

To Go or Not to Go?

An Empirical Analysis of Firms' Choice to Go Public or Stay
Private

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ABSTRACT

Going public represents a large step in the life-cycle of the firm. While theory has catalogued the corresponding costs and benefits, empirical answers have been slow to follow, impeded by the veil of privacy which shrouds the choices and conditions of private firms. While going public would seem a primary goal of growing firms in the United States, [La Porta, Lopez-de-Silanes, and Shleifer \(1999\)](#) has shown that public incorporation may not even be the optimal organizational form in the presence of poor regulatory and information environments. This paper will be the first to examine private firms' decisions to go public or stay private on a broad cross-country scale and free of common sample biases that plague the extant research.

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1 Introduction

Going public represents a large step in the life-cycle of the firm. Theory has catalogued the corresponding costs and benefits, but empirical answers have been slow to follow. While it would seem a primary goal of growing firms in the United States, [La Porta, Lopez-de-Silanes, and Shleifer \(1999\)](#) has shown that public incorporation and the notion of widely-dispersed ownership is less common internationally and, indeed, may not even be the optimal organizational form in the presence of poor regulatory and information environments.

Aside from the substantial fixed costs of going public ([Ritter, 1987](#)), there are increased reporting costs and reduced stealth with respect to competitors([Campbell, 1979](#); [Yosha, 1995](#)). Further, an private owner may not get full value of his sale due to adverse selection ([Leland and Pyle, 1977](#)). Finally, widely-dispersed owners may not invest in monitoring the firm, driving its value down even further.

The benefits of going public have also been considered, including access to external financing to reduce debt constraints, owner risk diversification, increased owner liquidity in case of a personal wealth shock, risk-sharing across investors which lowers the firm's required rate of return on investment, improved bargaining power with banks ([Rajan, 1992](#)), facilitation of control transfers through merger and acquisition ([Zingales, 1995](#)), and increased market monitoring of the firm ([Holmström and Tirole, 1993](#)). Also, contrary to the adverse selection story, firms may use IPOs to exploit short-lived market mispricing ([Ritter, 1991](#)).

How do these factors trade off in a firm's decision to go public or not? We simply do not know. Empirically, the literature is constrained to the characteristics and subsequent performance of IPO firms, conditional on their choice to IPO.¹ However, little is known about these firms *before* they choose to go public, and *almost nothing*

¹Based on the current literature, the poor long-run performance of IPOs remains a mystery([Ritter and Welch, 2002](#)).

about the firms who never do. This veil of privacy presents the main obstacle to progress in understanding the trade-offs between these organizational forms.

The current research proposal is to exploit the Fourth Directive of the EU which applies to nearly five million companies in Europe. The directive requires these firms, public and private, to report audited financials. This European dataset affords several additional advantages. First, European IPO activity has been highly active in the sample period; the number of IPOs surpassed that of US IPOs from 1995-2005 (Kim and Weisbach, 2005). Second, the sample size of private firms exceeds the extant studies by several orders of magnitude. Finally, cross-country variation allows for more refined, conditional answers in the presence of the legal and regulatory environment.

The proposal is not a pure data-play, however. While the research design will draw on the methodologies of within-country studies in Italy (Pagano, Panetta, and Zingales, 1998) and Germany (Boehmer and Ljungqvist, 2004), this paper will also apply several new tests to this research question. First, the availability of private and public firm data allows consistent estimation of firm performance via switching regressions with endogenous switching (Maddala, 1983, Ch. 9). Second, controlling for all other factors that affect the decision, the relationship between corporate governance and IPO activity as theorized by Boot, Gopalan, and Thakor (2005) can be rigorously tested, and possibly refuted.

2 Motivation

2.1 Existing Literature

Table I summarizes some of the extant theory and empirical implications surrounding the decision to go public as reviewed in the foregoing introduction.

While the theory has moved ahead, empirical work has lagged behind, primarily because of data limitations. Kim and Weisbach (2005) state:

Reflecting the importance of the going public decision, the academic literature on IPOs has been voluminous. Yet, perhaps surprisingly, the vast majority of empirical literature has ignored the underlying reasons why firms go public... The likely reason why there has been so little empirical work addressing the reasons for going public is that the most straightforward way to study the issue would be to compare the characteristics of firms that chose to go public with the firms that remained private. However, such a study would require extensive data on private firms, which generally are not available.

