

Financial regulation and IPOs: Evidence from the history of the Italian stock market

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Abstract

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Key words: IPOs; Regulation; Survival; Investor protection; Italy

JEL classification: G18; G30; G38; K22, N23; N24

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Abstract

This paper studies the impact of regulation on IPO markets using historical data. Regulatory interventions have different effects on the development of public equity markets under different conditions. Studying the whole population of 879 Italian IPOs from the unification of Italy (1861) through the present, we find that tightening regulatory changes improve IPO survival rates. In contrast, easing of regulations tend to harm IPO survival rates, without increasing the number of IPOs.

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1. Introduction

The effectiveness of regulatory interventions is controversial and largely depends on how they are implemented. Recent IPO studies find that the level of uncertainty is lower for IPOs issued after regulations are tightened (Ekkayokkaya and Pengniti, 2012; Shi et al., 2012). EU Member States have adopted SOX Act-like provisions to reduce the uncertainty surrounding valuations in regulated markets. However, Akyol et al. (2014) show that these provisions have not decreased the average level of IPO underpricing on unregulated markets, particularly London's Alternative Investment Market. From a historical perspective, Chambers and Dimson (2009) highlight that regulations have been less effective than market forces at reducing information asymmetries in UK IPOs.

All these studies on the effects of changes in IPO regulation focus on underpricing. The rationale is that effective interventions decrease information asymmetries, thereby reducing underpricing. While underpricing is of interest and offers the possibility of direct tests on the efficacy of regulatory changes soon after their implementation, rules typically need complementary enforcement to be effective and should be evaluated as a whole. For this reason, we believe that a long-term perspective can shed some lights on the effects of regulation on capital markets. In the present paper, our main focus is on IPO survival.

While failure is hardly a welcomed corporate event, it is not uncommon in competitive stock markets, and market participants are well aware of this possibility in setting asset prices. Firms go bankrupt with some regularity, more so in bad times. So the failure is priced in. However, since the deaths of public corporations may determine substantial economic and social welfare costs (Bhattacharya et al., 2014), the survival of IPO-firms is considered a measure of capital market development (e.g., Fama and French, 2004). The underlying argument, as

suggested by the law and finance literature, is that better regulated capital markets develop corrective mechanisms and remedies to address information asymmetries, thereby increasing the survival of firms going public (La Porta et al., 1998).

To date, the relationship between regulation and IPO survival is the core research question of only two studies. Simon (1989) finds that the US Securities Act of 1933 did not reduce the failure rates of firms listed in the NYSE. Burhop et al. (2014) argue in favour of regulatory changes, showing how a largely unregulated market, such as the IPO market in London in the early 20th century, was unable to grant access to the public capital markets for growth companies. These two studies cover concise periods of time, up to 15 years. Our paper examines the entire population of IPOs in Italy since the country's unification in 1861, for a total of 879 IPOs. The novelty of our research lies in two areas: to the best of our knowledge, this is the first paper to study the survival of IPOs over such a long time horizon, and it is the first survival study on the Italian market and its regulation.

We investigate the effects of changes in regulation both on the number of firms going public each year and on their survival profiles. As regulatory changes are made in response to economic conditions (Peltzman, 1976), we compare the effects of tightening regulatory changes in periods of higher demand for investor protection to changes taking place in periods of demand for capital formation. Controlling for firm-specific and macroeconomic factors, we find a significant increase in IPO survival after tightening regulatory interventions, compared to a decrease in survival when a looser regulation is introduced. These results hold in particular for smaller firms. However, the shorter survival profile of firms that go public after restrictive regulatory changes is not accompanied by an increase in the annual number of IPOs, scaled by GDP.

This paper is organized as follows. Section 2 presents the literature review and develops the testable hypotheses. Section 3 describes the evolution of the Italian regulatory framework, summarizing the key regulatory changes that occurred over the history. Section 4 presents the data, sample, and methodology. Section 5 reports the results, Section 6 the robustness checks, and Section 7 concludes the paper.

2. Literature review and testable hypotheses

One of the purposes of financial regulation is to provide more information to investors, as a remedy to information asymmetries between investors, on the one hand, and issuers and financial intermediaries, on the other. Whenever the social and private values of information differ, indeed, firms trading off the private costs and benefits do not provide socially optimal levels of disclosure (Bushee and Leuz, 2005). By reducing these asymmetries and by making information more evenly distributed, regulation can improve the market price-setting mechanisms and the public confidence in their functioning. Nevertheless, the burden of regulation may be regarded as unnecessary, as far as firms have private incentives to provide information voluntarily and markets themselves build in investor protection. In practice, stock prices reflect the known possibilities of firm failure and by pricing ex-ante that expectation. In this way, throughout history, in efficient stock markets investors are naturally “self-protected”.

Despite the fact that some degree of regulation of financial markets is universally required, there are important limits to its effectiveness. First, one-size-fits-all regulation can be costly for smaller firms (Mulherin, 2005). Second, their effectiveness depends on contextual factors. For instance, higher disclosure is useful when recipients can process the disclosed information. This is related to the role of financial intermediaries. Bhattacharya et al. (2014) find

that the involvement of high-quality intermediaries in the public birth of a firm is associated with lower firm mortality rates. Everything else equal, the need of regulation is lower when financial intermediaries perform better.

Regulators face therefore difficulties in identifying the appropriate balance between protecting investors and granting opportunities to raise capital. To this extent, IPO markets offer an interesting setting for calibrating the effectiveness of financial regulation. Early studies by Stigler (1964) and Benston (1973) conclude that the 1933 and 1934 Acts were of no apparent value to investors, while Jarrell (1981) show that by imposing higher registration costs for riskier securities, the SEC induced issuing firms to substitute debt for equity securities at the margin. Furthermore, changes in regulation may take place in response to general macroeconomic or societal changes. The notion of investor protection can serve as political rationale for more regulation, which could be motivated by authorities in response to crises. On the other hand, Jarrell (1984) shows that the emergence of low-cost, off-board alternatives to block trading on the NYSE was one of the main forces responsible for the SEC deregulation in 1975. This motivates our study on the impact of regulatory changes in different conditions. Precisely, we study the impact of regulatory changes when different conditions and interests are in place. According to two competing views (i.e., public interest vs. special interest motives for regulation), we elaborate four hypotheses.

First, in periods of corporate scandals or financial crises, regulatory intervention could represent a way to curb and prevent distrust that grip potential investors and undermine the efficient functioning of capital markets (Seligman, 1983). Coherently, regulatory interventions for the “public interest” are motivated by needs to correct market failures and are intended to protect investors and to stabilize the financial system. However, interventions cannot occur

without costs, such as those of compliance. For instance, Iliev (2010) finds that the SOX Act raised fees paid to outside auditors and costs for internal controls. Kaserer et al. (2009) find that the act increased fees paid to accounting and law firms preparing the IPO. Regulation is therefore only valuable when its benefits outweigh its implementation costs.

In the IPO setting, regulation might be a successful screening device to select firms that enter the markets. A tighter regulation makes it more difficult for low-quality firms to comply with more stringent listing requirements. The higher compulsory disclosure is also expected to discourage low-quality firms from going public by lowering information asymmetries and, consequently, reducing their chances of pooling with high-quality firms. The connection between the likelihood of survival and regulation can also be driven by an ex-post decrease in moral hazard problems, particularly for regulations meant to protect minority shareholders. Hence, we hypothesize that firms that go public under conditions of stricter regulations are likely to survive for a longer time on the capital markets.

Hypothesis 1. *Regulatory interventions during periods of higher demand for investor protection lead to an increase in the survival of firms going public.*

Recently, there has been an increase in delistings of foreign firms from US markets to list elsewhere. Doidge et al. (2010) argue that, among other reasons, these firms are looking to escape the obligations imposed by the SOX Act. Restrictive laws aimed at protecting investors may indeed have unintended consequences, reducing the attractiveness of listing avenues and

decreasing the IPO volume.¹ Such avoidance strategies (i.e. firms choosing not to go public) would a decrease in IPO volumes.

