

# ***A discusión***

## **THE DETERMINANTS OF THE GOING PUBLIC DECISION: EVIDENCE FROM THE U.K.**

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# **THE DETERMINANTS OF THE GOING PUBLIC DECISION: EVIDENCE FROM THE U.K.**

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## **ABSTRACT**

Several theoretical papers have addressed the question of why firms raise public equity. However, direct empirical evidence on the characteristics of firms going public is scarce and limited to non-Anglo-Saxon contexts. Our research combines the analysis of ex ante and ex post characteristics of Initial Public Offering (IPO) companies to cast more light on the determinants of the going public decision in the UK. Some of our findings are consistent with prior empirical studies in other contexts: IPO probability depends positively on firm size and stock price levels. Results also suggest that a firm's need to finance investments is not the main motive to go public, although this reason underlies the going public decision in a number of UK firms. Besides, contrary to the evidence shown by Pagano et al. (1998) for Italian IPOs, we find that UK firms do not go public to reduce debt since leverage is negatively related to the probability of going public. Finally, the relationship between profitability and the likelihood of an IPO for our whole IPO sample is negative and significant. Whether firms that go public have higher investment rates than other firms, as is the case of our survivor IPOs, the negative effect of profitability on the probability of going public may reflect the fact that these firms cannot yield sufficient internal funds to finance large investments. In fact, the relationship between profitability and the likelihood of an IPO becomes significantly positive for our acquired IPO group, where investment opportunities variables have no significant effect on the going public decision. This result is consistent with the portfolio rebalancing motive to go public.

**Key Words:** Initial Public Offerings, the Going Public Decision.

**JEL Classification:** G100, G300, G320.

## 1. Introduction

Numerous empirical studies have investigated the post-issue performance of Initial Public Offerings (IPOs), both in the short and in the long-run.<sup>1</sup> Furthermore, several theoretical papers have addressed the question of why firms choose to raise public equity. However, empirical tests of theoretical predictions are still scarce, mainly due to the lack of data on privately held firms necessary for a direct investigation of the choice between going public and remaining private. The available empirical evidence on the determinants of IPO decisions focuses largely on samples of Continental European countries (Pagano et al., 1998 for Italy; Fisher, 2000 and Boehmer and Ljungqvist, 2001 for Germany).<sup>2</sup> Capital markets in these countries are smaller and narrower than in countries with English legal origins (La Porta et al., 1997). Therefore, whether the prior evidence on the determinants of IPO decisions can be generalized to the Anglo-Saxon context is still an open question. This paper aims to cast some light on this issue by studying a large sample of UK private and IPO firms.

The determinants of IPO decisions can be inferred not only from firms' ex ante characteristics but also from the ex post consequences of such a decision (Pagano et al., 1998). We segment our IPO sample into three groups on the basis of their post-IPO evolution to one of the three basic states defined by Jain and Kini (1999): survivors, acquired firms or failed firms. We then use logistic analysis to test predictions derived from theoretical models of the IPO decision. Specifically, we compare characteristics for these groups of IPO firms with those of firms that decide to remain private.

Some of our results clearly confirm some well-established empirical regularities in other contexts. We find a positive relationship between firm size and the likelihood of an IPO, which is

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<sup>1</sup> Two widely studied phenomena within this research field are the underpricing of IPOs in the primary market (e.g. Ritter, 1984) and their subsequent long-run under performance in the secondary market (e.g. Ibbotson, 1975; Ritter, 1991; Loughran and Ritter, 1995).

<sup>2</sup> An exception is Helwege and Packer (2001), based on a small sample of US private firms for which accounting information is available. In particular, they compare the financial characteristics and ownership structures of 136 private non-financial firms with outstanding public bonds, with sets of firms that have publicly traded equity. They also identify 36 bond issuers attempting IPOs in their sample and compare them to non-IPO bond issuers.

consistent with the predictions derived from both the adverse selection theories and the portfolio rebalancing motive to go public. Also consistent with both theory and previous evidence, is our result that the probability of an IPO is positively related to stock price levels. As in Pagano et al. (1998), we favor the windows of opportunity hypothesis to explain this result since the industry market to book ratios diminish after the IPO.

On the other hand, we also get some results that are different from those found in other contexts. In this sense, although on average financing needs are not a major factor in IPO decisions in the UK, raising external funds to finance investments seems to underlie the going public decision for a number of firms in our sample. Our results also suggest that reduction of leverage is not a motivation for UK IPOs. Indeed, leverage is significantly negatively related to IPO probability except for post-IPO failures. Finally, the relationship between profitability and the probability of going public for our survivor and failed IPOs is negative and significant, reflecting the fact that these firms cannot generate sufficient internal funds to finance large investments. However, for the acquired IPO group the relationship becomes positive and significant when we use the ratio operating profit over total assets as proxy for profitability, supporting the prediction derived from the portfolio rebalancing motive to go public whereby the incentive to divest of initial owners increases with the profit made by the company. The differences observed in our results using two alternative measures for firm profitability, EBITDA over total assets and operating profit over total assets, are consistent with managers engaging in window dressing behavior at the IPO date, since the marginal effect of profitability on the going public decision using the first measure is much higher than using the second one, which includes more discretionary items.