Several papers have overcome this obstacle in small or industry-specific samples, but they are often clouded by sample-selection biases. [Pagano, Panetta, and Zingales \(1998\)](#) examines a set of Italian private firms from 1982 to 1992. [Pagano, Panetta, and Zingales \(1998\)](#) find that firms go public following a period of rapid growth and large investments, but that firm size is the main determinant of whether a firm goes public. However, Italy, known as an insider-economy, hardly represents the typical environment for firms in other countries. [Boehmer and Ljungqvist \(2004\)](#) looks at 330 private firms in Germany, but these firms are only firms that first announce the intention to go public. Their hazard model on models the successful IPOs given that firms choose to go public. [Boehmer and Ljungqvist \(2004\)](#) find that the success probability of the German IPO depends on profitability, sales, earnings growth and aggregate stock returns. Further, that family firms do not complete their IPOs as often following announcement. [Helwege and Packer \(2004\)](#) look at the same phenomenon in the US where private firm disclosures are required prior to the IPO. They find that industry book-to-market and the presence of an outside blockholder increases the likelihood of an announced IPO being successfully completed. Besides the self-selection bias, the [Helwege and Packer \(2004\)](#) sample consists of only 43 observations. Closer to home, [Rosen, Smart, and Zutter \(2005\)](#) look at a sample of private banks which must report

financials to the FED. However, banks represent a regulated and rather atypical IPO sample. Unless the reader considers Italy a representative sample, no paper has yet tackled this question free of sample bias.

2.2 Contribution

The present study adds to the existing literature along three main dimensions. First, it will examine the choice of public versus private organizational form on a far wider scale, superceding the extant studies. Second, the econometric methodology of switching regressions to compare of subsequent performance by newly public firms with matched samples from both the public and private sector will tell more about underlying economic motivation. Third, it will test recent theory by [Boot, Gopalan, and Thakor \(2005\)](#) as to how the legal and regulatory environment affect firms' choices.

3 Research Design

Overall, the research design will build upon the few relevant papers in this literature, including [Pagano, Panetta, and Zingales \(1998\)](#), [Boehmer and Ljungqvist \(2004\)](#) and [Rosen, Smart, and Zutter \(2005\)](#). However, two design extensions are permitted by the data, Switching Analysis and Cross-Country Analysis, which are discussed below.

Because [Van Hulle \(2004\)](#) and [Burgstahler, Hail, and Leuz \(2006\)](#) argue that accounting standards should not be significantly different across EU countries,² the main accounting difference of concern are those between public and private firms. However, with only 13 countries, it is quite feasible to do most of the analysis country-by-country as well as pooled with either fixed or random country effects.

²Even before the EU's Seventh Directive, [Van Hulle \(2004\)](#) finds substantial accounting harmonization across many European countries.

3.1 A Hazard Model of the IPO Decision

A hazard model provides significantly more information than does a simple probit/logit regression, since the time series aspects are also considered. The first pass will follow adopt the variables used by [Boehmer and Ljungqvist \(2004\)](#). However, the advantage is that the sample will not be biased to firms who first pre-select to IPO, but will include all eligible private firms above the exchange-listing hurdle.

The hazard model is

$$Prob(I_{i,t}^* > 0) = f(\text{firmcharacteristics}_t, \text{marketconditions}_t, \text{controls}_t) \quad (1)$$

where $I_{i,t}^*$ is an latent variable such that if $I_{i,t}^* > 0$ then firm i finds it optimal to go public in period t . Importantly, the dependent variable and some of the independent variables are time-varying. The analysis gives the (instantaneous) probability that a firm will go public given that it already has not done so, conditional on the state characteristics.

Because the hazard analysis will compare private firms to one another, reporting differences between public and private firms will not be an issue.

3.2 IPO Hurdle Levels and IPO underperformance

IPO underperformance remains a puzzle for academics and investors alike. One explanation is the market-timing hypothesis of [Ritter \(1991\)](#). Using pre and post IPO accounting data, I will investigate and refine an alternative hypothesis from the emerging markets literature that may explain IPO underperformance.

[Goetzmann and Jorion \(1999\)](#) simulate a process for emerging markets where data is only collected once the market rises above some hurdle based on a “last time up” rule. They show that estimated means and covariances with the world market are biased, but that the time of the last emergence and the length of the current emerged

period convey useful information. If one considers IPO firms within a single market, the parallel is obvious.

However, no analytical solution exists, so corrections based on the principle cannot be applied directly to IPO firms. With private data, however, the problem evaporates.