Among the unintended consequences of tightening regulatory interventions, the reforms can “cull out” not only the lower, but also the higher return firms. This point is extremely important for IPOs, whose long-run return may be poor on average, but more volatile than most stocks. The skewed distribution of IPO returns offers the chance to gain extremely high rewards (e.g., identifying the “next Microsoft”, as discussed by Loughran and Ritter, 1995). Over the period 1980–2000, the top 100 IPOs earned over 1,000% in their first three years of trading (Field and Lowry, 2009). The confidence in the ability to “cherry-pick” such IPOs with extremely high rewards motivate to invest in this poor-performing asset class.

Hypothesis 2. *Regulatory interventions during periods of higher demand for investor protection lead to a decrease in IPO volumes.*

During periods of expansion, regulatory changes are typically aimed at increasing the possibilities for capital formation (Bernanke et al., 1999). These changes lower restrictions on fundraising, making it easier for companies to go public, but they might also lead to socially suboptimal outcomes, such as financial instability. While risk is overestimated during recessions, leading to more prudent behavior, it is often underestimated in economic booms (Herring, 1999) when fewer investors care about firm transparency (Wagenhofer, 2011).

¹ Ten years after SOX, the JOBS Act of 2012 was designed to stimulate economic growth by improving access to public capital markets for growing companies (Ritter et al., 2013; Gao et al., 2014).

In expansion periods, regulators face a reduced demand for regulation to protect investors, while agents of financial markets exert a diffuse pressure to implement less restrictive interventions and to increase capital formation as much as possible. The private interest theory of regulation (Stigler, 1971) argues that regulators cannot work independently from the forces operating on financial markets. While the pressure can take different forms—from the coercive power used by groups to achieve their own interests (Rajan and Zingales, 2003), to the widespread sentiment of agents demanding more financial openness and lower costs of capital (Chinn and Ito, 2006)—governments are inevitably influenced when designing laws. When regulators decrease compliance costs for firms, this behavior may increase the probability of low-quality firms entering the markets. In this scenario, the development of financial markets is negatively influenced by the lower expected survival of the new firms. Based on these arguments, we formulate the following hypotheses:

Hypothesis 3. *Regulatory interventions during periods of higher demand for capital formation lead to a decrease in the survival of firms going public.*

Hypothesis 4. *Regulatory interventions during periods of higher demand for capital formation lead to an increase in IPO volumes.*

3. Historical evolution of the regulatory framework in Italy

The first IPO on the Milan Stock Exchange, the railway company Società delle Strade Ferrate Lombardo Veneto, took place in 1861, the year of Italy's unification. Examining the evolution of the IPO market from its foundation enables us to uncover long-term patterns in the

effectiveness of regulatory interventions in fostering the development of financial markets. We rely on Aganin and Volpin (2005) to identify four regulatory periods in the evolution of the Italian stock market: 1861–1935, 1936–1973, 1974–1997, and 1998–2011.²

3.1. Lack of financial market regulation: 1861–1935

In the early years after its unification, Italy's stock market was almost entirely self-regulated. Firms could issue shares with multiple votes using cross-shareholdings with no limits, and banks were unconcerned about the quality of listing firms (Vivante, 2003). This loose legal framework did not formalize any requirements in terms of information disclosure for listed firms.

3.2. Post-1929 financial market reforms: 1936–1973

In response to the financial crisis of 1929, the Italian legal framework underwent a dramatic change. Aimed at satisfying demands for investor protection, Law 375/36 (the Bank Law) and subsequent ones (e.g., Royal Decree 262/42) imposed important innovative regulations for stock market agents (Vivante, 2003). All shareholders acquired the right to vote at annual shareholder meetings, and listed firms were required to make two annual reports available to the public.

3.3. Exchange commission and capital formation: 1974–1997

² Aganin and Volpin (2005) provide also a very detailed, historical description of the evolution of the Italian stock market. Given our focus on the evolution of the equity capital market, rather than on the development of corporate law per se (as in Aganin and Volpin, 2005), we consider the Bank Law in 1936 to be the first major law introduced after the 1929 crisis. This law dramatically reshaped the banking sector, which was directly responsible for defining the listing requirements for issuers (Siciliano et al., 2011).

The Italian economy in the 1960s was characterized by underdeveloped capital markets and a bank-based economy. New entrepreneurs found it very expensive to raise equity funds. Conversely, incumbent pyramidal groups thrived in the market, with a very high ownership concentration (Barca, 1994) and often political alliances (Aganin and Volpin, 2005). A clear policy goal was to increase the role of public equity markets, as a means of financing and stimulating investments by the general public. This goal was combined with a call for more independence from political influences.

Accordingly, in 1974, the government delegated part of the supervision of financial markets to a commission equivalent to the US SEC, the Commissione Nazionale per le Società e la Borsa (CONSOB). However, it took some time for the power and role of the CONSOB to be realized, and the introduction of the CONSOB was initially unsuccessful. Although intended to take the role of a national agency, CONSOB lacked both independence and skills, due to an insufficient and unqualified staff (Enriques and Volpin, 2007). Nonvoting shareholders and minorities were poorly protected, as votes could not be posted, and the threshold required to call a shareholder meeting was as high as 20%. Private benefits of control were high, and minority shareholders were more likely to be expropriated by controlling blockholders than before (Bragantini, 1996).

3.4. Investor protection reforms: 1998–present

The latest major regulatory change occurred in 1998, when Italy's legal protections for investors still ranked among the lowest of developed countries (La Porta et al., 1998). Legislative Decree 58/98 (the Draghi Reform) represented a “cornerstone” (Mallin, 2011) that changed the process of offerings and takeovers. It increased investor protection through wider application of

the right to withdrawal from the company. When evaluated in terms of the shareholder protection index developed by La Porta et al. (1998), the impact of this law was an improvement from one to five. Later legislation, such as the EU Takeover Directive (2004/25/EC), which included requirements for bidders in M&As, the Savings Law (Law 262/05), and the EU directive on shareholders rights (2007/36/EC), marked further progress in favor of greater investor protection and easier exercise of voting rights. Since 1998, Italian regulation has been driven by demands for the alignment of investor protection to international market standards (Dyck and Zingales, 2004).

4. Methodology and data

4.1. Data and sample

We analyze the population of 879 Italian IPOs that went public over the full history of Italy from its foundation in 1861 until December 2011. Different datasets were used to obtain information. Listing and delisting dates, establishment year, and industry information were collected from three sources: a publication by the major investment bank in Italy (Mediobanca)³, the historical collection of De Luca (2002) (which integrates the primary source of Mediobanca by punctually describing the history of each listed firm), and the EURIPO database for IPOs since 1985.⁴ As the first task, IPOs were identified from among other types of listings. We excluded introductions, new listings by firms with a dispersed and broad prior stockholder base, transfers of listings from other markets, cross-listings of companies quoted on another exchange,

³ Report published by Mediobanca in 2012, entitled “Shares listed and removed from list on Milan Stock Exchange from 1861 to 30 June 2012”. See *Indices and data on investments in listed securities*, Table X, pp. 336-369.

⁴ See Vismara et al. (2012) for a description of the database.

IPOs of closed-end-funds, and purely financial entities⁵. For each IPO firm, we assessed the survival time after the listing, defined as the time elapsed from the IPO until its suspension, take-over, or any other event leading to its delisting from the stock exchange.

Figure 1 reports the yearly number of IPOs (vertical bars above zero, with Nuovo Mercato's IPOs in black) and delistings (vertical bars below zero, with voluntary delistings in grey) from 1861 to 2011.⁶ The line shows the evolution in the number of listed firms. The four regulatory periods described above are highlighted. There is a spike in the number of IPOs in the early 1900s, during the first regime (1861–1935). Until the First World War, this period exhibited the most intense industrialization for the country, facilitated by the creation of two national banks.⁷ Italy was previously lagging in terms of its industrialization process and the development of universal banks (Gerschenkron, 1962).