The rest of the paper is organized as follows. The next section reviews the extant theories on the benefits and costs of the going public decision as well as the empirical predictions derived from them and the related empirical evidence found in the literature. Section three explains the research design of our empirical analysis. Section four describes our sample. Empirical results are reported in section five and section six concludes.

## **2. The Determinants of the Going Public Decision: Theory and Empirical Evidence**

The decision to go public is potentially affected by many different factors and it may not be possible to capture all of them in a single model. A number of theories focus on different

aspects of IPO decisions and suggest testable predictions on the relationship between certain ex ante characteristics of firms and the probability of an IPO and also on the consequences of this decision for financial and investment policies. In this section we review these predictions as well as the related empirical evidence found so far in the literature.

## **2.1. *Why firms go public?: The benefits of going public***

### *Financing of growth*

IPOs are relevant as a means of raising external funds to finance growth by investment-intensive firms that do not generate sufficient internal cash flows (Pagano and Röell, 1998). Various theories have highlighted the benefits of issuing public equity instead of increasing leverage or placing private equity to obtain external funding. For example, Diamond (1991) and Holmstrom and Tirole (1993) point out that raising external equity offers the opportunity to obtain low cost direct financing without the intervention of financial intermediaries such as banks or venture capitalists.

In the case of firms that go public to finance investments and growth, we would expect the probability of an IPO to be positively related to growth and investment opportunities and negatively related to firm profitability since low profitable firms may not be able to generate enough funds to finance large investments. However, empirical evidence on the ‘growth motive’ for public offerings is not always consistent with this prediction. While some indirect evidence suggests that firms go public in the US to finance expansion (Mikkelsen et al., 1997), direct investigation by Pagano et al. (1998) does not support this prediction in Italy. Similarly in Germany, Fischer’s (2000) results suggest that variables measuring firms’ financing needs are not an important factor in the decision to go public. Finally, Helwege and Packer (2001) do not find significant differences in the capital expenditures and sales growth levels between their group of US bond issuers attempting IPOs and those that remained private.

### *Portfolio rebalancing*

An alternative reason to go public pointed out in the literature is the owner’s desire to divest or diversify their wealth. Several theoretical papers highlight the importance of the diversification motive for going public (Pagano, 1993; Zingales, 1995; Stoughton and Zechner, 1998; and Chemmanur and Fulghieri, 1999). Also, some empirical evidence points to diversification as a central motive for firms to go public. For example, the findings of Rydqvist

and Hogh  lm (1995) suggest that Swedish firms went public during 1970-1991 to liquidate their owners' investment rather than to finance growth.

The owners of a closely-held firm tend to be over-invested (under-consuming), overexposed to equity (underexposed to debt) and overexposed to firm-specific risk (undiversified). The disutility associated to this situation is directly related to the size of the stake in the company, the stock price level, the firm profit and the firm-specific risk. Firstly, the greater the stake in the stock owned by the initial shareholders the greater will be their incentive to diversify and hence the diversification motive to go public is another reason for larger firms to be more likely to go public. Secondly, the relationship between the cost of capital of the investment and the stock price level of similar companies is direct since higher prices imply a higher risk of a future loss, via price decreases. Similarly, when the firm profit is high the risk of a future loss increases as high profitability levels tend to revert. Therefore, initial owners' benefits from diversifying their investment by going public are higher as the stock price level and firm profit increase, suggesting that the probability of going public should be positively related to both stock prices of similar companies and firm profitability. Finally, as pointed out by Pagano et al. (1998) and Fischer (2000), the diversification incentive to go public will be higher for firms belonging to riskier industries. Fischer (2000) considers that the level of intangible assets is a good proxy for risk and predicts a positive correlation between this variable and the likelihood of an IPO. Consistent with this prediction, he finds a positive and very significant relationship between the level of intangible assets and the probability of going public in Germany.

### *Liquidity*

Listing on a major exchange creates liquidity in the stock and makes share trading cheaper than informally searching for a counterpart (Booth and Chua, 1996; Bolton and Von Thadden, 1998). As liquidity of a company's shares is a function of its trade volume, only companies that exceed certain size may benefit from such liquidity gains. This creates another reason to predict that larger firms are more likely to attempt an IPO.

