: Over the last decade, the percentage of small firms that go public and make acquisitions after their IPO increases.

Hypothesis 7: Over the last decade, there is no significant increase in the fraction of IPOs that subsequently go private as an independent firm.

4. Sample and results

Our sample is composed of 3,948 European IPOs that took place on the London, Euronext⁴, Frankfurt and Milan stock exchanges from 1995 to 2011. We identify the IPOs and collect the data from the EurIPO database⁵. We focus on the stock exchanges of the UK, France, Germany, and Italy since these countries are the four largest European economies. The sample includes IPOs on both the main and second markets⁶. In this section, we test the seven testable hypotheses of the economies of scope explanation developed above, in order to shed light on the causes of the drop in European IPOs.

IPO activity in Europe has recently shown a sharp decline. Table 1 reveals that, while an average of 293 companies went public each year from 1995 to 2000, this number has fallen by approximately one third after 2000, with 199 IPOs per year. Small firms, defined as those with an inflation-adjusted pre-IPO annual sales of less than €30 million using 2011 purchasing power⁷, are responsible for the largest fraction of the IPO activity, in contrast to the US pattern after 2000 (see Gao et al., 2012). Since 1995, the percentage of offerings by small firms, averaging 69.4%, has been persistently higher than the percentage of IPOs by large firms. Indeed, the market share of small firm IPOs increased slightly, from 65.9% in 1995-2000 to 72.1% in 2001-2011. This is inconsistent with an increased inability or unwillingness of small private firms to access the public market, as documented by Gao et al. (2012) for the US context. However, if we exclude second markets, the story is different.

⁴ We use the French Paris Bourse until the creation of Euronext with the merger of the four stock exchanges of Belgium, France, the Netherlands and Portugal, where the first listing took place on January 27, 2005. Afterwards, we consider Euronext in its entirety.

⁵ See Vismara et al. (2012) for a description of the database.

⁶ Main markets include: Official List (UK), Premier Marché and Eurolist in 2005 (France) Amtlicher Markt (Germany) and MTA (Italy); second markets include: AIM (UK), Second Marché, Nouveau Marché, Marché Libre and Alternext (France), Neuer Markt and Freiverkehr Markt (Germany) and Expandi, Nuovo Mercato and AIM Italia (Italy). Only a few of these markets are still active. See Vismara et al. (2012), Table 1 for details.

⁷ Price level adjustments use data from Eurostat.

In main markets, only one third of the IPOs since 1995 were conducted by small firms, and this fraction is decreasing over time. The share of small firm IPOs dropped from 38.4% to 25.5% after the technology bubble burst in 2000, with a decrease of 20 small firm IPOs each year, on average, between 1995-2000 and 2001-2011. Such a decline in small firm IPOs could be either driven by increased compliance costs, consistent with the regulatory overreach hypothesis, or by a structural disadvantage of small firms with respect to large firms, as argued by the economies of scope explanation. We now shed light on which of the two hypotheses is able to explain this pattern.

[TABLE 1]

4.1 Profitability

Table 2 reports the percentage of publicly traded firms with non-negative earnings each year from 1995 to 2011. IPOs are from the prior three years, while listed firms have been publicly traded for at least three years. We define small and large firms using a cutoff of €30 million in inflation-adjusted pre-IPO annual sales, and €250 million in fiscal year annual sales (both using 2011 purchasing power) for our IPOs and seasoned listed firms, respectively. Note that if a company grows its sales from less than €30 million before the IPO to more than €30 million during the three years after the IPO, it is still classified as a small firm. Thus, there is no look-ahead bias.

[TABLE 2]

Panel A of Table 2 shows that there is a considerable decline in the post-issue profitability of small firm IPOs over time, with an approximately 20% drop in the annual fraction of profitable firms after the bubble (from 67.1% to 44.4%). In comparison, the decline in the percentage of large firm IPOs reporting positive earnings is less pronounced (from 91.3% to 80.1%). This is consistent with our first hypothesis. In general, large firms seem to make profits more easily than their smaller counterparts. The percentage of large firm IPOs with non-negative earnings indeed averages 85.4%, compared to 50.7% for small firm IPOs, and is higher in every year of our sample period.

Panel B of Table 2 shows that among seasoned listed firms, the same pattern is present. The percentage of small firms that are profitable falls from 77.7% during 1995-2000 to 59.4% after the bubble, while the decrease is modest among large firms (from 90.4% to 84.8%). Across the entire 1995-2011 period, on average 87% of large firms have been profitable, while only 65.5% of small firms have reported positive

profits in a given year. Therefore, the evidence in Table 2 is consistent with our Hypothesis 1 that the percentage of firms that are profitable in the years following the IPO decreases more among small than large companies.

Figure 1 shows the evolution over time in the number of listed firms with positive earnings, distinguishing between small and large firms using the data from Table 2. For each year, the number of small (large) firms is computed as the sum of small (large) firm IPOs from the prior 3 years and small (large) firms listed by more than three years, with earnings per share available from Datastream. An inspection of the graph clearly reveals that the fraction of unprofitable firms, represented by the dark shaded area, is larger among small companies and is widening over time. Conversely, the fraction of unprofitable large firms is smaller and remains quite stable across the sample years. This evidence is consistent with the predictions of the economies of scope hypothesis.

[FIGURE 1]

4.2 Long-run performance

We measure stock price performance as 3-year buy-and-hold returns (BHR), measured from the closing market price after the first 21 days of trading until the 3-year anniversary (35 months) or the closing market price on the delisting day, if this occurs earlier. Table 3 shows that mean 3-year BHR returns decreased from 4.9% for companies listing during 1995-2000 to 0% for those listing during 2001-2008. Over the entire sample period, the equally weighted 3-year BHR averaged 2.5%, less than 1% per year. Most importantly, large firm IPOs outperform small firm IPOs: on average, the 3-year BHR is 14.6% for large and -2.9% for small companies. Average returns associated with the two subperiods, before and after the technology bubble burst in 2000, are positive for large firm IPOs (19.7% and 8.3%), while they are negative for small firm IPOs (-2.5% and -3.3%). With a few exceptions (1997 and 2006), the poorer long-run performance of small firm IPOs exists across all of the sample years. Regardless of the cause, the low realized returns on small company IPOs would inevitably dampen investor enthusiasm towards them, resulting in lower volume. One possible motivation is, as argued by Gao et al. (2012), that the declining profitability of small firms, if unanticipated, results in low returns. Although we do not find evidence that the long-run returns for small firms decreased more than the long-run returns for large firms, as predicted in our Hypothesis 2, we show that the underperformance of IPOs is concentrated among small firms, consistent with the evidence for the US in Ritter (2011) and Gao et al. (2012).

[TABLE 3]

4.3 Foreign listings

The fraction of IPOs from foreign companies on our four European markets did not decrease over the last decade. As reported in Table 4, non-European firms are not a large percentage of European IPOs (6.9% of the overall sample, with 1.8% being US companies). This percentage was particularly low (2.4%) in the period 1995-2000, and increased afterward (10.4% in the period 2001-2011), when the level of regulation in Europe increased. The same pattern has been followed by US firms listing in Europe, increasing from 0.8% during 1995-2000 to 2.7% from 2001 onwards. Therefore, the decision to list on European stock exchanges from overseas has not been negatively affected by changes in regulation. This is consistent with our Hypothesis 3, which states that there was no significant decrease in the market share of foreign IPOs in European markets over the last decade.