[INSERT SOMEWHERE HERE FIGURE 1]

Table 1 describes the population of IPOs and delistings on the Milan Stock Exchange, classified by regulatory period and by industry, as identified by the official Industry Classification Benchmark (ICB) classification. This disaggregation shows how the different IPO

⁵ We identify as dual-listings those companies that go public at the same time on two markets (e.g. Aisofware that went public in August 1, 2000 in Italy and in Nasdaq Europe). These companies are treated as IPOs and are included in our sample. Cross-listings are either firms that are listed in Italy and cross-list elsewhere (e.g. FIAT or Telecom Italia) or firms that are listed elsewhere and cross-list in Italy (e.g. Luxottica or Volkswagen). The first group of firms does not actually delist from the Italian stock market and it is therefore considered as surviving till their eventual delisting. The second group is made of (typically large) firms that are primarily listed in other markets and decide to be traded also in the Italian stock market. These are not Initial Public Offerings and are consequently excluded from the sample of IPOs.

⁶ IPOs on the Nuovo Mercato (in black) are excluded from our analysis on the annual number of IPOs, due to their minimal listing requirements and the “dot-com bubble-related” history of this second market (Vismara et al., 2012).

⁷ Banca Commerciale Italiana and Credito Italiano, the two largest banks in Italy (with the names of Intesa San Paolo and Unicredit), were established in 1894.

waves are clustered in different industries over time. Consumer goods firms are prominent in the first regulatory period (31%, 119/385 IPOs). Industrial firms become more relevant in the last two periods, starting from 1974.

[INSERT SOMEWHERE HERE TABLE 1]

Table 2 reports the Kaplan-Meier survival rates at 1, 3, 5, and 10 years after the IPO for the population of Italian IPO firms. Firms are grouped by the regulatory subperiod at the time of listing (Panel A) and by industry (Panel B). IPOs issued in 1935–1973 and 1998–2011 show higher survival rates compared to those issued in 1974–1997. A log rank test rejects the null hypothesis of equality of survival rates at 10 years across regulatory periods (chi-square: 18.03, p value: 0.000).⁸ Hence, firms that go public after restrictive regulatory changes seem to have longer survival profiles, as argued in Hypothesis 1. To verify this preliminary result, we use survival regression models. At the sector level (Panel B), the financial industry, subject to different capital requirements, shows the shortest average survival profiles (64% at 10 years after the IPO). Based on this evidence, we will perform our regression analysis while excluding financial stocks.

[INSERT SOMEWHERE HERE TABLE 2]

4.2. Definition of delistings

⁸ The test involves classifying the failure rates into observed and expected failure rates. If the observed failure rate is significantly different from the expected failure rate, then the test rejects the null hypothesis that the groups share the same survival rates.

Hypotheses 1 and 3 investigate the effects of regulation on the survival of IPO firms. We track these IPOs until the truncation date (December 31, 2011). Survivors are identified as stocks of firms that continue to be traded on the same market where they went public. Firms can delist for different, not necessarily negative, reasons (Macey et al., 2008). For instance, firms can delist because of a take-over, due to their attractiveness as acquisition targets (Bonardo et al., 2010). Alternatively, they may delist from a second-tier market to transfer to a main market (Vismara et al., 2012)⁹. Firms that delist due to a take-over or to transfer their listing to another market are treated as “censored” survivors, and their observation is truncated at the take-over or transfer date. Voluntary delistings occur upon the firm’s voluntary request. They include management buy-outs, voluntary liquidations, and restructuring or rearrangement schemes. For these firms, going public may have been an unsuccessful strategy, but their product market potential can still be relevant. The following subsections provide some examples of voluntary and non-voluntary delistings.¹⁰

4.2.1. Voluntary delistings

- (1) “The company [Teatro al Foro Bonaparte, IPO on 1872] encountered problems already during the first years of activity. So, its shareholders approved the voluntary liquidation on 1876” (De Luca, 2002, p. 134).
- (2) The family of the company [Gewiss, IPO on 1988], already controlling 75.34% of the

⁹ This means that they are by all means treated as survivors, but their life is not considered from their IPO to today, but from their IPO to the transfer date. Market transfers are indeed extremely rare in Continental Europe as the cost of the transfer process is considered higher than its benefit. Table 5 of Vismara et al. (2012) shows that only 8 out of 1,670 IPO-firms chose to switch markets over the last two decades in France (3), Germany (4) and Italy (1: Finmatica).

¹⁰ There is no consensus on this issue in previous studies. Companies delisted for M&As are considered as non-survivors (Carpentier and Suret, 2011; Pour and Lasfer, 2013) or as censored survivors (Espenlaub et al., 2012; Jain and Kini, 2000), as in our case.

shares, launched a tender offer on the remaining shares aimed at delisting the company.

The officially declared motivation for the planned delisting was “the reorganization of the ownership structure, the consolidation of the market position, and a greater operating flexibility”.¹¹

4.2.2. *Non-voluntary delistings*

(3) “In 1958, the company [Petroli d’Italia, IPO on 1924] was admitted to the composition with creditors under the supervision of the Court of Milan and was forced to delist during the same year” (De Luca, 2002, p. 324).

(4) “The company [Editoriale Olimpia., IPO on 2010] was delisted in 2011 due to ‘inexistence of minimum requisites for information obligations according to the Borsa Italiana Rules’”.¹²

4.3. *Methodology*

In order to address the potential bias due to the fact that regulatory changes might simultaneously affect both the decision to go public and the subsequent survival profile of public firms, we implement a two-stage Heckman selection procedure. In the first stage, we estimate the likelihood of firms to go public based on the observable characteristics of firms prior to the IPO; in the second stage, we predict the survival of each IPO including as a regressor the inverse Mills ratio extrapolated from the first stage.

¹¹ The tender offer’s prospectus is available at: <http://www.borsaitaliana.it/bitApp/download.bit?target=DocViewerDownload&filename=db/pdf/new/59443.pdf>.

¹² The list of companies that delist in Italy from 1995 onwards and their motivations are available at: http://www.borsaitaliana.it/borsaitaliana/ufficio-stampa/dati-storici/delistingmaggio2012.en_pdf.htm.

The first stage models the probability to go public and is therefore tested on a sample of firms that includes both firms going public (i.e. our original population of IPOs) and private companies. We build our historical dataset of private companies by accessing the yearly publications of “Le principali società italiane” (i.e., “The main Italian companies”), published by Mediobanca, the major investment bank in Italy. These reports have already been used in other studies (e.g. Pagano et al., 1998; Bertero and Rondi 2000). For each firm included in the reports, Mediobanca registers industry and accounting figures.¹³ The first stage of the Heckman regression is run on a sample of 91,938 firm-year observations, including these private firms (91,516 firm-year observations) and the population of 422 IPOs in the period 1965-2011. We run the first stage using as independent variables the determinants for the decision to go public as identified by the literature (e.g., Chemmanur et al. 2010; Pagano et al. 1998). Specifically, our model includes industry dummies, sales (Size), sales growth rates (Growth rates), return on assets (ROA), capital expenditure on total assets (Capex), and the sum of long-term debt and short-term on total assets (Leverage).

After assigning an inverse Mills ratio to all IPOs¹⁴, we ran the second step of the Heckman procedure, and applied the bootstrapping procedure to obtain consistent estimates of the standard errors.¹⁵ Specifically, using Cox proportional hazard models, we regress the survival time of IPOs. A positive coefficient implies a hazard ratio greater than 1, meaning that an increase in the

¹³ The selection of firms included in the “Le principali società italiane” publication by Mediobanca is based on two criteria, which are book value of equity and annual sales. The thresholds were set respectively at 1bn lire and 10bn lire in 1965, and adjusted over time. Using this data source, we are able to gather industry and accounting data for 91,516 firm-year observations from 1965 to 2011.