### *Overcoming borrowing constraints*

Highly leveraged firms may face constraint on raising additional debt financing because their creditors are aware of the increasing risk. Among the benefits of becoming publicly listed, Rajan (1992) highlights an increase in competitiveness among a firm's lenders, a decrease in the

cost of credit and a larger supply of external finance, all derived from an increase in dissemination of information to investors. According to this view, IPOs should be more frequent for firms with high leverage. In particular, as Myers (1977) suggests, highly leveraged firms with investment opportunities should be more likely to go public.

However, leverage is also argued to represent a potential deterrent to going public. In this sense, very high leverage can prevent investors from injecting equity in a company and may therefore be a deterrent for firms to go public. In this sense, contrary to their expectations, Pagano et al. (1998) find that leverage has a negative impact on the likelihood of an IPO, although this effect is not significant at conventional levels. Similarly, for the sample of German IPOs in stock exchange segments other than the *Neuer Markt*, Fischer (2000) finds that leverage increases even reduce the likelihood of going public. Finally, when comparing their sample of private bond issuers with a sample of public bond issuers, Helwege and Packer (2001) find that highly leveraged firms are far more likely to be private than public. Although this result suggests that the correlation between leverage and the probability of going public in the US is negative,<sup>3</sup> they observe similar levels of leverage in private bond issuers attempting an IPO and in those that did not, concluding that leverage is neither a deterrent nor an incentive to go public.

### *Windows of opportunity hypothesis*

Ritter (1991) was the first to suggest that firms may time their IPOs to exploit the fact that other firms in the same industry are overvalued. Rajan and Servaes (1997) modeled and tested this ‘windows of opportunity’ theory. Several empirical studies present evidence consistent with this hypothesis, which is typically referred to as the ‘hot issue markets anomaly’. For instance, Choe et al. (1993) find that already listed firms raise more equity in bull markets and Lerner (1994) shows that biotech firms raise equity after periods of unusually high returns of a biotech index.

Regarding the going public decision, a testable prediction derived from the windows of opportunity hypothesis is that the likelihood of going public should be positively related to the industry market to book ratio. However, as discussed above, a positive relationship between industry market to book ratio and the probability of going public may also reflect a high market

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<sup>3</sup> The findings of Busaba et al. (2001) also suggest that leverage has a negative effect on the probability of going public in the US. Specifically, they provide evidence that leverage is positively related to the probability of withdrawing IPOs during premarket.

valuation of the industry's future growth and investment opportunities. Furthermore, the 'portfolio rebalancing' motive to go public also suggests a positive relationship between stock price level and the going public activity.

In general, the empirical evidence provided so far is consistent with the prediction derived from the windows of opportunity hypothesis. Pagano et al. (1998) show that the industry market to book value is the main factor affecting listing probability in Italy. They find a significant positive association between the median industry market to book value and the probability of an IPO. The finding that both investment and profitability decrease after the IPO leads Pagano et al. to reject the growth opportunities explanation and to conclude that firms attempt to time the market. Helwege and Packer (2001) also find that firms in their sample that go, or plan to go, public belong to industries with higher valuations.

### *Getting publicity*

Recent theoretical work on IPOs emphasizes the benefits to customers of following a firm's stock price and the benefits to the firm of having many customers with information about its value. Thus, being listed is argued to be a means of publicity for the firm. For instance, Subramanyam and Titman's model (1999) includes the idea that consumers, suppliers and workers obtain costless information (or serendipitous information) when dealing with the firm, which is incorporated in the stock price and makes it an efficient source of firm valuation. Stoughton et al. (2001) consider that consumers learn about the product quality of the firm from the stock market and therefore a good firm can charge higher prices in the goods market. As argued by Helwege and Packer (2001), these benefits should be higher for firms with a large customer base. Therefore, there should be a higher propensity to go public in firms belonging to retail trade sectors. However, they do not find evidence that firms in the retail sector have a higher propensity to go public.

## **2.2. *Why firms stay private?: The costs of going public***

### *Adverse Selection theories*

In general, insiders can be assumed to know more than outsiders about the true value of a firm. This informational asymmetry may adversely affect the quality of firms that are offered for



sale (Leland and Pyle, 1977). In equilibrium, investors protect themselves by reducing the price they are willing to pay for IPO firms. Several theoretical studies focus on informational asymmetry costs to model different aspects of IPO decisions. For example, Rock (1986) and Welch (1989) relate these costs to the IPO under-pricing necessary to sell shares in equilibrium.<sup>4</sup> Chemmanur and Fulgheri (1999) consider that the choice between raising public or private equity is driven by the costs investors incur in evaluating a firm's prospects. They predict that information asymmetry could result in an IPO price lower than could be raised by selling private equity to a small group of venture capitalists.