Although most capital raising occurs predominantly in domestic markets, the decreasing transaction costs resulting from ongoing financial globalization have pushed more companies to turn to global markets as a source of funds (Kim and Weisbach, 2008). Hence, an impact of the overreach of regulation may be hidden by the higher mobility of IPOs. To this extent, Table 4 reports the fraction of European firms going public abroad, namely the US and other countries that have received an increasing interest by European issuers over the last decade ('other exchanges' includes those of Australia, Hong Kong, Singapore, India, and Canada). Results show that the flow of European companies going public abroad, either in the US or in other countries, is minimal. The annual average fraction is 0.7% for US exchanges, and 0.2% for other exchanges. This reveals that European companies have not started emigrating to other countries after the regulatory tightening, while European IPO markets have become more attractive.

[TABLE 4]

4.4 Post-IPO M&A activity and delistings

Figure 2 compares the trends of IPO and M&A activities in Europe. The IPO volume refers to companies going public on the four stock exchanges included in our sample, while M&A volume includes all deals completed each year and involving a target based in Western Europe (the source is Zephyr Annual Report). After a common peak around 2006, IPO volume suffers a dramatic decline, as already documented in Table 1. The low volume of IPOs in 2008-2011 is at least partly attributable to the lower valuations following the panic of 2008 and the subsequent Eurozone crisis. For France, Germany, Italy, and the UK, the total real return on equities was negative during 2007-2011. However, the volume of mergers and acquisitions does not show the decline that IPO volume does, remaining stable at a high level. This is consistent with an increased preference of private firms to sell to another company instead of raising public equity capital, as

implied by the economies of scope hypothesis. Therefore, inspection of Figure 2 offers support to our Hypothesis 4 that, while the number of IPOs decreases, M&A activity does not.

[FIGURE 2]

Table 5 shows the fraction of European companies that delist, either voluntarily or for bankruptcy, and those that are acquired or acquire another firm, within three years after their IPO. After the technology bubble burst, there is an increased propensity to be targeted shortly after going public. Of the IPOs listed before 2001, 7.1% were acquired within three years; this percentage increases slightly to 7.7% from 2001 onwards. Conversely, the propensity to acquire after going public has decreased. The fraction of newly listed firms making at least one acquisition has dropped from 42.3% to 28.7%. By splitting the analysis according to firm size, evidence shows that the upward trend in being targeted is driven by small firms. Before the bubble, 7.4% of small and 6.8% of large firms were acquired in the three years following the IPO; after the bubble, these percentages change to 8.5% and 5.4% respectively. The fraction of firms completing at least one M&A as an acquirer is instead decreasing regardless of firm size: from 40.4% to 26.6% among small firm IPOs, and from 47.5% to 34.5% among large firm IPOs⁸. Overall, the evidence in Table 5 is consistent with our Hypothesis 5, that the percentage of small firms that go public and are acquired soon after their IPO has increased over the last decade. Our Hypothesis 6, predicting an increase in the percentage of small firms that go public and make acquisitions after their IPO, does not find support.

[TABLE 5]

The fraction of companies that decide to delist fluctuates across the years, with no striking evidence of an increased propensity to leave the public market in the last decade, consistent with our seventh hypothesis. The percentages of 2006 (1.7%) and 2007 (0.3%) are far below the average value of the sample period (3.3%), while the result of 2008 (3.3%) may be influenced by the advent of the financial crisis. Also the mean delisting rate in the pre-bubble period is slightly higher than the post-bubble value. Hence, there is apparently no support for arguing that the IPO drought among small firms is primarily caused by increased costs of going (and staying) public. At least, there is no significant increase over the last decade in the fraction of IPOs that subsequently go private as an independent firm, consistent with Hypothesis 7.

⁸ The number of acquisitions is from Thomson OneBanker and considers all completed deals within three years from the IPO. We do not test whether these changes are statistically significant or not. There is industry clustering, so the number of independent observations is less than the total number of observations.

5. Second markets

The existence of second-tier markets is a peculiarity of European stock exchanges that should not be neglected.⁹ The role of second markets, characterized by considerably looser regulation, has been relevant in Europe. The most popular second market in Europe, London's Alternative Investment Market (AIM), accounts for 79% of the IPOs taking place in London from 1995 to 2011. As documented by Vismara et al. (2012), these markets are dominated by small firms. In particular, they provide small firms that do not succeed in meeting main markets' requirements with an easier opportunity to go public. Since second markets have not been affected by the post-SOX regulatory tightening, the motivations behind the regulatory overreach hypothesis do not apply. Thus, second markets represent an ideal setting in which to test whether the predictions of the economies of scope hypothesis persist even in the absence of regulatory concerns.

Our previous analysis of the profitability of recent IPOs revealed that large firms seem to be able to remain profitable more easily than small firms. If the decrease in profitability was primarily caused by increased compliance costs, we would expect a higher level of profitability among second market IPOs, which are exempt from strict regulatory requirements. Table 6 documents that this is not the case. First, the percentage of recently listed firms that remain profitable is persistently higher among main market IPOs, both for small and large firms. On main markets, 80.3% of recent IPOs are profitable on average each year, while on second markets this percentage is only 58.9%. Second, the profitability rate among second market IPOs is worse for small than for large companies. This suggests that, even in the absence of regulatory burdens, small firms still face a higher difficulty to remain profitable than their large counterparts, as argued by the economies of scope hypothesis. On average, 82.3% of large firm IPOs from the prior three years on second markets are profitable, while this occurs for only 52.8% of small firm IPOs.

[TABLE 6]

Table 7 provides a picture of the long-run performance of European IPOs, distinguishing between main and second markets. At an aggregate level, in Table 3 we previously documented the persistently poorer long-run performance of small firm IPOs in comparison to large firm IPOs. Again, if low returns were caused by an unexpected decrease in earnings due to higher compliance costs, this pattern should not be present among second market IPOs. However, results show that second market IPOs perform worse than main market IPOs, and this is true for both small and large firms. The average 3-year buy-and-hold return across the entire 1995-2008 sample period for main market IPOs is 27.5%, considerably higher than the -5.1% return

⁹ Second-tier markets exist elsewhere, such as Hong Kong's GEM and Shenzhen's ChiNext, but the difference in regulation with their respective main markets is not as extreme. In the United States, the Amex had a short-lived Emerging Company Marketplace from 1992-1995, described by Aggarwal and Angel (1999).

associated with second market IPOs. Further, the lower returns on small firm IPOs compared to large firm IPOs are confirmed even in second markets, consistent with the economies of scope explanation. Here, large firm IPOs outperform their small counterparts by an average 12.5% over 3 years, with a mean 3-year buy-and-hold return on large firm IPOs of 4.9% compared to -7.6% on small firm IPOs.