¹⁴ For the 457 IPOs occurring before 1965, we assigned the inverse Mills ratio of a post-1965 IPO-firm, matched using a propensity score matching methodology, and choosing industry and age as matching variables. Each pre-1964 IPO firm was matched one-to-one, allowing for repetition, to post-1964 firms, following a nearest neighbor approach. By doing so, we implicitly assume that the selection bias of a firm going public before 1965 was similar to that of the nearest neighbor among those that went public after 1965.

¹⁵ The covariance matrix generated by the direct (non-simultaneous) estimation of the second stage is inconsistent. Correct standard errors and other statistics can be generated from an asymptotic approximation or by resampling, such as through a bootstrap.

covariate increases the delisting rate. As a robustness check, we exclude voluntary delistings, treating them as censored survivors, as we do with take-overs and market transfers.

Hypotheses 2 and 4 examine whether the evolution of regulation in time is a determinant of IPO volume. We test whether changes in regulation have an impact on the number of companies that go public each year. A time-series regression with a first-order autoregressive error term is estimated with maximum likelihood. The dependent variable is the annual number of IPOs, excluding Nuovo Mercato's IPOs, divided by the annual real GDP (measured in € billions, data from the national statistical agency, ISTAT).

4.4. Variables

The impact of financial regulation is investigated through a set of three dummy variables (Post 1935, Post 1973, and Post 1997). These variables, following Aganin and Volpin (2005) and as described in Section 3, pinpoint the major regulatory changes. Each dummy equals 1 after the regulatory change. Post 1935 and Post 1997 identify the starting year for the post-1929 financial market reform and investor protection reform, respectively. We expect that these regulatory interventions will lead to an increase in the survival of firms that go public, according to Hypothesis 1. Using Cox proportional hazard models, we find that our hypothesis is valid when the coefficients of the Post 1935 and Post 1997 dummies are significantly negative. Thus, the delisting probability decreases for firms that go public after 1935 and 1997. Hypothesis 3 is valid when the coefficient of the dummy variable Post 1973 is positive, indicating a shorter survival profile for firms that go public after reforms aimed at increasing the role of capital formation in the stock exchange. Similarly, using time-series regressions, we find that Hypothesis 2 is valid when the coefficients of the Post 1935 and Post 1997 dummies are significantly negative,

implying that regulatory interventions during periods of higher demand for investor protection lead to a decrease of IPO volumes. A positive coefficient for the Post 1973 dummy would provide support for Hypothesis 4.

The propensity to go public and the subsequent survival of an IPO are likely to be affected by several factors at the individual and context levels. For instance, the extent of entrepreneurial activity fluctuates with regulations, which, in turn, may affect the available pool of firms that will potentially go public. For this reason, we use a comprehensive set of control variables. Firm-specific control variables are used only in the survival models, in which the dependent variable is the probability that each firm will delist. Macroeconomic control variables are also used in the time-series regression, in which the dependent variable is the annual number of IPOs.¹⁶

Younger firms may suffer from greater uncertainty, owing to their higher managerial inexperience and lack of a performance record. For this reason, we control for firm age, defined as the number of years from the firm's incorporation date to the IPO date. Compared to smaller firms, larger firms are typically more robust and have less severe problems of asymmetric information. Thus, we expect there to be a positive relationship between firm size and IPO survival. Due to the lack of consistent data on IPO size before the Second World War, we classify firms going public into three classes with respect to their ICB classification. Firms in the Oil and Gas, Basic Materials, Utilities, and Telecommunications sectors are classified as large; those in the Industrials, Consumer and Goods, Consumer and Services, and Financials sectors are

¹⁶ It is difficult to test whether new regulatory interventions can explain the development of financial markets, given the difficulty in isolating the effects of regulation. We carefully test various specifications and control variables, to address the most important concerns that may arise. As expressed in Mulherin (2007), the need for more refined estimation techniques of the consequences of regulation remains an important avenue for future research.

classified as medium-sized; and those in Health Care and Technology sectors are classified as small.¹⁷ In our regressions, we use two dummies for the top (large firms) and bottom (small firms) groups, considering the medium-sized class to be the reference case.

For economic and political reasons, we expect state-owned firms to be less likely to fail. These firms are typically highly interconnected, such that their bankruptcy may lead to the insolvency of many other firms, which might call for rescuing from the government. Accordingly, we include a dummy variable that equals 1 for state-controlled IPOs, which is expected to have a positive impact on the survival profile of the firms.

We include macroeconomic and contextual controls in all of our regressions. The national economic performance might affect the nature and number of IPOs. Indeed, under negative economic conditions, the survival chances of firms going public can be shorter. We capture this effect by including the percentage growth in real GDP in the year of the listing (Real GDP growth $[t-1, t]$). Data are from ISTAT. Financial conditions also play a role. Consistent with the window-of-opportunity theory (Ritter, 1991), firms that go public during buoyant market periods face more optimistic expectations and less selective investors, leading to a higher propensity to go public. This effect is also found for low-quality firms, which can reach higher valuation multiples by pooling with high-quality firms. We control for the total return of the Italian index by including reinvested dividends in the year of listing (Market return index $[t-1, t]$). Data are from Siciliano et al. (2011).

IPOs cluster in time as entrepreneurs time their decisions to go public to take advantage of the time-varying propensity of investors to overpay (Ritter, 1984). Consequently, the volume

¹⁷ This categorization is consistent with the description of the evolution of firms going public in Italy in De Luca (2002) and with empirical evidence from the EURIPO database for IPOs from 1985.

of IPOs is higher in periods near market peaks (Loughran and Ritter, 1995). To control for this effect, we include the annual number of IPOs in the UK, which has been a preeminent international financial center over the last century. Data for the variable “Number of IPOs in UK” are from Chambers and Dimson (2009).

The probability of delisting might be higher during periods when a larger number of firms fail. Thus, we include the annual rate of firms’ insolvency (*fallimenti*) over existing firms at the time of each IPO in our regressions. Data for the variable “Number of insolvencies” are from Di Martino and Vasta (2010) and ISTAT. When a country’s capital market structure is more developed, more services and facilities are available for listed firms, and more tools are provided for investors to evaluate the quality of firms going public. Accordingly, we measure the importance of the equity market relative to the economy as the total market capitalization to GDP. Data for the variable “Market cap to GDP” are from ISTAT and the Italian Stock Exchange (Borsa Italiana).

Further, since the performance of newly listed firms might be correlated to the presence of rivals who can be denied to go public by regulatory changes, we include in our regression an IPO-specific index of change in competition. Specifically, for each IPO i in year t , we calculate the difference between the number of IPOs and of delistings in the same industry in the following ten years, over the number of IPOs in the same industry in year t . This allows us to control for the change in number of listed firms in each industry following each IPO.

Finally, we include a time trend variable, which ranges from 0 (for IPOs in 1861) to 150 (for IPOs in 2011), to control for the unobservable development of the market over time. We include a dummy for years of the First (1915–1918) and Second World Wars (1940–1945), to capture the negative effects of the dramatic sociopolitical conditions in those periods. In the

Appendix, we provide the correlation matrix including all of the variables. Multicollinearity is not a major concern because none of the variance inflation factors exceeds 4, which is below the critical cut-off of 10.

5. Results

Table 3 reports the results of tests of difference in means and of a probit model estimated with the maximum likelihood method (the dependent variable is 0 if the firm is not listed and 1 in the year of listing; listed firms are dropped from the sample after the listing year). Results suggest that the probability of going public increases with the size, growth rates and level of investments and profitability of a firm. By contrast, firm's leverage has a negative impact. These results are in line with the literature (e.g., Pagano et al., 1998).