Adverse selection models suggest that younger and smaller firms, which are more seriously affected by adverse selection costs because they have lower visibility and short track records, are less likely to go public.<sup>5</sup> Consistent with this prediction, Pagano et al. (1998) find that firm size is significantly and positively related to the probability of going public in Italy. Helwege and Packer (2001) also provide some evidence to support the predictions derived from the adverse selection theories in the US context. Firms that attempted to complete IPOs in their sample of private bond issuers had higher median sales, assets and employees than those that remained private. However, they also find evidence that younger firms are more likely to make IPOs.

As argued by Diamond (1991), one factor that may allow firms to overcome the adverse selection problem is profitability. High profitability may be seen as a signal of a firm's quality. According to this theory, high profitability should be positively related to the probability of going public.<sup>6</sup> However, there are other potential explanations for the finding of a positive relationship between profitability and the probability of going public: (1) according to the market-timing hypothesis put forward by Ritter (1991), firms might take advantage of temporary increases in profitability and go public, hoping that investors will perceive high profitability as permanent and overvalue their shares; (2) entrepreneurs may engage in earnings upwards manipulation at the time of the IPO (Degeorge and Zeckhauser, 1993). As shown by Stein

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<sup>4</sup> Beatty and Ritter (1986) provide evidence that larger offerings are less underpriced.

<sup>5</sup> The considerable costs linked to the decision to be listed also suggest that the probability of going public should be positively related to the company's size (Pagano et al., 1998).

<sup>6</sup> The relationship between profitability and the probability of going public can also be argued to be negative since profitable firms generate more internal funds and therefore need less external equity to finance their investments, reducing the likelihood of going public.

(1989), even in efficient capital markets, myopic behaviour such as ‘window-dressing’ may persist since it is a Nash equilibrium.

Pagano et al. (1998) find a positive and significant relationship between profitability and the likelihood of an IPO in their Italian sample. Additionally, they observe a permanent post-IPO reduction in profitability, and interpret their findings as further support for the market-timing hypothesis. Fischer (2000) shows a significant positive relationship between ROA and the probability of going public for German IPOs in stock market segments other than the *Neuer Markt*, concluding that this result could be seen as sustaining Ritter’s (1991) market-timing hypothesis, although other possible explanations cannot be ruled out. Finally, Helwege and Packer (2001) do not find differences in the profitability measures between US bond issuers attempting an IPO and those that did not reveal any desire to go public.

### *Loss of confidentiality*

Some theories suggest that the costs of revealing important information about technological developments and marketing plans to competitors in the IPO process could discourage firms from going public (Campbell, 1979; Yosha, 1995; Maksimovic and Pichler, 2001). Consequently, if the IPO process reveals proprietary information, R&D intensity should be negatively related to the likelihood of going public.

### *Explicit initial and subsequent costs of going public*

There are some administrative expenses linked to the IPO process, like underwriting and registration fees. Moreover, the fact of being publicly listed generates some extra expenses every year, like costs of elaborating and disseminating information about the company, stock exchange fees, auditing fees etc. Most of these costs do not depend on the firm size but are fixed and therefore create another reason to predict that smaller companies are less likely to go public (Yosha, 1995; Pagano and Röell, 1998).

### 3. Research Design

Pagano et al. (1998) suggest that the determinants of the going public decision can be inferred from both the ex ante characteristics of the IPO firms and the ex post consequences of this decision. Rather than being redundant, ex post information complements the evidence based on the ex ante characteristics of IPO firms because in some cases, a firm's underlying motives to go public can only be inferred from ex post data. For instance, it is difficult to induce from ex ante information whether the IPO is used as a means to sell the company (Zingales, 1995 and Mello and Parsons, 1998). However, if a firm is acquired relatively soon after an IPO, its sale was probably the primary motivation underlying the decision to go public. Similarly, provided that they have superior information about their firms' prospects, entrepreneurs of IPO firms that fail outright within a short period after the IPO were probably able to anticipate this circumstance before the IPO and decided to go public to divest. We combine these two methods of inferring the determinants of the going public decision in our research.

As pointed out by Jain and Kini (1999), IPO firms can evolve into three basic post-issue states: they can survive as independent firms; an existing company can acquire them; or they can fail outright. We study the factors affecting the IPO decision of these three groups separately. To do so, we follow each firm five years after the IPO and we segment our sample on the basis of firm post-issue state into survivors, acquired firms and failed firms. Following Jain and Kini (1999), the acquired group comprises IPOs that are subsequently acquired by an existing public or private company or taken private. Failure is defined as delisting from the trading exchange for negative reasons. The rest of the firms are considered as survivors. We then carry out logistic regression analysis to compare the ex ante characteristics of both the whole IPO sample and each of our three IPO groups with those of a private firms sample.