As the accounting rigor may change when a firm goes public, I will match the firm both to a private and a public doppleganger to control for the accounting regime change.

3.3 Switching Regressions of the Performance of Public and Private Firms

A switching regressions with endogenous switching framework exploits the public and private dataset to predict the performance of firms had these firms chosen to organize in the alternative manner.³ While the approach is limited to the cross-section rather than a time-series analysis, the approach takes self-selection bias into account.

The following three-equation system is estimated simultaneously by Full-Information Maximum Likelihood:

$$ROA_{Pb,i} = \alpha_{Pb,i} + \beta_{Pb,i}X_{Pb,i} + \gamma_{Pb,i}C_i + \varepsilon_{Pb,i} \quad (2)$$

$$ROA_{Pv,i} = \alpha_{Pv,i} + \beta_{Pv,i}X_{Pv,i} + \gamma_{Pv,i}C_i + \varepsilon_{Pv,i} \quad (3)$$

$$I_i^* = \delta_0 + \delta_1(ROA_{Pb,i} - ROA_{Pv,i}) + \delta_2X_i + \delta_3C_i + \delta_4M_i - \varepsilon_i \quad (4)$$

where ROA_i is a firm performance measure for firm i , Pb and Pv denote public and private firms, respectively, X are firm characteristics, C are country-level factors for firm i and M includes other factors related to the firms decision to go public or stay private. I_i^* is an latent variable such that if and only if $I_i^* > 0$ the firm finds it optimal to go public. $\varepsilon_{Pb,i}$, $\varepsilon_{Pv,i}$ and ε_i are mean-zero normally distributed error terms.

³More on this methodology can be found in Maddala's (1983) seminal text on Limited Dependent Variables.

The above selection system is observationally equivalent to a mixture of distributions model. However, because the difference in expected firm performance under private or public organization is a factor in the decision process as shown in Eq. 4, the mixture of distributions interpretation of the model is inappropriate. The term, $ROA_{Pb,i} - ROA_{Pv,i}$, is endogenous. The sign of it's coefficient is expected to be positive ($\delta_1 > 0$) if firms go public to increase value.

The intuition of the specification is that the econometrician only observes $ROA_{Pb,i}$ for public firms ($I_i^* > 0$) and $ROA_{Pv,i}$ for private firms ($I_i^* < 0$), but these firms make their choice to go public or stay private based on the expected difference between the two, along with a host of other factors. This induces endogeneity between the decision to go public and the firm's subsequent performance. The biased OLS estimates are corrected by this econometric specification.

The estimation provides also provides the expected ROA had the public firm been private and vice versa:

$$\widehat{ROA}_{Pb,i} = \hat{\alpha}_{Pb,i} + \hat{\beta}_{Pb,i}X_{Pb,i} + \hat{\gamma}_{Pb,i}C_i \quad (5)$$

$$\widehat{ROA}_{Pv,i} = \hat{\alpha}_{Pv,i} + \hat{\beta}_{Pv,i}X_{Pv,i} + \hat{\gamma}_{Pv,i}C_i. \quad (6)$$

3.4 Cross-Country Analysis

This analysis is still under consideration. It is likely to follow the extant international corporate governance literature. Specifically, country-specific factors not of interest will be subsumed in the random-effects paradigm, as the country-level variables would be perfectly collinear with a country fixed effect or intercept.

4 Data

Table II shows my projected sample from a merged AMADEUS and SDC database. This sample would be the basis of the foregoing empirical analysis. The sources are overviewed below.

4.1 Amadeus Sample of Private and Public Firms

AMADEUS reports financials for public and private firms in Europe from 1995 to 2005.⁴ The information on private firms is less scrutinized than that of public firms, presenting one of the advantages of staying private but also posing a disadvantage to the econometrician trying to measure the state of the firm. The sample selection will rely primarily on [Burgstahler, Hail, and Leuz \(2006\)](#) to focus on private firms that meet the minimum eligibility requirements to go public. The hurdle level is itself an interesting cross-country metric, but our analysis here is primarily concerned with the choices of eligible firms.

The quality of the private financial data relative to the public data is an important and open issue, particularly since some of the analysis will attempt to compare the two. The private data is likely to be as informative as any other privately reported data available, such as [Pagano, Panetta, and Zingales \(1998\)](#) or [Boehmer and Ljungqvist \(2004\)](#). Still, the quality and quantity of data greatly exceeds that of any prior study.