[INSERT SOMEWHERE HERE TABLE 3]

Table 4 reports the estimates of the Cox proportional hazard models. First, we perform regressions considering only the control variables. Then, we perform them while including the regulation dummies. Models 1 and 3 consider both imposed and voluntary delistings, whereas Models 2 and 4 consider only imposed delistings. In Models 5 and 6, financials companies are excluded.

As expected, larger and state-controlled firms are more likely to survive in the long-term. The historical trend coefficient is negative and statistically significant, coherently with the hypothesis that the historical development of Italian financial markets over time is related to unobservable characteristics that are not explained by our control variables. Nevertheless, the

negative coefficients of the Post 1935 and Post 1997 dummies confirm that after regulatory changes in response to demands for investor protection, the IPO survival increases (Hypothesis 1). On the other hand, changes under conditions of high demand for easier capital formation lead to shorter survivals of newly listed firms, as verified by the positive coefficient of the Post 1973 dummy (Hypothesis 3).

These results are confirmed when we exclude financial companies from the analysis. The significance of the coefficients estimated for our regulatory change dummies confirms that financial markets do not grow monotonically, as argued by Rajan and Zingales (2003). Furthermore, as the trend coefficient is no longer significant when we exclude financial firms, this “unobservable trend” of historical development of the Italian financial markets over time may mostly be to the benefit of banks and other financial firms. The coefficient of the inverse Mills ratio is significant and negatively signed implying that the error terms in the selection and primary equations are negatively correlated. Therefore, unobserved factors that make listing more likely tend to be associated with lower hazard rate (higher survival time). By contrast, the estimated coefficient for the competition index is positive and significant, implying that higher levels of competition decrease IPO survival.

[INSERT SOMEWHERE HERE TABLE 4]

Table 5 reports the results of the time-series regression on the annual number of IPOs, scaled by GDP. The market return index in the previous year is a good predictor of the following year’s number of IPOs, consistent with the window-of-opportunity theory. More importantly, the regulatory change in 1936, responsive to high demand for investor protection after the 1929

crisis, leads to a weakly significant decrease in the annual number of firms going public. These results are confirmed in Model 2, which excludes financial companies from the sample.

Therefore, Hypothesis 2 is only partially supported. However, there is no evidence of an increase in the number of IPOs after 1973, as intended by regulatory changes responsive to the demand for easier capital formation. Thus, there is no support for Hypothesis 4.

[INSERT SOMEWHERE HERE TABLE 5]

6. Robustness check

6.1. Intra-period analysis

We investigate whether the impact of firms' characteristics on IPO survival changes across different regulatory regimes. First, since larger uncertainty and more information asymmetries are typically associated with younger and smaller firms (e.g., Lewellen 2006), we assess the ex-ante risk profile of IPO firms in each sub-period by comparing their age at IPO. Figure 2 presents the 10-years moving average of firms' age at IPO. The trend shows that following the regulatory change in 1936, responsive to high demand for investor protection after the 1929 crisis, the average age at IPO increases. A decrease in the average age of IPOs is instead observed after 1973. In unreported results, we further test for differences in means across regimes and find that the average age at IPO increases between after the first regulatory change (9.0 years in period 1861-1935 vs. 42.4 in period 1936-1974, the difference in mean is significant at less than 1%). In the third regime, the age at IPO remains almost the same (46.3), while it significantly (at less than 1%) decreases to 31.7 in the last regime (1998-2011).

[INSERT SOMEWHERE HERE FIGURE 2]

In order to investigate how some firms' characteristics impact on survival in different regulatory periods, we run our regressions including the interaction terms of explanatory variables with regulatory dummies. Table 6 presents the interaction of the regulatory changes with age and size. Results suggest that the regulatory regimes do not have different effects on firms of different age. By contrast, significant marginal effects are found for small firms. In particular, the post-1973 regime is correlated with lower survival rates for smaller firms, while the opposite occurs after the regulatory change in 1935 and 1997. We conclude that the changes in regulations affect at a larger extent smaller firms.

[INSERT SOMEWHERE HERE TABLE 6]

6.2. Logit and Accelerated Failure Time models

We test the validity of our results using the logit and Accelerated Failure Time (AFT) models. The former predicts factors influencing the delisting event within 10 years, while the latter allows independent variables to accelerate or decelerate the time to delisting. The dependent variable in the AFT model measures the survival time, rather than the risk of failure (as in the Cox model). A positive coefficient in the AFT model indicates an increase in the expected time until failure.¹⁸ If the results are robust, then we expect to obtain the same sign for the regulatory dummies in the logit regression and the Cox model, whereas we expect to obtain the opposite

¹⁸ The parametric AFT model requires that the distribution of the baseline survival function be specified. Following the Akaike Information Criterion (AIC) for model selection specifications, we rely on a log-normal distribution.

sign in the AFT model (i.e., increasing risk of failure is reflected by a decreasing survival time).

Table 7 reports the results, which confirm the support for Hypotheses 1 and 3.

[INSERT SOMEWHERE HERE TABLE 7]

6.3. Varying entry-into-force dates

It is possible that the average levels of IPO survival and volumes change before or after the entry-into-force of the regulatory changes. Therefore, we examine the patterns around those years. We rerun the same Cox and time-series regressions as in Tables 4 and 5, substituting the regulatory dummies with the dummy variable “Change in regulation ($t + N$)”. This variable equals 1 if a change occurs after $t + N$, where t is the entry-into-force date of the regulatory change and N is an integer whose value ranges from -3 to +3. In total, we perform seven regressions.

Table 8 reports only the coefficient estimates for the regulatory change ($t + N$) for each regression. The significance of the effects of regulatory changes on IPO survival are corroborated in Panel A. In the Cox proportional hazard regressions, changes in regulation are significant from the year in which they take place onward. Thus, Hypotheses 1 and 3 are confirmed. Regulatory interventions during periods of higher demand for investor protection lead to an increase in the survival of firms going public. Interventions responsive to demands for reduced requirements for capital formation lead to a decrease in the survival of firms going public. With regard to time-series regressions (Panel B), the regulatory change in 1936, which is in response to high demand for investor protection after the 1929 crisis, leads to a weakly

significant decrease in the annual number of firms going public. The number of IPOs does not increase after 1973.

[INSERT SOMEWHERE HERE TABLE 8]

7. Conclusions

Recent studies have shown that increased regulation and disclosure requirements reduce information asymmetry and IPO underpricing (e.g., Ekkayokkaya and Pengniti, 2012; Shi et al., 2012; Akyol et al., 2014). However, this is not without problems. Excessive regulation can discourage firms from going public and lead to a decline in the number of IPOs (Doidge et al., 2010; Gao et al., 2014). Considering that the absence of a vibrant IPO market is a major problem for economic and employment growth (e.g., Kenney et al., 2012), heavy-handed regulatory changes can have unintended consequences that overwhelm their benefits.

In this study, we find that the two radical regulatory changes that arose from a higher demand for investor protection—introduction of the Bank Law in 1936 and the Draghi Law in 1998—led to a significant improvement in IPO survival. Companies that went public after these restrictive interventions were more robust. Meanwhile, the IPO survival was lower, without an increase in IPO volumes, after the regulatory changes in 1974 made in response to demands for capital formation. These results are stronger for smaller firms and are robust to different econometric specifications (i.e., Cox proportional hazard, logit, and AFT models) and to controls for alternative factors and varying entry-into-force dates.

This paper fills a void in the literature by investigating the effects of regulatory changes on the number and survival of firms that go public. By investigating the impact of major

regulatory interventions from the birth of Italy in 1861, our report is (1) the first paper on regulation and IPOs in Italy, and (2) the first paper on the survival of IPOs over such a long time period. The historical perspective of this study allows us to evaluate the long-term effects of regulatory interventions in IPO markets, which is a topic of current interest. The recent financial crisis has fueled debate over the need for more stringent regulations of capital markets.