Considering the whole IPO sample, the logistic regression estimated is specified as follows:

$$IPO_{it} = \alpha_0 + \alpha_1 SIZE_{it} + \alpha_2 CAPEX_{it} + \alpha_3 GROWTH_{it} + \alpha_4 LEVERAGE_{it} + \alpha_5 PROFIT_{it} + \alpha_6 MEDIANMTB_{it} + \alpha_7 INTANG_{it} + \alpha_8 RETAIL_{it} + \alpha_9 YR2 + \dots + \alpha_{9+N-1} YRN \quad [1]$$

where  $IPO_{it}$  is a binary variable that equals one if firm  $i$  went public in year  $t$  and zero if it remained private. At any time  $t$  the sample consists of all potential IPO firms, including those

firms in the IPO sample until the year they go public plus firms from the private sample. Firms are dropped from the sample after they go public.

When we separate IPO firms into survivors, acquired firms and failed firms our model becomes in a multinomial logit as shown in equation [2]:

$$IPO2_{it} = \alpha_{0,j} + \alpha_{1,j}SIZE_{it} + \alpha_{2,j}CAPEX_{it} + \alpha_{3,j}GROWTH_{it} + \alpha_{4,j}LEVERAGE_{it} + \alpha_{5,j}PROFIT_{it} + \alpha_{6,j}MEDIANTB_{it} + \alpha_{7,j}INTANG_{it} + \alpha_{8,j}RETAIL_{it} + \alpha_{9,j}YR2 + \dots + \alpha_{9+N-1,j}YRN \quad [2]$$

where  $IPO2_{it}$  is a categorical variable with four possible responses: ‘S’ if firm  $i$  went public in year  $t$  and is classified within the survivor IPO group; ‘A’ if firm  $i$  went public in year  $t$  and is classified within the acquired IPO group; ‘F’ if firm  $i$  went public in year  $t$  and is classified within the failed IPO group; and ‘P’ if firm  $i$  stayed private in year  $t$ . This multinomial logit model is estimated using ‘P’ as the reference category. In this way, we obtain three estimated coefficients for every independent variable, one for each IPO group ( $j = S, A, F$ ). These coefficients represent the effect of the respective variable on the probability of going public and belonging to the correspondent IPO group relative to the probability of remaining private.

### *Variables definition*

The models include several factors as independent variables that theory predicts to be related to the probability of going public. Definitions of these factors are given below:<sup>7</sup>

*SIZE (+)*: We use two alternative variables to proxy for firm’s size, logarithm of total assets (*LOGTA*) and logarithm of sales (*LOGSALES*). According to several theories discussed in section 1 and prior empirical evidence, the expected signs of these variables are positive.

*CAPEX (+) and GROWTH (+)*: As proxy for investment opportunities we use capital expenditures over total fixed assets (*CAPEX*). To measure the firm’s growth we use the annual rate of growth in sales computed as sales in year  $t$  minus sales in year  $t-1$  divided by sales in year  $t-1$  (*GROWTH*). If firms go public to finance investments and growth we would expect these two variables to be positively related to the probability of going public. These underlying reasons for going public are more likely to be true for firms that survive after the IPO. Thus, we should

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<sup>7</sup> Due to lack of information, some of the predictions derived from the various theories concerning the going public decision are not tested.

going public are more likely to be true for firms that survive after the IPO. Thus, we should expect a greater impact of these variables on the probability of going public for the group of survivors than for those IPO firms that are subsequently acquired or fail.

*LEVERAGE (?)*: We measure leverage as total debt over total assets (*LEVERAGE*). As discussed in the previous section, predictions are ambiguous concerning the sign of the relationship between leverage and the probability of an IPO. High leveraged firms may be constrained from getting additional debt and go public to finance growth.

*PROFIT (?)*: Profitability is measured as return on assets, which is computed in two alternative ways: EBITDA over total assets (*EBITDA/TA*), and operating profits over total assets (*OPPR/TA*). Predictions on the relationship between profitability and the probability of going public are also ambiguous. On the one hand, profitable firms can get internal funds to finance investments and would prefer not to go public to avoid agency problems derived from the ownership dispersion. On the other hand, profitability may help firms to overcome adverse selection problems. Then profitable firms would be more likely to go public. The portfolio rebalancing motive to go public also suggests a positive relationship between the likelihood of an IPO and firm profitability.

*INDUSTRY MARKET TO BOOK RATIO (+)*: As discussed above, the existence of growth opportunities in the industry, the timing of IPOs to exploit overvaluation of other industry firms in specific periods and the portfolio rebalancing motive to go public suggest the existence of a positive relationship between the industry market to book value and the probability of going public. We measure this factor as the median value of the market to book ratio (market capitalization at the end of the year over book value of equity) at which firms in the same two-digit SIC industry trade each year (*MEDIANMTB*).