[TABLE 7]

The increase in the fraction of foreign companies going public in European markets, documented in the previous section and inconsistent with the regulatory overreach hypothesis, needs to be clarified by considering the two market categories separately. Only main markets are indeed affected by regulatory changes. Thus, the aggregate result may be driven by second markets, characterized by a substantially larger number of companies going public each year. An increasingly large number of non-European companies going public on second markets to avoid higher compliance costs may hide a negative trend on main markets, which would instead be consistent with the regulatory overreach hypothesis. However, Table 8 reveals that this is not the case. The market share of foreign IPOs is increasing both in main and second markets. Before the technology bubble burst in 2000, the percentage of IPOs by non-European firms averages 1.5% on main markets and 2.7% on second markets; from 2001 onwards, these percentages increase to 4.8% and 11.8%, respectively. Thus, the upward trend in non-European IPOs is confirmed also on main markets, despite increased compliance costs. This is in contrast with the predictions of the regulatory overreach hypothesis.

[TABLE 8]

Our previous analysis on post-listing activity documented that the percentage of small firms that are acquired soon after their IPO has increased, and that regulatory changes have apparently not pushed publicly traded firms to go private more frequently. We now test the implications of the economies of scope hypothesis at the market level. Specifically, a sharper increase in the propensity to be acquired should be observed among second market IPOs, where the presence of small firms is predominant. At the same time, the regulatory overreach hypothesis would predict a higher propensity to delist only for main market IPOs, in an attempt to avoid compliance costs. Results are shown in Table 9.

[TABLE 9]

Inconsistent with the regulatory overreach hypothesis, only second market IPOs experience an increase in their propensity to be targeted. While the average fraction of IPOs acquired in the following three years decreases from 11.4% in 1995-2000 to 2.4% in 2001-2008 on main markets, it increases from 5.5% to 8.9% among second market IPOs. These patterns suggest that the desire to get big fast by becoming part of a larger organization concerns small firms predominantly, as posited by the economies of scope explanation. The propensity to acquire is instead decreasing in both markets. The fraction of firms making at least one acquisition decreases from 45.8% to 36.4% after the bubble burst among main market IPOs, and from 41.0% to 26.9% among second market IPOs. Inconsistent with the regulatory overreach hypothesis, the average propensity to delist is lower for main market IPOs (1.4% on average) than for second market IPOs (4.1%). Additionally, while this percentage increases among second market IPOs, which are exempt from most regulatory requirements, it decreases among main market IPOs, where companies instead face the increased regulatory costs of staying public.

6. Time-series regressions explaining IPO activity

Market conditions have been widely documented to play a substantial role in a firm's decision to go public. Figure 3 reports the number of IPOs taking place each year on the London, Euronext, Frankfurt, and Milan stock exchanges from 1995 to 2011, both at an aggregate level (black bars) and by firm size (light grey for small firm IPOs, and dark grey for large firm IPOs). The black line shows the FTSE EuroMid index, excluding dividends, adjusted for inflation using 2011 purchasing power and scaled at 100 for the 1995 year end value. The correlation between IPO activity and the equity index stands out immediately. Specifically, the 2008-2011 and the 2001-2003 volume declines appear to be largely due to depressed market valuations. This evidence supports the market conditions hypothesis. In addition to cyclical fluctuations, however, there is a negative trend in IPO activity, which could be due to either increased compliance costs and/or structural changes penalizing small firms.

[FIGURE 3]

To discriminate among the alternative explanations for changing IPO volume, we examine the volume of European IPOs in a time-series setting, and test whether a downward trend in the number of companies going public is present after controlling for market conditions. The economies of scope hypothesis predicts a more pronounced decline among small firm IPOs. Table 10 shows the results of the quarterly time series regression estimated using maximum likelihood with a first-order autoregressive error term. The dependent variable in Model (1) is the number of IPOs in each quarter divided by quarterly real GDP (measured in €

trillions) in the same quarter. In Model (2) and Model (3), the dependent variable is respectively the scaled number of small and large firm IPOs, using a cutoff of €30 million in inflation-adjusted pre-IPO annual sales. In Model (4), the dependent variable is the scaled number of second market IPOs. The aim is to test whether, in the absence of compliance costs, the decline in the number of IPOs persists.

There are three explanatory variables of interest. First, a time trend variable is aimed at capturing the hypothesized gradual impact of economies of scope and speed to product market on scaled IPO volume. Second, a dummy variable that equals one for quarters beginning with the passage of the first European SOX-equivalent code, introduced in February 2002 by German authorities, should clarify whether excessive regulatory costs are a valid motivation for the low IPO volume of the last decade. Third, the inflation-adjusted FTSE EuroMid index value controls for the influence of market valuations.

Results in Table 10 show that the coefficient of the time trend variable is negative and significant at the 5% level in Model (1), and at the 10% level in Model (2), while insignificant in Model (3). Consistent with the economies of scope hypothesis, this implies that a negative trend is affecting the IPO activity in Europe, and this trend is driven by small firms. This evidence is robust to the effects of market conditions which, predictably, are found to significantly influence IPO volumes in all model specifications, as posited by the market conditions hypothesis. At the same time, the insignificant coefficients on the European SOX-equivalent dummy variable indicate that regulatory changes have no reliable impact when considering the gradual downtrend in IPOs together with other control variables. This is inconsistent with the predictions of the regulatory overreach hypothesis.

[TABLE 10]

The coefficient of the time trend variable is negative and significant also in Model (4), where the dependent variable is the scaled number of IPOs on second markets. This is inconsistent with the regulatory overreach hypothesis: in an environment where the compliance costs of being a publicly traded firm are minimal and do not change over time, there is no regulatory-based reason for a decrease in the number of companies going public. Instead, the results unveil a downward trend in the number of companies going public on second markets, where small firms predominate. This significantly negative trend provides further support to the economies of scope hypothesis, since even in the absence of regulatory constraints the decline in IPO activity is present. Predictably, the coefficient on the European SOX-equivalent dummy variable is insignificant.

The average number of IPOs per quarter is approximately 60, and with real GDP averaging approximately €2 trillion per quarter, the dependent variable in Model (1) has an average value of approximately 30. The coefficient on the time trend of -0.71 (in Model 1) implies that scaled IPO volume is falling at -2.84 per year

(-0.71 x 4 quarters) over our 17-year sample period. This is an economically large amount relative to the mean of approximately 30 scaled IPOs per quarter.

7. Conclusions

Three alternative explanations have been proposed for the recent drop in the number of firms going public in Europe. First, the “economies of scope” hypothesis (Gao et al., 2012), which states that getting big fast has become more important, resulting in small firms being acquired; second, the “regulatory overreach” hypothesis, which states that small firms are remaining private due to an increase in the regulatory costs borne by publicly traded firms; and third, the market conditions hypothesis, which points to depressed stock market levels as the primary cause for the low IPO volume. Although the patterns are not quite as strong as those documented by Gao et al. (2012) for US IPOs, our European evidence for 1995-2011 suggests that small firm IPO activity is experiencing a long-term secular decline. Consistent with the market conditions hypothesis, European IPO volume has been depressed by lower market valuations following the collapse of the technology bubble, the Panic of 2008, and the Eurozone crisis. However, we find a negative trend in IPO volume that persists even after controlling for the influence of market conditions on IPO volumes, and is largely consistent with the economies of scope hypothesis.