Questions of how long firms will survive on a stock exchange and how their propensity to list is affected by regulatory changes carry important implications. A lax regulatory regime that shortens the survival profile of firms going public, without increasing their number, has economic consequences that regulators should aim to avoid. The interests of a firm's stakeholders are clearly linked to the firm's ability to survive. Managers and investors are directly affected. In addition, the reputational capital of underwriters is built by taking public viable companies that grow (or, at least, survive) in the long-term.

Our focus on a single country allowed a high level of accuracy for a study in which firms going public, as well as regulatory interventions, are traced over 150 years. While this focus is a strength of the study, it also creates limitations that suggest several avenues for further research. For instance, future studies may account for the specific features of each legal system. The development of regulatory regimes requires sensitivity to the particular context and culture of the domain and jurisdiction for these regulations. As legal origins have a pervasive influence on outcomes over the years, a comparative historical approach across countries would be of interest to generalize our insights.

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Table 1.

Population of IPOs and delistings on the Milan Stock Exchange from its foundation until December 31, 2012, across regulatory periods and industries. Regulatory periods are identified as in Aganin and Volpin (2005). Industry classification is the one-digit ICB classification. Delistings do not consider market transfers or take-overs. Voluntary delistings are excluded in the second column.

ICB Industries	Period 1861–1935			Period 1936–1973		
	IPOs	Delistings	Excluding Voluntary	IPOs	Delistings	Excluding Voluntary
Oil & Gas	2	0	0	6	1	1
Basic Materials	49	20	12	10	3	1
Industrials	75	34	20	20	9	4
Consumer Goods	119	53	27	18	19	11
Health care	2	2	2	3	0	0
Consumer Services	26	12	7	5	3	1
Telecommunications	4	0	0	1	0	0
Utilities	43	6	3	18	1	0
Financials	64	37	15	30	5	1
Technology	1	1	1	3	0	0
Total	385	165	87	114	41	19
ICB Industries	Period 1974–1997			Period 1998–2011		
	IPOs	Delistings	Excluding Voluntary	IPOs	Delistings	Excluding Voluntary
Oil & Gas	4	3	2	2	0	0
Basic Materials	14	7	2	4	4	4
Industrials	55	17	11	50	9	8
Consumer Goods	31	16	10	34	9	8
Health care	3	0	0	10	1	1
Consumer Services	12	2	2	36	6	5
Telecommunications	1	0	0	1	0	0
Utilities	4	1	1	18	1	1
Financials	42	7	5	29	5	5
Technology	1	0	0	29	5	5
Total	167	53	33	213	40	37

Table 2.

Survival rates. This table reports the Kaplan-Meier cumulative survival rates for the population of 879 IPOs in Italy, classified by regulatory subperiod (Panel A) and by industry (Panel B), at 1, 3, 5, and 10 years after the IPO. Chi-squared and p values (in brackets) refer to a log rank test on survival rates.

	Obs.	1 YR	3 YR	5 YR	10 YR
<i>Panel A. By period</i>					
1861–1935	385	100	92	82	66
1936–1973	114	100	98	96	79
1974–1997	167	99	96	91	70
1998–2011	213	100	98	92	84
Full sample (1861–2011)	879	100	95	87	72
Log Rank test					18.03 (0.000)
<i>Panel B. By industry</i>					
Oil & Gas	14	100	100	100	93
Basic Materials	77	99	92	86	74
Industrials	200	100	96	89	68
Consumer Goods	202	100	95	86	72
Health care	18	100	94	83	67
Consumer Services	79	100	92	90	77
Telecommunications	7	100	100	86	86
Utilities	83	100	96	90	78
Financials	165	99	95	83	64
Technology	34	100	97	94	82
Log Rank test					7.85 (0.550)

Table 3.

Determinants for the decision to go public. This table reports the mean values of variables for the sample of IPOs and of private firms, as well as the results of a probit model estimated with the maximum likelihood method (first stage). The dependent variable is 1 for firms that have gone public in a certain year, and 0 otherwise. The analysis is performed on a sample of 91,938 firms-years observations including IPOs and private firms. Robust standard errors are in parentheses. Stars identify significance level at less than 1% (***), 5% (**), and 10% (*).

	<u>Firms going public</u> <u>Firms remaining private</u>		First stage
	Mean	Mean	
Sales	331.981	1498.557	0.057*** (0.012)
Sales growth	0.152***	0.041	0.073*** (0.016)
Leverage	0.372***	0.477	-0.093*** (0.014)
ROA	0.156***	0.072	0.324*** (0.057)
CAPEX/TA	0.368***	0.331	0.005*** (0.001)
Market Cap to GDP			0.434*** (0.140)
Post 1973			-0.083 (0.104)
Post 1997			0.008 (0.087)
Constant			-7.650 (15.149)
Industry fixed effects			Yes
Pseudo R2			0.104
Firm-years observations	422	91,516	91,938

Table 4.

Cox proportional hazard models. This table reports the results of Cox proportional hazard models, where delistings do not consider market transfers or take-overs. Robust standard errors (in brackets) are clustered by year to account for possible within-series correlation in the residuals. Models 1 to 4 are run on the entire population of Italian IPOs. In models 5 and 6, financial stocks are excluded. Each regression includes the Mills ratio received from the first-step probit regression to capture unobservable information affecting both the choice of going public or staying private and the IPO survival. Models 5 and 6 include the Mills ratio received from the first-step probit regression excluding financial stocks. Stars identify significance level at less than 1% (***), 5% (**), and 10% (*).

	(1)	(2)	(3)	(4)	(5)	(6)
	Delistings	Excluding voluntary	Delistings	Excluding voluntary	Delistings	Excluding voluntary
Age at IPO	-0.000 (0.003)	0.002 (0.002)	0.002 (0.002)	0.003 (0.002)	0.006* (0.003)	0.007** (0.003)
Large size	-0.306** (0.121)	-0.297** (0.136)	-0.300** (0.123)	-0.295** (0.137)	-0.225* (0.130)	-0.222 (0.144)
Small size	0.019 (0.354)	0.081 (0.362)	0.018 (0.348)	0.074 (0.361)	0.152 (0.365)	0.199 (0.378)
State-controlled	-0.730** (0.333)	-0.906** (0.436)	-0.886*** (0.343)	-1.082** (0.455)	-0.701** (0.356)	-0.903* (0.469)
Real GDP growth [t-1, t]	-4.392** (1.771)	-2.948 (1.800)	-3.418 (2.535)	-2.679 (2.666)	-2.160 (2.566)	-1.661 (2.672)
Market return index [t-1, t]	0.000 (0.002)	0.001 (0.003)	-0.002 (0.003)	0.001 (0.003)	-0.000 (0.003)	0.002 (0.004)
Number of IPOs in UK	0.003 (0.002)	0.003 (0.002)	0.003* (0.002)	0.003 (0.002)	0.003 (0.002)	0.003 (0.002)
No. of insolvencies	0.008 (0.025)	0.020 (0.028)	-0.042 (0.027)	-0.021 (0.031)	-0.034 (0.029)	-0.013 (0.032)
Market Cap to GDP	-1.578 (1.087)	-1.483 (1.170)	0.054 (1.111)	-0.743 (1.268)	-0.616 (1.251)	-1.160 (1.347)
Competition at IPO	0.003** (0.001)	0.002** (0.001)	0.003*** (0.001)	0.003*** (0.001)	0.002** (0.001)	0.003** (0.001)
Mills ratio	-2.094** (0.835)	-1.834** (0.917)	-2.708*** (0.915)	-2.730** (0.980)	-3.696*** (0.957)	-3.606*** (1.039)
Historical trend	-0.538** (0.254)	-0.736*** (0.260)	-0.317* (0.184)	-0.552** (0.270)	-0.068 (0.550)	-0.423 (0.512)
World Wars	0.024 (0.328)	0.067 (0.366)	0.167 (0.393)	0.280 (0.419)	0.164 (0.419)	0.265 (0.450)
Post 1935			-1.006*** (0.272)	-0.737** (0.292)	-1.089*** (0.309)	-0.830** (0.327)
Post 1973			0.756** (0.317)	0.817** (0.340)	0.780** (0.331)	0.831** (0.350)
Post 1997			-1.852*** (0.625)	-1.909*** (0.635)	-2.344*** (0.763)	-2.353*** (0.772)
Observations	879	879	879	879	714	714
Pseudo R2	0.095	0.071	0.162	0.097	0.129	0.091

Table 5.