*INTANGIBLES (+)*: The level of intangible assets over total assets is considered a proxy for company risk. According to Fischer (2000), if diversification is an important motive for firms to go public, this variable should be positively related to the probability of going public. Our model includes a dummy variable (*INTANG*) that equals one if the firm has intangible assets and zero otherwise. Using the level of intangibles divided by total fixed assets as a continuous variable we obtain similar results to those subsequently reported.

*INDUSTRY (+)*: Following Helwege and Packer (2001), we also include in the model an indicator variable (RETAIL) that equals one if the firm belongs to any of the retail trade sectors, which are assumed to have a larger customer base,<sup>8</sup> and zero otherwise.

Our model also includes N-1 calendar year dummies (YR2...YRN) with N denoting the number of years covered in the sample period.<sup>9</sup>

#### **4. Sample and Bivariate Analysis**

##### *IPO Sample*

For the purposes of this study, IPOs are defined as all new listings on the London Stock Exchange, both in the Main market and in the Alternative Investment Market (AIM).<sup>10</sup> Our initial sample of firm commitment IPOs was collected from the London Stock Price Database (LSPD) and from the London Stock Exchange web page.

The LSPD contains information about the reason why securities were first quoted in SEDOL or included in the database. We considered all non-financial firms for which the ‘type of birth’ was identified as an IPO.<sup>11</sup> Financials are excluded because of intrinsic differences in the nature of their operations and accounting fundamentals. We also excluded ‘Introductions’ - listings that are not accompanied by an issue of new securities. The accounting data necessary to carry out the logistic analysis was collected from the Thomson Financial Database. Therefore, to include a firm in our sample we required it also to be covered in this database. Initially, 812 new

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<sup>8</sup> These are industries from division G of the SIC code classification, which includes two digit SIC codes from 52 to 59.

<sup>9</sup> Results do not materially change when we also include industry dummies.

<sup>10</sup> The Alternative Investment Market was launched in 1995 as the London Stock Exchange’s global market for smaller, growing firms.

<sup>11</sup> The most popular method of going public among the sample firms are ‘Placings’ - IPOs that are not registered to be offered to the public at large. More than 90% of the firms in the sample used this method or combined it with some other method of bringing securities to listing.

listings that met our requirements were identified in the LSPD during the period 1990-2000.<sup>12</sup> On checking the lists of new issuers provided by the London Stock Exchange web page<sup>13</sup> we identified 28 additional non-financial firms covered by Thomson Financial that went public between 1990 and 2000. Pagano et al. (1998) provide evidence that the motives for a subsidiary of a public company to become listed substantially differ from those of an independent IPO. As the number of spin-offs from another company identified in our sample is too small (10 IPOs) to analyse them separately, as Pagano et al. (1998) do, these firms were excluded from the sample.<sup>14</sup> Thus, our final IPO sample consists of 830 firms, 525 of which went public in the Main market and 305 in the AIM.

Figure 1 plots the time distribution of our IPO sample in both the Main market and the AIM. The largest number of IPOs took place in 1996 (146 IPOs) and again in 2000 (180 IPOs). This clustering of IPOs in specific time periods is consistent with the IPO waves documented previously in other countries (see for example Rydqvist and Hoglholm, 1995 for the Swedish stock market or Pagano et al., 1998 for the Italian case). The first IPO wave is observed in both the Main market (79 IPOs) and the AIM (67 IPOs) while the second one is concentrated in the AIM, with 121 IPOs versus 59 in the Main market.

As in Jain and Kini (1999), we followed each firm five years after the IPO and classify it based on its post-issue state into three alternative categories: survivors, acquired firms and failed firms.<sup>15</sup> To carry out this classification, we checked the information provided by the LSPD database about the ‘type of death’ and the ‘date of death’ of our IPO firms. This allowed us to identify the IPOs that by the end of 2001 could be classified as acquired or failed firms. For the rest of the sample, we verified their status in the Thomson Financial database by July 2003. Those firms that were active at that date were considered survivors. For the firms that did not remain active in Thomson Analytics as at July 2003, we identified whether they had been

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<sup>12</sup> We do not consider IPOs prior to 1990 because accounting data for our set of private firms is only available after that year. Furthermore, we do not consider IPO firms after 2000 since a reasonable period is needed following the IPO to observe the evolution of the sample firms towards one of the post-issue states considered in the analysis (survivors, acquired firms or failed firms).

<sup>13</sup> The London Stock Exchange has provided this information for the Main market since 1999 and for the Alternative Investment Market since it was launched in 1995.

<sup>14</sup> Results including these companies do not differ from those disclosed in the paper.