The drop in the number of IPOs has been less dramatic in Europe than in the US prior to the Eurozone crisis, thanks to the presence of second, loosely regulated, markets. Even in these markets, however, we find a negative trend in the yearly number of IPOs. This is inconsistent with the regulatory overreach hypothesis: in an environment where the compliance costs of being a publicly traded firm are minimal and did not change over time, there is no regulatory-based reason for such a decrease in the number of companies going public.

As in the US, small publicly traded companies are increasingly finding it difficult to earn positive profits. Furthermore, M&A activity has been on an uptrend. After going public, small firms are increasingly being acquired, suggesting that small firms prefer to get big fast by becoming part of a larger organization rather than to remain independent and rely on internal growth as either a private or public firm. As in the U.S., public market investors have earned low returns on small company IPOs. European small company IPOs from 1995 to 2008 have given public market investors an average 3-year buy-and-hold return of -2.9%, markedly lower than the average 3-year BHR of 14.6% for large company IPOs, consistent with the empirical results of Vismara et al. (2012). The average 3-year BHR on all IPOs has been only 2.5%, giving investors an average return of less than 1% per year. Our analysis suggests that the 2004-2007 boom in second market IPOs, primarily on London’s AIM, is unlikely to be repeated.

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Table 1. Number of European IPOs. Sample of IPOs in Europe (London, Euronext, Frankfurt, and Milan) from 1995 to 2011. Small firm IPOs are defined as initial public offerings conducted by companies with less than €30 million in pre-IPO annual sales, in 2011 purchasing power (Eurostat). Proceeds are the aggregate amount raised in all of the IPOs, excluding overallotment options that get exercised. Statistics are computed for all markets and for main markets IPOs. Main markets are Official List (London), Eurolist (Euronext), Amtlicher Markt (Frankfurt), and MTA (Milan). ‘Annual’ rows show the mean values of IPO volume and aggregate proceeds per year, and the percentage of small and large firms, for the pre- and post-bubble periods. Source: EurIPO.

	All markets							Main markets			
	No. of IPOs	No. of IPOs missing sales	Small firm IPOs		Large firm IPOs		Proceeds (2011 €bn)	No. of IPOs	No. of IPOs missing sales	Small firm IPOs	
			No.	%	No.	%				No.	%
1995	87	0	49	56.3	38	43.7	8.0	58	0	29	50.0
1996	230	15	147	68.4	68	31.6	13.4	83	8	31	41.3
1997	219	0	146	66.7	73	33.3	10.7	76	0	32	42.1
1998	275	0	159	57.8	116	42.2	24.6	71	0	22	31.0
1999	373	2	252	67.9	119	32.1	55.1	78	0	23	29.5
2000	572	4	391	68.8	177	31.2	60.8	108	3	40	38.1
2001	191	0	149	78.0	42	22.0	33.5	32	0	4	12.5
2002	120	2	94	79.7	24	20.3	10.0	25	2	6	26.1
2003	89	0	66	74.2	23	25.8	7.7	13	0	2	15.4
2004	309	0	238	77.0	71	23.0	18.0	40	0	4	10.0
2005	429	0	309	72.0	120	28.0	39.9	69	0	15	21.7
2006	421	0	294	69.8	127	30.2	48.0	98	0	34	34.7
2007	353	2	232	66.1	119	33.9	28.4	79	0	25	31.6
2008	60	1	46	78.0	13	22.0	10.1	12	0	6	50.0
2009	27	13	9	64.3	5	35.7	1.2	3	0	1	33.3
2010	102	1	64	63.4	37	36.6	49.4	25	0	4	16.0
2011	91	2	64	71.9	25	28.1	5.4	23	0	5	21.7
Annual											
1995-2000	293	4	191	65.9	99	34.1	28.8	79	2	30	38.2
2001-2011	199	2	142	72.1	55	27.9	22.9	38	0	10	25.4
Total	3,948	42	2,709	69.4	1,197	30.6	424.0	893	13	283	32.2

Table 2. Profitability of recent IPOs and listed firms by year. The table reports the percentage of recent IPOs and seasoned listed firms with nonnegative earnings per share (EPS) each year, from 1995 to 2011. EPS is after extraordinary items. ‘IPOs from the prior 3 years’ are IPOs taking place in Europe (London, Euronext, Frankfurt, and Milan) for which year t is one of the first 3 post-IPO fiscal years. Small and large firm IPOs are defined on the basis of pre-IPO annual sales of €30 million, in 2011 purchasing power (Eurostat). ‘Firms listed by more than 3 years’ are firms listed in Europe (London, Euronext, Frankfurt, and Milan) with at least three years of trading history. This sample of listed firms is from Datastream and it is selected each year t (from 1995 to 2011) considering all the firms ‘alive’ in that year t with a Datastream ‘base date’ before year $t-3$. Listed firms are classified in two categories with €250 million in 2011 purchasing power being the cutoff number. ‘Annual’ rows show the mean values of IPO volume and proceeds per year, and the percentage of small and large firms, for the pre- and post-bubble periods.

	Panel A: IPOs from the prior 3 years				Panel B: Firms listed by more than 3 years			
	small firm IPOs		large firm IPOs		sales < €250m		sales > €250m	
	No. with EPS	% EPS \geq 0	No. with EPS	% EPS \geq 0	No. with EPS	% EPS \geq 0	No. with EPS	% EPS \geq 0
1995	46	67.4	298	92.5	1,508	79.8	1,871	89.0
1996	70	64.3	347	91.6	1,527	79.0	1,915	89.1
1997	168	76.7	121	93.4	1,664	79.5	2,184	89.5
1998	338	74.6	210	94.8	1,587	78.4	2,102	91.2
1999	421	73.4	249	94.0	1,536	75.4	2,031	91.6
2000	569	55.4	281	84.0	1,471	73.8	1,947	91.8
2001	633	44.1	261	75.1	1,506	70.3	1,890	88.6
2002	519	35.8	184	62.5	1,583	59.3	1,834	77.4
2003	217	42.9	66	69.7	1,804	51.4	1,759	78.0
2004	252	43.3	85	88.2	1,757	57.1	1,739	83.8
2005	384	43.0	142	85.2	1,693	61.3	1,689	89.6
2006	624	44.6	228	85.5	1,613	65.8	1,653	90.4
2007	653	48.2	278	88.1	1,638	66.5	1,599	91.6
2008	464	52.2	207	88.9	1,671	60.7	1,546	90.4
2009	227	47.1	113	69.0	1,792	46.8	1,494	70.2
2010	80	41.3	43	72.1	1,845	56.6	1,493	83.5
2011	93	36.6	53	81.1	1,699	61.2	1,465	89.6
Annual								
1995-2000	269	67.1	251	91.3	1,549	77.7	2,008	90.4
2001-2011	377	44.4	151	80.1	1,691	59.4	1,651	84.8
Total	5,758	50.7	3,166	85.4	27,894	65.5	30,211	87.0

Table 3. Long-run performance of IPOs by firm size. Average 3-year buy-and-hold returns (in percentage) of IPOs in Europe (London, Euronext, Frankfurt, and Milan) from 1995 to 2008. The sample include all the IPOs from the EurIPO database for which we have information on pre-IPO sales. Small firm IPOs are defined as those from companies with less than €30 million in pre-IPO annual sales, in 2011 purchasing power. The first 21 trading days after the IPO are excluded, as underwriters are often still stabilizing prices during this period. Returns are thus over the 35 months starting one month after the IPO, or a shorter time if a stock is delisted before its third year anniversary. ‘Annual’ rows show the mean values of IPO volume and proceeds per year, and the percentage of small and large firms, for the pre- and post-bubble periods.