Time-series regression on the number of IPOs per year. This table reports the results of time-series regressions with the maximum likelihood, with residuals following an AR(1) process. Dependent variable is the annual number of IPOs (excluding Nuovo Mercato's IPOs), scaled by the real GDP (in € billions at 2011 purchasing power). Robust standard errors are in parentheses. Financial stocks are excluded in model 2. Stars identify significance level at less than 1% (***), 5% (**), and 10% (*).

	(1)	(2)
Real GDP growth [$t-1, t$]	36.575 (41.521)	41.942 (37.597)
Market return index [$t-1, t$]	19.130** (7.489)	18.539** (7.289)
Number of IPOs in UK	0.088 (0.102)	0.095 (0.099)
Historical trend	0.041 (0.437)	0.230 (0.330)
World Wars	-3.312 (12.875)	-0.427 (12.596)
Post 1935	-52.607** (25.988)	-53.416** (24.256)
Post 1973	-8.843 (14.954)	-12.851 (12.410)
Post 1997	-1.099 (10.060)	-4.220 (8.937)
AR(1) coefficient	0.560*** (0.174)	0.572*** (0.177)
Constant	56.943** (25.773)	36.187** (18.105)
Observations	149	149
R ²	0.663	0.663

Table 6.

Cox proportional hazard models with interactions. This table reports the coefficients of the interactions terms among regulatory dummies and the age at IPO (Model 1) and the size of a firm (large firms in Model 2 and small firms in Model 3). Robust standard errors (in brackets) are clustered by year to account for possible within-series correlation in the residuals. Models 1 to 3 are run on the entire population of Italian IPOs. Stars identify significance level at less than 1% (***), 5% (**), and 10% (*).

	(1)	(2)	(3)
Age at IPO X Post1935	0.009 (0.008)		
Age at IPO X Post1973	0.002 (0.006)		
Age at IPO X Post1997	-0.033 (0.033)		
Large size X Post 1935		0.681 (0.439)	
Large size X Post1973		-0.480 (0.500)	
Large size X Post 1997		1.408 (1.279)	
Small size X Post 1935			-21.121*** (0.856)
Small size X Post1973			20.173*** (0.526)
Small size X Post 1997			-35.445*** (0.830)
Observations	879	879	879
Pseudo R ²	0.170	0.168	0.171

Table 7.

Robustness checks. This table reports the results of the logit and accelerated failure time models. Robust standard errors are clustered by year and reported in parentheses. Each regression includes the Mills ratio received from the first-step probit regression to capture unobservable information affecting both the choice of going public or staying private and the IPO survival. Stars identify significance level at less than 1% (***), 5% (**), and 10% (*).

	Logit model		Accelerated failure time model	
	(1)	(2)	(3)	(4)
	Delistings	Excluding voluntary	Delistings	Excluding voluntary
Age at IPO	0.002 (0.004)	0.002 (0.004)	-0.002 (0.002)	-0.002 (0.002)
Large size	-0.332 (0.204)	-0.275 (0.215)	0.250** (0.110)	0.233* (0.127)
Small size	0.224 (0.415)	0.349 (0.426)	-0.067 (0.313)	-0.145 (0.338)
State-controlled	-1.695** (0.799)	-1.559* (0.806)	0.998*** (0.317)	1.028*** (0.360)
Real GDP growth [$t-1, t$]	-3.753 (3.055)	-1.776 (3.403)	1.467 (1.633)	0.627 (1.877)
Market return index [$t-1, t$]	-0.006 (0.004)	0.003 (0.005)	0.002 (0.003)	-0.000 (0.004)
Number of IPOs in UK	-0.002 (0.004)	-0.001 (0.004)	-0.001 (0.002)	-0.001 (0.002)
No. of insolvencies	-0.049 (0.035)	-0.009 (0.040)	0.038* (0.023)	0.021 (0.027)
Market cap to GDP	2.007 (1.388)	-1.098 (1.722)	-0.454 (1.085)	0.380 (1.333)
Competition at IPO	0.006*** (0.002)	0.004** (0.002)	-0.002** (0.001)	-0.002* (0.001)
Mills ratio	-4.626*** (1.621)	-4.727*** (1.588)	2.715*** (0.882)	2.533*** (0.967)
Historical trend	-1.037* (0.610)	-1.093** (0.510)	0.513 (0.335)	0.662** (0.303)
World Wars	0.205 (0.334)	0.006 (0.425)	-0.092 (0.254)	-0.147 (0.366)
Post 1935	-1.440*** (0.399)	-0.812* (0.461)	1.063*** (0.228)	0.777*** (0.281)
Post 1973	1.316** (0.526)	1.373** (0.578)	-0.881*** (0.262)	-0.877*** (0.300)
Post 1997	-1.868*** (0.652)	-2.198*** (0.679)	1.149*** (0.362)	1.227*** (0.387)
Constant	3.120** (1.351)	2.120* (1.215)	1.157* (0.694)	1.518** (0.672)
No of observations	879	879	879	879
Pseudo R ²	0.144	0.111	0.389	0.281

Table 8.

Analysis of varying entry-into-force dates. This table reports results from Cox proportional hazard regressions (Panel A) and yearly time-series regressions, with residuals following an AR(1) process (Panel B), using the same specifications as in Tables 4 and 6. Regulation dummies are defined as “Change in regulation ($t + N$)”, equal to 1 if a change occurs after $t + N$ (where t is the entry-into-force date of the regulatory change, and N is an integer ranging from -3 to +3) or 0 otherwise. Only coefficients for the regulation dummies are shown. Each row refers to a separate regression. Stars identify significance level at less than 1% (***), 5% (**), and 10% (*).

<i>Panel A. Cox proportional hazard regression</i>			
	(1)	(2)	(3)
	Post 1935	Post 1973	Post 1997
$t-3$	-0.503 (0.325)	0.259 (0.291)	-0.701 (0.487)
$t-2$	-0.459 (0.326)	0.344 (0.299)	-0.680 (0.487)
$t-1$	-0.445 (0.325)	0.373 (0.293)	-1.047 (0.646)
t	-1.006*** (0.272)	0.756** (0.317)	-1.852*** (0.625)
$t+1$	-0.902*** (0.282)	0.714** (0.325)	-1.541** (0.614)
$t+2$	-0.834*** (0.281)	0.749** (0.323)	-1.512** (0.725)
$t+3$	-0.786*** (0.278)	0.643** (0.328)	-1.494** (0.727)
Number of observations	879	879	879
<i>Panel B. Time-series regression</i>			
	(1)	(2)	(3)
	Post 1935	Post 1973	Post1997
$t-3$	-47.528 (35.262)	-6.540 (15.734)	1.831 (10.101)
$t-2$	-54.921 (36.291)	-5.422 (17.262)	-3.020 (9.055)
$t-1$	-60.064* (30.823)	-13.062 (13.954)	-2.720 (8.571)
t	-51.840** (26.063)	-9.379 (14.791)	-1.099 (10.06)
$t+1$	-49.243** (24.927)	-10.119 (13.578)	-6.860 (8.308)
$t+2$	-48.020* (26.041)	-11.114 (13.559)	-1.143 (9.915)
$t+3$	-41.777* (24.312)	-9.300 (14.207)	-5.057 (8.603)
Number of observations	149	149	149

Fig. 1. Number of IPOs and delistings in Italy during 1861–2011. X-axis represents years. Vertical bars below the X-axis identify the number of delisted companies per year (voluntary delistings are in grey), while bars above the X-axis describe IPOs per year (IPOs listed on the Nuovo Mercato are in black). The line shows the number of listed firms.