<sup>15</sup> The average period for firms in the sample to be acquired after the IPO is 5,01 years. The same average period takes a firm to fail outright after the IPO in our sample. This result justifies our choice of a 5 years post IPO period to follow firms and classify them into survivors, acquired firms and failed firms.

acquired or had failed using the Nexis Lexis database. This way of classifying firms into survivors, acquired and failed firms introduces some bias in the analysis since those firms that went public after July 1998 where not followed five complete years after going public but a shorter period. The last IPO included in our sample took place in December 2000, so the minimum post IPO period a firm has been followed to be classified as survivor, acquired or failed firm is three and half years. We also carried out the analysis following IPO firms three years after going public and results obtained from this analysis do not materially differ from those presented below.

**Figure 1**

Evolution of the IPO Market in the UK during 1990-2000

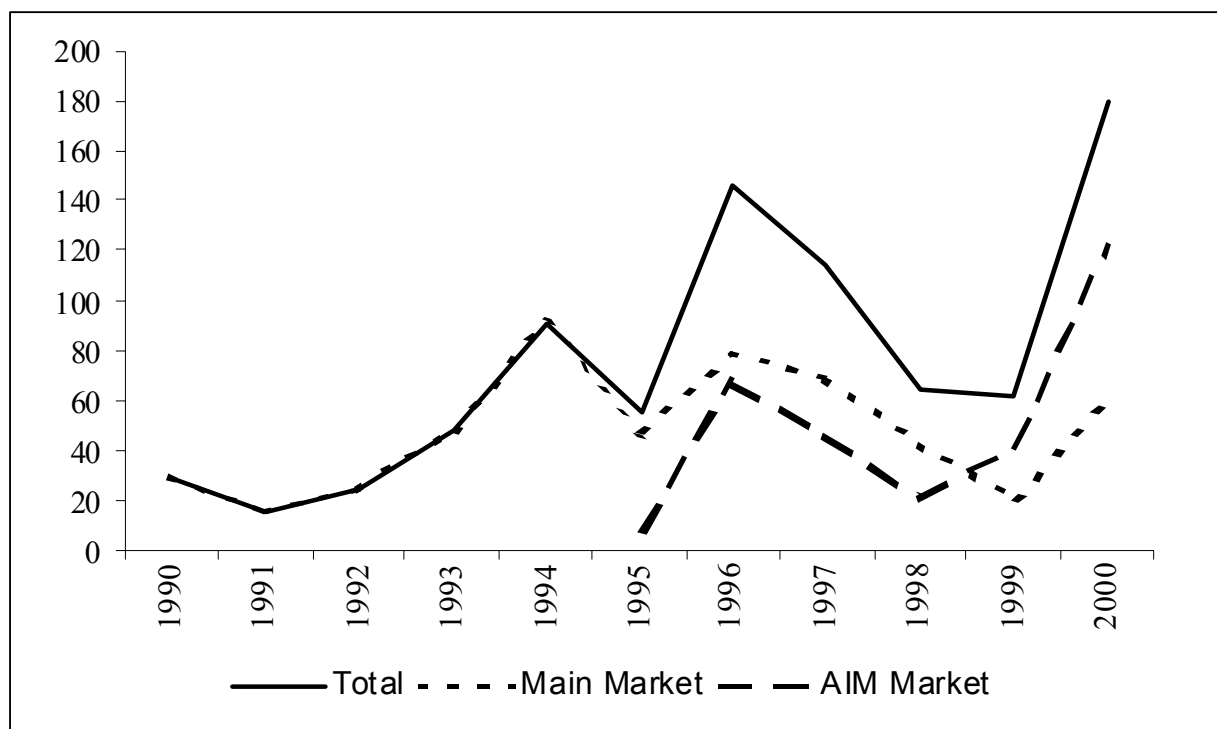


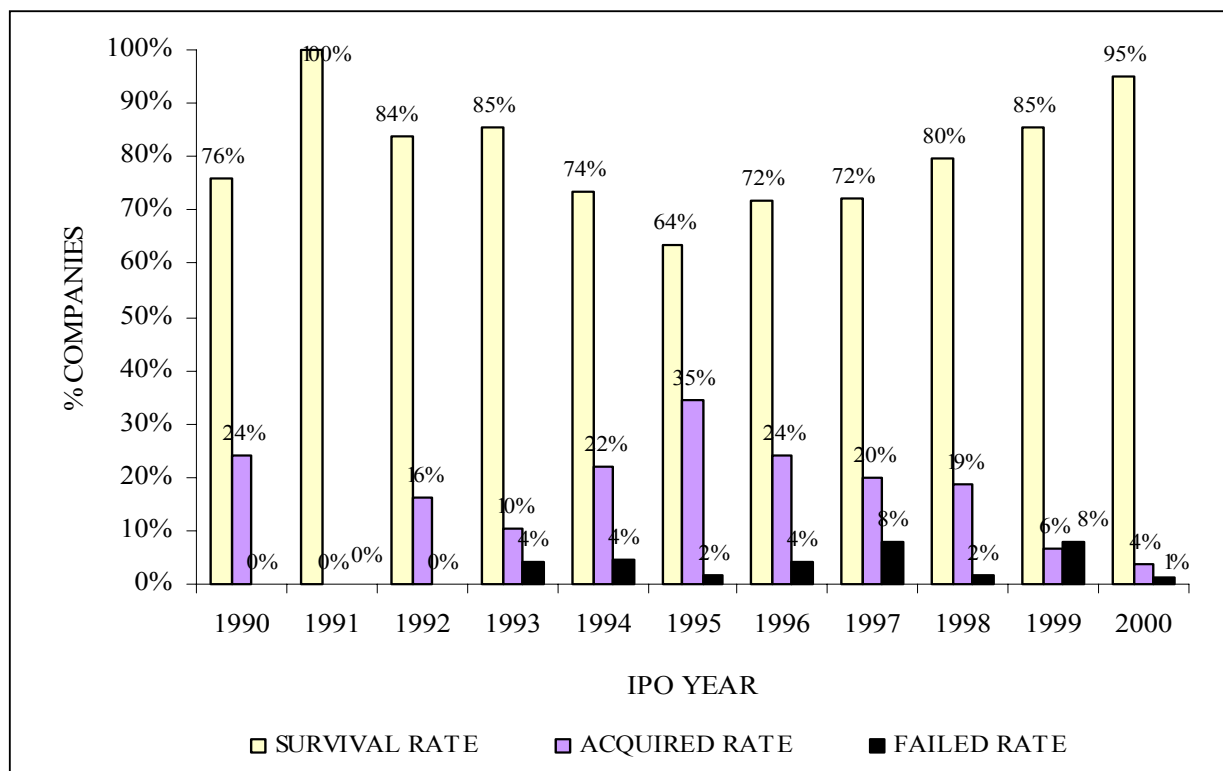
Figure 2 provides the distribution of our IPO firms into survivors, acquired firms and failed firms by IPO year. From the 830 IPOs, 664 (80%) had survived, 136 (16%) had been acquired and 30 (4%) had failed after five years of becoming listed. The survival rate in our sample is higher than the 69% reported in Jain and Kini (1999) for a sample of 877 US IPOs. The bias of the survival rate upwards in the last two years of the period studied, when IPOs are



not followed during a whole five years period, may be one reason for this difference. Our percentage of acquired firms (16%) is comparable to the acquired rate observed in Jain and Kini (1999) (17%). Finally, our rate of failure (4%) is lower than that one observed in Jain and Kini (14%). The highest failure rates are observed for the IPOs that took place in 1997 and 1999, with 8% of the companies that went public during those years failing outright within the following five years. On the contrary, all companies that went public in 1991 had survived five years later. Finally, 1995 presents the highest proportion of firms that were acquired after going public, with more than one third (35%) of the IPOs taking place that year having been acquired within the following five years.