	All IPOs		Small firm IPOs		Large firm IPOs	
	No. with sales	3y BHR (%)	No.	3y BHR (%)	No.	3y BHR (%)
1995	87	110.0	49	103.0	38	119.1
1996	215	26.7	147	16.4	68	48.1
1997	219	188.9	146	214.3	73	140.4
1998	275	12.0	159	9.8	116	14.8
1999	371	-39.9	252	-52.8	119	-12.6
2000	569	-63.9	392	-71.0	177	-45.7
2001	191	-21.8	149	-23.6	42	-15.4
2002	118	41.8	94	38.4	24	53.0
2003	89	42.2	66	28.7	23	88.5
2004	309	30.2	238	13.6	71	79.4
2005	429	13.8	309	7.5	120	27.5
2006	421	-9.0	294	-2.2	127	-23.7
2007	351	-37.2	231	-38.0	120	-35.6
2008	58	-4.0	46	-5.0	12	-0.2
Annual						
1995-2000	289	4.9	191	-2.5	99	19.7
2001-2008	246	0.0	178	-3.3	67	8.3
Total	3,702	2.5	2,572	-2.9	1,130	14.6

Table 4. The market share of non-European companies among European IPOs, and European IPOs on U.S. and other exchanges. The table shows the number and percentage of IPOs conducted by foreign companies from 1995 to 2011 on the following stock exchanges: ‘European exchanges’ are London, Euronext, Frankfurt, and Milan stock exchanges; ‘US exchanges’ are NYSE and NASDAQ; ‘Other exchanges’ include Australia, India, Singapore, Hong Kong and Toronto stock exchanges. Non-European IPOs are those conducted by firms registered in a country outside the EU27 area. Firms domiciled in tax-haven countries are included as non-European, irrespective of the main country of operations. The ‘European exchanges’ column shows both the fraction of non-European and US firm IPOs. Source: EurIPO, Datastream.

	European exchanges					US exchanges		Other exchanges	
	No. IPOs	Non-EU firm IPOs		US firm IPOs		No. EU firm IPOs	% EU firm IPOs	No. EU firm IPOs	% EU firm IPOs
		No.	%	No.	%				
1995	87	1	1.1	0	0.0	2	0.4	0	0.0
1996	230	5	2.2	1	0.4	1	0.1	1	0.2
1997	219	3	1.4	2	0.9	0	0.0	0	0.0
1998	275	3	1.1	1	0.4	2	0.7	1	0.4
1999	373	11	2.9	6	1.6	0	0.0	0	0.0
2000	572	19	3.3	4	0.7	1	0.3	0	0.0
2001	191	3	1.6	1	0.5	2	2.5	0	0.0
2002	120	5	4.2	3	2.5	2	3.0	0	0.0
2003	89	4	4.5	0	0.0	1	1.6	0	0.0
2004	309	30	9.7	5	1.6	0	0.0	0	0.0
2005	429	53	12.4	9	2.1	1	0.6	1	0.2
2006	421	49	11.6	14	3.3	1	0.6	0	0.0
2007	353	49	13.9	11	3.1	1	0.6	3	0.5
2008	60	9	15.0	3	5.0	2	9.5	1	0.6
2009	27	5	18.5	3	11.1	0	0.0	1	0.8
2010	102	15	14.7	6	5.9	3	3.2	2	0.6
2011	91	7	7.7	4	4.4	6	7.4	2	0.5
Annual									
1995-2000	293	7	2.4	2	0.8	1	0.2	0	0.1
2001-2011	199	21	10.4	5	2.7	2	1.7	1	0.9
Total	3,948	271	6.9	73	1.8	25	0.7	12	0.2

Table 5. M&A activity and delistings of IPOs within 3 years. The sample is composed of 3,728 IPOs in Europe (London, Euronext, Frankfurt, and Milan) from 1995 to 2008. ‘Target’ includes IPOs that are taken over within three years from the IPO. ‘Acquirer’ includes IPOs that completed at least one merger or acquisition (M&A) deal as acquirer within three years from the IPO. ‘Delisting’ includes IPOs that delist due to bankruptcy or at direct request of the company within three years from the IPO. Small firm IPOs are defined as companies with less than €30 million in pre-IPO annual sales, in 2011 purchasing power. Source: EurIPO, Thomson OneBanker for the number of acquisitions.

	All IPOs							Small firm IPOs				Large firm IPOs					
	No. IPOs	Target		Acquirer		Delisting		No. IPOs	Target		Acquirer		No. IPOs	Target		Acquirer	
		No.	%	No.	%	No.	%		No.	%	No.	%		No.	%	No.	%
1995	87	9	10.3	31	35.6	1	1.1	49	3	6.1	20	40.8	38	6	15.8	11	28.9
1996	230	18	7.8	89	38.7	7	3.0	147	11	7.5	53	36.1	68	7	10.3	36	52.9
1997	219	17	7.8	95	43.4	11	5.0	146	9	6.2	63	43.2	73	8	11.0	32	43.8
1998	275	17	6.2	123	44.7	5	1.8	159	10	6.3	71	44.7	116	7	6.0	52	44.8
1999	373	13	3.5	163	43.7	10	2.7	252	11	4.4	100	39.7	119	2	1.7	63	52.9
2000	572	51	8.9	245	42.8	31	5.4	391	41	10.5	157	40.2	177	10	5.6	88	49.7
2001	191	24	12.6	66	34.6	5	2.6	149	21	14.1	48	32.2	42	3	7.1	18	42.9
2002	120	8	6.7	34	28.3	5	4.2	94	7	7.4	25	26.6	24	1	4.2	9	37.5
2003	89	8	9.0	38	42.7	4	4.5	66	7	10.6	27	40.9	23	1	4.3	11	47.8
2004	309	44	14.2	120	38.8	26	8.4	238	36	15.1	85	35.7	71	8	11.3	35	49.3
2005	429	44	10.3	132	30.8	15	3.5	309	35	11.3	93	30.1	120	9	7.5	39	32.5
2006	421	18	4.3	92	21.9	7	1.7	294	12	4.1	55	18.7	127	6	4.7	37	29.1
2007	353	4	1.1	73	20.7	1	0.3	232	4	1.7	37	15.9	119	0	0.0	36	30.3
2008	60	1	1.7	11	18.3	2	3.3	46	0	0.0	10	21.7	13	1	7.7	1	7.7
Annual																	
1995-2000	293	21	7.1	124	42.3	11	3.7	191	14	7.4	77	40.4	99	7	6.8	47	47.5
2001-2008	247	19	7.7	71	28.7	8	3.3	179	15	8.5	48	26.6	67	4	5.4	23	34.5
Total	3,728	276	7.4	1,312	35.2	130	3.5	2,572	207	8.0	844	32.8	1,130	69	6.1	468	41.4