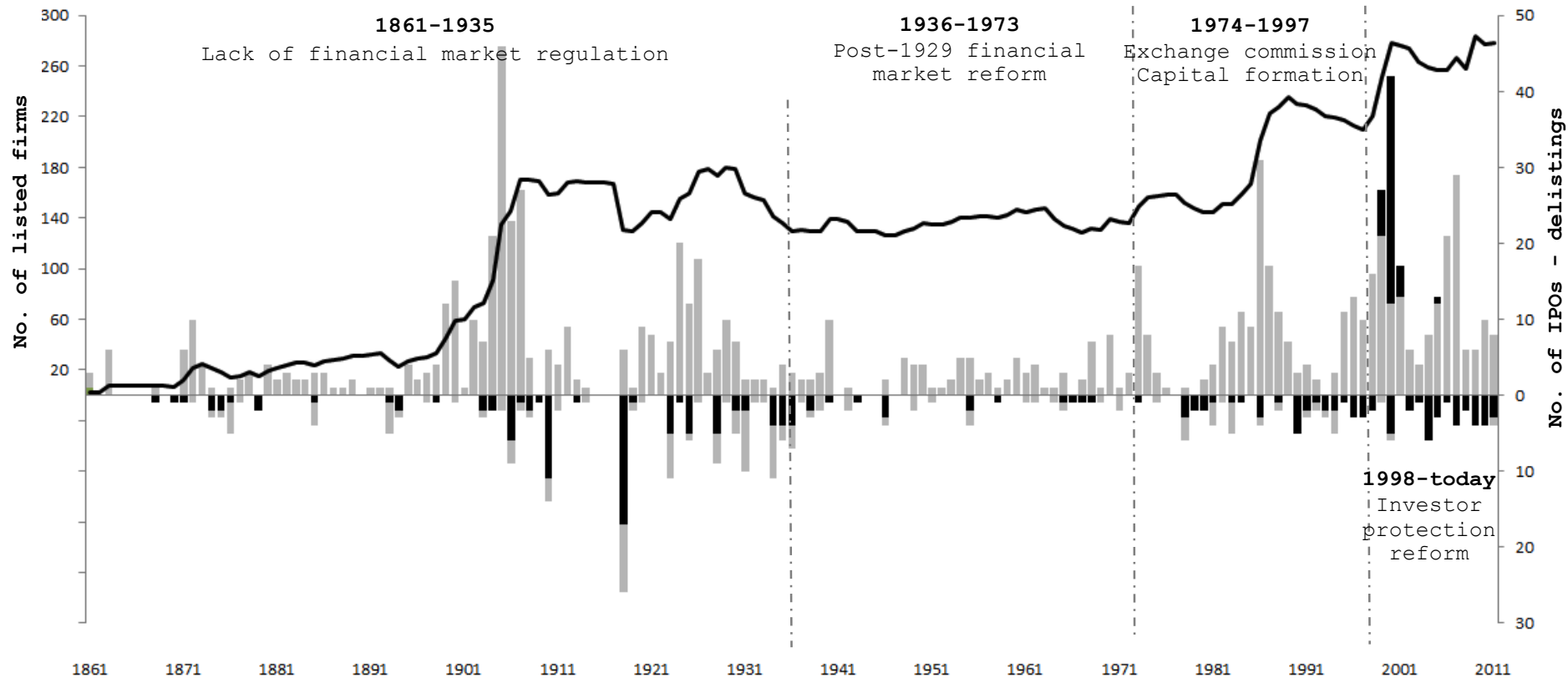
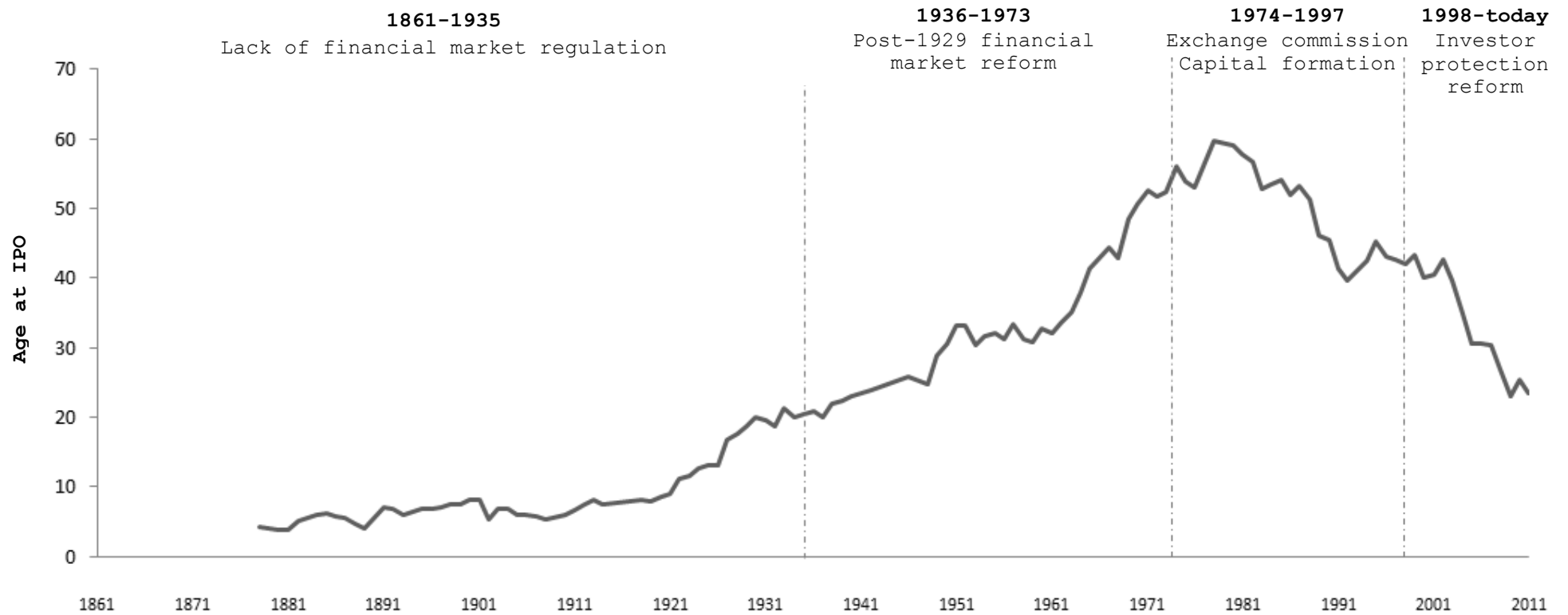


Fig. 2. Ten-years moving average of age at IPO.



Appendix.

Correlation matrix. Significant correlations at less than 1% are identified with *.

Variables	1	2	3	4	5	6	7	8	9	10
1 Age at IPO	1									
2 Large size	0.089*	1								
3 Small size	-0.051	-0.232*	1							
4 State-controlled	0.222*	0.280*	-0.065	1						
5 Real GDP growth	0.279*	-0.011	0.176*	0.077	1					
6 Market return index	0.005	-0.108*	0.280*	-0.003	0.466*	1				
7 Number of IPOs in UK	0.129*	-0.004	0.226*	0.018	0.592*	0.570*	1			
8 No. of insolvencies	0.229*	-0.049	0.243*	0.018	0.806*	0.583*	0.621*	1		
9 Market cap to GDP	0.227*	-0.055	0.317*	0.060	0.731*	0.781*	0.608*	0.807*	1	
10 Competition at IPO	0.136*	0.019	0.164*	0.078	0.350*	0.034	0.074	0.190*	0.257*	1