⁴Besides common firm characteristics, the AMADEUS data offers considerable ownership information, which may also be used to get at several theoretical questions described in Table I.

4.2 SDC Sample of IPOs

International IPO data come from the Securities Data Corporation Global New Issues Database.⁵ The characteristics of this database are well-known. From the sample, I will exclude utilities, financials and privatizations.

Exclusion of privatizations are particularly important as the motive for these decisions are vastly different from the decisions faced by owners of a private firms. As privatization data is unavailable from SDC, the SDC sample must be cross-checked against *Hoover's Online*.

5 Conclusion

Generalizations to the US experience may be limited, but the European sample provides a great advance in answering the question of why some firms choose public versus private organization. Indeed, given the dearth of data and the prevalence of private firms (La Porta, Lopez-de-Silanes, and Shleifer, 1999), the behavior and financing of private firms alone is of serious academic interest. Besides answering these immediate questions, the private-public comparative research could be extended to consider merger-acquisition and product-market effects relating to industrial structure. Another direction would be to look at privatizations to answer the same question from the perspective of governments.

While this study promises new answers to open questions in finance and organizational form, the barrier to entry is also high in regard to producing the matched and merged dataset.

⁵SDC also has merger-acquisition information as well as IPO information. Extension of the paper to include M&A data would provide evidence whether European firms go public to more easily transfer control just as US firms do Zingales (1995).

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Table 1

Theoretical Costs and Benefits of the Organizational Choice of Public vs. Private

This table is updated from Table II of Pagano, Panetta, and Zingales (1998).

	Model	Effects on the Probability of IPO	Consequences after IPO
Panel A: Costs of Going Public			
Adverse selection and moral hazard	Leland and Pyle (1977) Chemmanur and Fulghieri (1999) Subrahmanyam and Titman (1999)	Smaller and younger companies less likely to go public	Negative relation between operating performance and ownership
Fixed costs	Ritter (1987)	Smaller companies less likely to go public	
Loss of confidentiality	Campbell (1979), Yosha (1995)	High-tech companies less likely to go public	
Panel B: Benefits of Going Public			
Overcome borrowing constraints		IPO more likely for high-debt/high-investment companies	Deleveraging/high-investment
Diversification	Pagano (1993)	Riskier companies more likely to go public	Controlling shareholder decreases his stake
Liquidity	Market microstructure models	Smaller companies less likely to go public	Diffuse stock ownership
Stock market monitoring	Holmström and Tirole (1993) Pagano and Röell (1998)	High-investment companies more likely to go public	Large use of stock-based incentive contracts
Enlarge set of potential investors	Merton (1987)		Diffuse stock ownership
Increase bargaining power with banks	Rajan (1992)	IPO more likely for companies paying higher rates	Decrease in borrowing rates
Optimal way to transfer control	Zingales (1995)		Higher turnover of control
Exploit mispricing	Ritter (1991)	High market-to-book values in relevant industry	Underperformance of IPOs; no increase in investments
Corporate governance	Boot, Gopalan, and Thakor (2005)	More IPOs in mainstream industries and in countries with non-volatile, middle-of-the-road corporate governance.	

Table 2

Projected Sample: 13 Developed European Countries from 1995-2005

The projected sample is based on [Burgstahler, Hail, and Leuz \(2006\)](#) set of public and private firms from AMADEUS. The IPO sample comes from Securities Data Corporation (SDC) and is identified by [Kim and Weisbach \(2005\)](#). The Legal Origin variable is from [La Porta, Lopez-de-Silanes, Shleifer, and Vishny \(1998\)](#). The sample can be expanded to include Eastern bloc and developing countries in Europe.

Country	Firm-Years		IPOs	Legal Origin
	Public	Private		
Austria	15	1531	39	German Civil Law
Belgium	120	20481	45	French Civil Law
Denmark	218	7869	48	Scandinavian Civil Law
Finland	267	6730	48	Scandinavian Civil Law
France	777	47453	492	French Civil Law
Germany	721	4331	394	German Civil Law
Greece	652	5474	130	French Civil Law
Italy	206	47358	124	French Civil Law
Netherlands	463	13755	78	French Civil Law
Portugal	106	5873	10	French Civil Law
Spain	355	42917	35	French Civil Law
Sweden	85	14995	91	Scandinavian Civil Law
United Kingdom	3168	58655	858	English Common Law