Table 6. Profitability of recent IPOs by market type. The table reports the percentage of recent IPOs with nonnegative EPS each year, distinguishing between main vs second markets. The ‘No. with EPS’ columns refer to IPO firms with EPS available in Datastream. ‘Main market IPOs from the prior 3 years’ are IPOs taking place on Official List (London), Eurolist (Euronext), Amtlicher Markt (Frankfurt), and MTA (Milan), for which year t is one of the first 3 post-IPO fiscal years. ‘Second market IPOs from the prior 3 years’ are IPOs taking place on AIM (UK), Second Marché, Nouveau Marché, Marché Libre and Alternext (France), Neuer Markt and Freiverkehr Markt (Germany) and Expandi, Nuovo Mercato and AIM Italia (Italy), for which year t is one of the first 3 post-IPO fiscal years. Small and large firm IPOs are defined on the basis of pre-IPO annual sales of €30 million, in 2011 purchasing power (Eurostat). ‘Annual’ rows show the mean values of IPO volume and proceeds per year, and the percentage of small and large firms, for the pre- and post-bubble periods.

	Main market IPOs from the prior 3 years				Second market IPOs from the prior 3 years			
	No. with EPS	EPS \geq 0 (%)	small with EPS \geq 0 (%)	large with EPS \geq 0 (%)	No. with EPS	EPS \geq 0 (%)	small with EPS \geq 0 (%)	large with EPS \geq 0 (%)
1995	89	87.6	77.2	95.2	58	81.5	76.6	96.3
1996	102	88.2	74.9	93.0	143	81.1	75.8	97.0
1997	121	81.0	68.6	92.6	168	77.0	71.4	95.7
1998	185	87.0	78.4	93.6	363	80.2	73.5	96.0
1999	173	90.2	79.0	96.4	497	77.9	72.4	92.0
2000	174	74.7	53.2	86.6	676	62.3	55.6	82.2
2001	173	67.1	42.6	80.4	721	49.8	44.2	71.1
2002	131	53.4	28.3	67.1	572	40.4	36.6	58.6
2003	57	66.7	40.0	72.3	226	44.7	43.0	63.2
2004	65	86.2	72.7	88.9	272	47.1	41.9	87.1
2005	105	78.1	42.1	86.0	421	48.5	43.0	83.9
2006	184	81.0	54.0	91.0	668	48.5	43.7	77.7
2007	225	83.6	62.3	92.9	706	52.7	46.6	82.0
2008	177	84.2	69.8	92.1	494	56.1	49.4	84.9
2009	89	69.7	51.6	78.0	251	49.4	46.4	59.3
2010	34	76.5	60.0	80.0	89	43.8	38.6	61.1
2011	40	77.5	37.5	84.8	106	44.3	36.5	75.0
Annual								
1995-2000	141	84.7	72.6	92.8	318	74.0	68.0	90.7
2001-2011	155	76.8	55.9	85.8	411	49.1	43.9	75.5
Total	2,124	80.3	65.2	88.5	6,431	58.9	52.8	82.3

Table 7. Long-run performance of IPOs by market type. Average 3-year percentage buy-and-hold returns of IPOs in Europe (London, Euronext, Frankfurt, and Milan) from 1995 to 2008, distinguishing between main vs. second markets. The sample include all the IPOs from the EurIPO database for which we have information on pre-IPO sales. Main markets are Official List (London), Eurolist (Euronext), Amtlicher Markt (Frankfurt), and MTA (Milan); second markets are AIM (UK), Second Marché, Nouveau Marché, Marché Libre and Alternext (France), Neuer Markt and Freiverkehr Markt (Germany) and Expandi, Nuovo Mercato and AIM Italia (Italy). Small firm IPOs are defined as those from companies with less than €30 million in pre-IPO annual sales, in 2011 purchasing power. The first 21 trading days after the IPO are excluded, as underwriters are often still stabilizing prices during this period. If a stock is delisted before the 36-month anniversary of the IPO, the buy-and-hold return is less than 35 month. ‘Annual’ rows show the mean values of IPO volume and proceeds per year, and the percentage of small and large firms, for the pre- and post-bubble periods.

	Main market IPOs				Second market IPOs			
	no. with sales	all IPOs	small firm IPOs	large firm IPOs	no. with sales	all IPOs	small firm IPOs	large firm IPOs
1995	58	115.9	121.1	110.2	29	98.4	74.4	143.9
1996	75	47.8	16.4	53.2	140	15.2	10.7	37.8
1997	76	141.1	214.3	114.6	143	217.1	228.5	177.5
1998	71	39.8	9.8	24.1	204	2.8	-0.6	9.0
1999	78	-35.8	-52.8	-28.1	293	-40.9	-52.9	-2.3
2000	105	-51.7	-70.9	-37.9	463	-66.5	-71.0	-50.3
2001	32	0.2	-23.6	-9.2	159	-26.6	-26.4	-29.6
2002	23	73.7	38.4	80.2	95	32.3	36.8	-19.5
2003	13	113.5	28.7	120.4	76	27.7	26.8	35.4
2004	40	81.3	13.6	92.4	269	21.5	14.5	64.7
2005	69	36.5	7.5	41.6	360	9.3	7.2	16.9
2006	98	-12.5	-2.2	-17.8	323	-7.7	-2.5	-32.9
2007	79	-34.3	-38.2	-41.1	272	-38.0	-40.5	-30.5
2008	12	17.6	-5.0	20.5	47	-10.6	-8.3	-22.7
Annual								
1995-2000	77	36.6	46.0	30.2	212	-6.4	-11.8	10.5
2001-2008	46	15.1	5.1	18.3	200	-3.8	-4.0	-2.9
Total	829	27.5	33.5	24.5	2,873	-5.1	-7.6	4.9

Table 8. The market share of non-European companies by market type. IPOs in Europe (London, Euronext, Frankfurt, and Milan) from 1995 to 2011, distinguishing between main vs second markets. Main markets are Official List (London), Eurolist (Euronext), Amtlicher Markt (Frankfurt), and MTA (Milan); second markets are AIM (UK), Second Marché, Nouveau Marché, Marché Libre and Alternext (France), Neuer Markt and Freiverkehr Markt (Germany) and Expandi, Nuovo Mercato and AIM Italia (Italy). Non-European IPOs are considered as IPOs conducted by firms registered in a country outside the EU27 area. Firms domiciled in tax-haven countries are included as non-European, irrespective of the main country of operations. Source: EurIPO.

	Main market IPOs			Second market IPOs		
	No. IPOs	non-EU	% non-EU	No. IPOs	non-EU	% non-EU
1995	58	0	0.0	29	1	3.4
1996	83	0	0.0	147	5	3.4
1997	76	0	0.0	143	3	2.1
1998	71	1	1.4	204	2	1.0
1999	78	1	1.3	295	10	3.4
2000	108	5	4.6	464	14	3.0
2001	32	0	0.0	159	3	1.9
2002	25	0	0.0	95	5	5.3
2003	13	3	23.1	76	1	1.3
2004	40	3	7.5	269	27	10.0
2005	69	0	0.0	360	53	14.7
2006	98	2	2.0	323	47	14.6
2007	79	3	3.8	274	46	16.8
2008	12	0	0.0	48	9	18.8
2009	3	0	0.0	24	5	20.8
2010	25	6	24.0	77	9	11.7
2011	23	3	13.0	68	4	5.9
Annual						
1995-2000	79	1	1.5	214	6	2.7
2001-2011	38	2	4.8	161	19	11.8
Total	893	27	3.0	3,055	244	8.0

Table 9. M&A activity and delistings of IPOs within 3 years, by market type. Sample of IPOs in Europe (London, Euronext, Frankfurt, and Milan) from 1995 to 2008, distinguishing between main vs second markets. Main markets are Official List (London), Eurolist (Euronext), Amtlicher Markt (Frankfurt), and MTA (Milan); second markets are AIM (UK), Second Marché, Nouveau Marché, Marché Libre and Alternext (France), Neuer Markt and Freiverkehr Markt (Germany) and Expandi, Nuovo Mercato and AIM Italia (Italy). ‘Target’ includes IPOs that are taken over within three years from the IPO. ‘Acquirer’ includes IPOs that completed at least one merger or acquisition (M&A) deal as acquirer within three years from the IPO. ‘Delisting’ includes IPOs that delist due to bankruptcy or at direct request of the company within three years from the IPO. Source: EurIPO, Thomson OneBanker for the number of acquisitions.

	Main market IPOs								Second market IPOs							
	No. IPOs	Target		Acquirer		Delisting		No. IPOs	Target		Acquirer		Delisting			
		No.	%	No.	%	No.	%		No.	%	No.	%	No.	%		
1995	58	8	13.8	22	37.9	0	0.0	29	1	3.4	9	31.0	1	3.4		
1996	83	10	12.0	37	44.6	1	1.2	147	8	5.4	52	35.4	6	4.1		
1997	76	11	14.5	36	47.4	1	1.3	143	6	4.2	59	41.3	10	7.0		
1998	71	11	15.5	34	47.9	1	1.4	204	6	2.9	89	43.6	4	2.0		
1999	78	1	1.3	34	43.6	1	1.3	295	12	4.1	129	43.7	9	3.1		
2000	108	13	12.0	54	50.0	5	4.6	464	38	8.2	191	41.2	26	5.6		
2001	32	2	6.3	12	37.5	2	6.3	159	22	13.8	54	34.0	3	1.9		
2002	25	1	4.0	9	36.0	1	4.0	95	7	7.4	25	26.3	4	4.2		
2003	13	1	7.7	6	46.2	0	0.0	76	7	9.2	32	42.1	4	5.3		
2004	40	3	7.5	17	42.5	0	0.0	269	41	15.2	103	38.3	26	9.7		
2005	69	1	1.4	31	44.9	0	0.0	360	43	11.9	101	28.1	15	4.2		
2006	98	1	1.0	31	31.6	0	0.0	323	17	5.3	61	18.9	7	2.2		
2007	79	0	0.0	25	31.6	0	0.0	274	4	1.5	48	17.5	1	0.4		
2008	12	0	0.0	3	25.0	0	0.0	48	1	2.1	8	16.7	2	4.2		
Annual																
1995-2000	79	9	11.4	36	45.8	2	1.9	214	12	5.5	88	41.0	9	4.4		
2001-2008	46	1	2.4	17	36.4	0	0.8	201	18	8.9	54	26.9	8	3.9		
Total	842	63	7.5	351	41.7	12	1.4	2,886	213	7.4	961	33.3	118	4.1		

Table 10. Quarterly time-series maximum likelihood regressions of scaled IPO volume. Time-series regressions using maximum likelihood estimation with residuals following an AR(1) process on the sample of 3,948 European IPOs (London, Euronext, Frankfurt and Milan) from 1995 to 2011. The dependent variable is the number of IPOs (model 1), the number of small firm IPOs (model 2), the number of large firm IPOs (model 3), and the number of second market IPOs (model 4) in each quarter, all scaled by quarterly real GDP, measured in €trillions of 2011 purchasing power. Small and large IPO firms are distinguished using a cutoff of €30 million in inflation-adjusted pre-IPO annual sales. GDP is the sum of the quarterly GDPs of the UK, France, Germany and Italy, plus Belgium, Netherlands and Portugal since the establishment of Euronext in 2005, and is measured in trillions of euros. *Time Trend* equals 1 for the first quarter of 1995 and increases by 1 for each quarter onwards until the third quarter of 2011. *EU SOX-equivalent dummy* equals 1 from the second quarter of 2002, when the implementation of SOX-like regulatory changes began in Europe with the introduction of *The German Corporate Governance Code* by German authorities. *EuroMid Index* is the value of the FTSE EuroMid equity index adjusted for inflation using 2011 purchasing power and scaled at 1 for the first quarter of 1995. *M/B for small firms* is the market-to-book ratio for small firms (defined as less than €250 million in annual sales using €2011), calculated as the sum of market value of small firms divided by the sum of book value of small firms. Both the market value and the book value are measured at quarter t-2. *EuroMid return [t-2, t-1]* is the FTSE EuroMid Index percentage return in quarter t-1. *Initial IPO return (t-1)* is the average first day percentage return for IPOs in quarter t-1, defined as the difference between the first day closing price and the offer price divided by the offer price. *EuroMid future return [t+1, t+4]* is the FTSE EuroMid Index percentage return in quarter (t+1) to (t+4). *Real GDP growth [t, t+3]* is the percentage growth in real GDP from quarter t to quarter t+3, downloaded from Eurostat. *Percentage of small firms with EPS≥0 (t-1)* is the percentage of firms with at least three years of trading history that have nonnegative EPS in quarter t-1 (small firms are with less than €250 million in annual sales using €2011). *Quarter 1 dummy* is a first quarter dummy that equals one in the first quarter of each year and zero otherwise. AR(1) is the lagged error term. The Durbin-Watson statistics and the R-squareds are also reported. The 67 quarters are from the first quarter of 1995 to the third quarter of 2011 (the EuroMid future return [t+1, t+4] variable is not available for observations of the fourth quarter of 2011). T-statistics are in parentheses below the coefficients. ***, **, and * indicate significance at the 1%, 5%, and 10% level respectively.

		(1)	(2)	(3)	(4)
	Mean value (Std deviation)	No. of IPOs	No. small firm IPOs	No. large firm IPOs	No. IPOs on second markets
Mean value of the dependent variable		29.76	20.35	9.09	22.88
Standard deviation of the dependent variable		(21.66)	(14.97)	(7.71)	(17.62)
Time trend	34.00 (19.49)	-0.71** (-2.10)	-0.34* (-1.93)	-0.26 (-1.52)	-0.39* (-1.88)
EU SOX-equivalent	0.57 0.50	-11.91 (-1.32)	-2.90 (-0.52)	-5.76 (-1.43)	-8.90 (-0.98)
EuroMid Index	1.70 (0.50)	29.96*** (2.83)	13.46*** (2.67)	12.57*** (3.76)	17.51*** (2.65)
M/B small firms (t-2)	6.17 (5.21)	0.47 (0.73)	0.27 (0.99)	0.20 (1.12)	0.05 (0.38)
EuroMid return [t-2, t-1]	1.46 (10.93)	-0.13 (-0.79)	-0.08 (-1.07)	-0.04 (-0.53)	-0.09 (-0.86)
Initial IPO return (t-1)	15.98 (23.66)	0.19** (2.18)	0.08* (1.83)	0.12*** (3.71)	0.10* (1.94)
EuroMid future return [t+1, t+4]	4.84 (21.56)	0.10 (1.14)	0.05 (1.01)	0.05 (0.83)	0.07 (1.02)
Real GDP growth [t, t+3]	1.16 (2.59)	0.85 (1.33)	0.20 (0.49)	0.43 (0.84)	0.42 (0.94)
Percentage of small firms with EPS≥0 (t-1)	67.05 (10.15)	-0.46 (-0.89)	-0.04 (-0.11)	-0.20 (-0.79)	-0.34 (-0.79)
Quarter 1 dummy	0.25 (0.44)	-12.55*** (-5.21)	-7.85*** (-5.32)	-3.97* (-1.89)	-8.33*** (-4.58)
AR(1) coefficient		0.57*** (2.67)	0.78*** (7.45)	0.02 (0.10)	0.74*** (5.31)
Constant		36.64 (1.00)	11.53 (0.38)	10.22 (0.54)	30.92 (0.97)
Observations		67	67	67	67
R-squared		0.77	0.76	0.64	0.77
Durbin-Watson statistics		1.27	1.05	1.97	1.16

Figure 1. Profitability of small and large listed firms. The graph reports the number of firms with earnings per share available from Datastream each year from 1995 to 2011, categorized by firm size and profitability. The black line divides small firms from large firms. The light shaded area represents the fraction of firms with non-negative earnings per share, while the dark shaded area represents the fraction of firms with negative earnings per share. For each year, the number of small firms is the sum of small firm IPOs from the prior three years (pre-IPO annual sales < €30 million, 2011 purchasing power) and small firms listed more than three years (annual sales < €250 million, 2011 purchasing power). Analogously, the number of large firms is the sum of large firm IPOs from the prior three years and large firms listed more than three years.

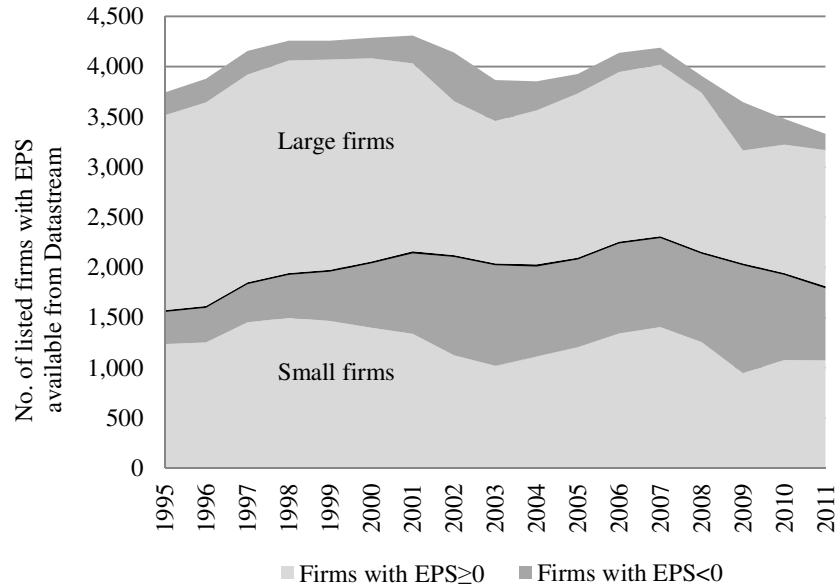


Figure 2. IPO vs. M&A activity in Europe. The black solid line refers to the number of IPOs in Europe (London, Euronext, Frankfurt and Milan; source: EurIPO), while the dashed line refers to the number of M&As involving a target based in Western Europe, both public and private (source: Zephyr). Values are computed as the ratio between the number of IPOs (M&As) in the corresponding year on the X-axis and the overall number of IPOs (M&As) completed during 1995-2011.

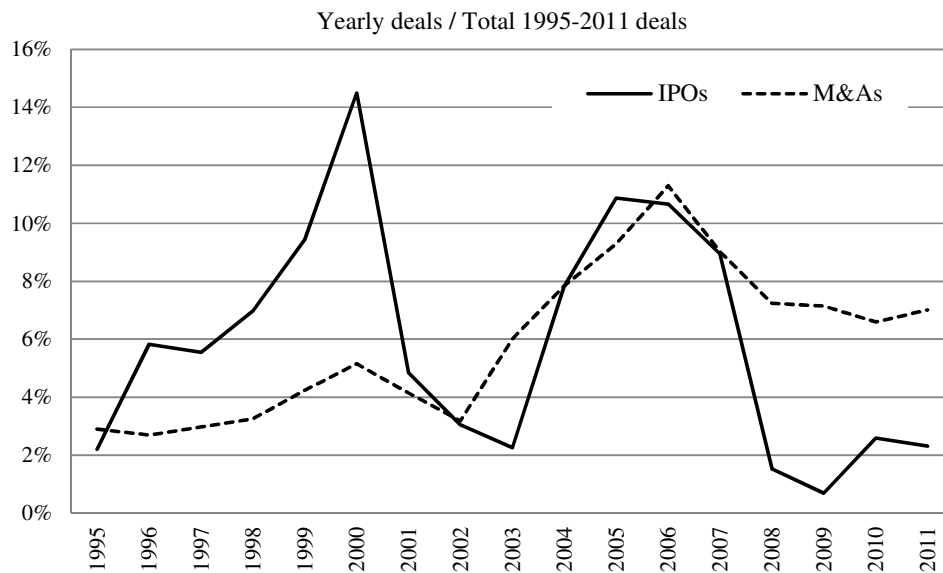


Figure 3. IPO activity and market valuation in Europe. The bars show the number of IPOs taking place each year in Europe (London, Euronext, Frankfurt and Milan; source: EurIPO) from 1995 to 2011, categorized by firm size. The aggregate number of IPOs is represented by the black bar, while the light (dark) grey bar shows the number of small (large) firm IPOs. Small firm IPOs are defined as with less than €30 million in pre-IPO annual sales, in 2011 purchasing power. The black line shows the inflation-adjusted year-end value of the EuroMid index excluding dividends (source: Datastream) in 2011 purchasing power (Eurostat), scaled at 100 for the 1995 year end value.