**Figure 2**

*Post Issue Status of the IPO Sample by Year*



### *Private Firms Sample*

Direct investigation into the choice between going public and remaining private is possible if information on privately held firms is available. Our sample of private firms was

collected from the FAME financial database. This database is made up of the complete Companies House Index of both live and dissolved UK and Irish firms. It includes up to 10 years of financial historical data for each company.<sup>16</sup>

Initially, we identified 96,369 non-financial private firms in FAME. However, since previous evidence suggests that non-independent firms are less likely to raise public equity (Boehmer and Ljungqvist, 2001)<sup>17</sup> and we do not have information to test for differences in the ownership structure of our IPO and private firms, only private independent firms were selected. The FAME database includes an ‘Independence Indicator’ to signify the degree of independence of a company with regard to its shareholders. The independence indicator is noted as A, B, C and U: indicator A denotes firms with no recorded shareholder with an ownership over 24.99% either direct or total; indicator B denotes any company with no recorded shareholder with an ownership percentage over 49.99% but having one or more shareholders with an ownership percentage over 24.99%; indicator C denotes any company that has a recorded shareholder with a direct or total ownership over 49.99%; and indicator U classifies firms with an unknown degree of independence. We only considered firms with ‘A’ as an independence indicator. This yielded a final sample of 9,968 private independent firms.

Figure 3 shows the industry classification of our IPO and private samples. More than 65% of the IPOs are concentrated in the Services (37.8%) and the Manufacturing (27.2%) industries. There are similarities to the IPO sample in that the majority of firms belong to Services (25.4%) and Manufacturing (23.9%) industries in the private firms sample. Agriculture, Forestry and Fishing firms as well as Mining and Public Administration are the industries with the fewest firms in both samples. Despite the similarities observed, the industry distribution of both samples is different. In fact, using a proportion test, we reject the null of equal percentage of firms in the two samples for all but two sectors.

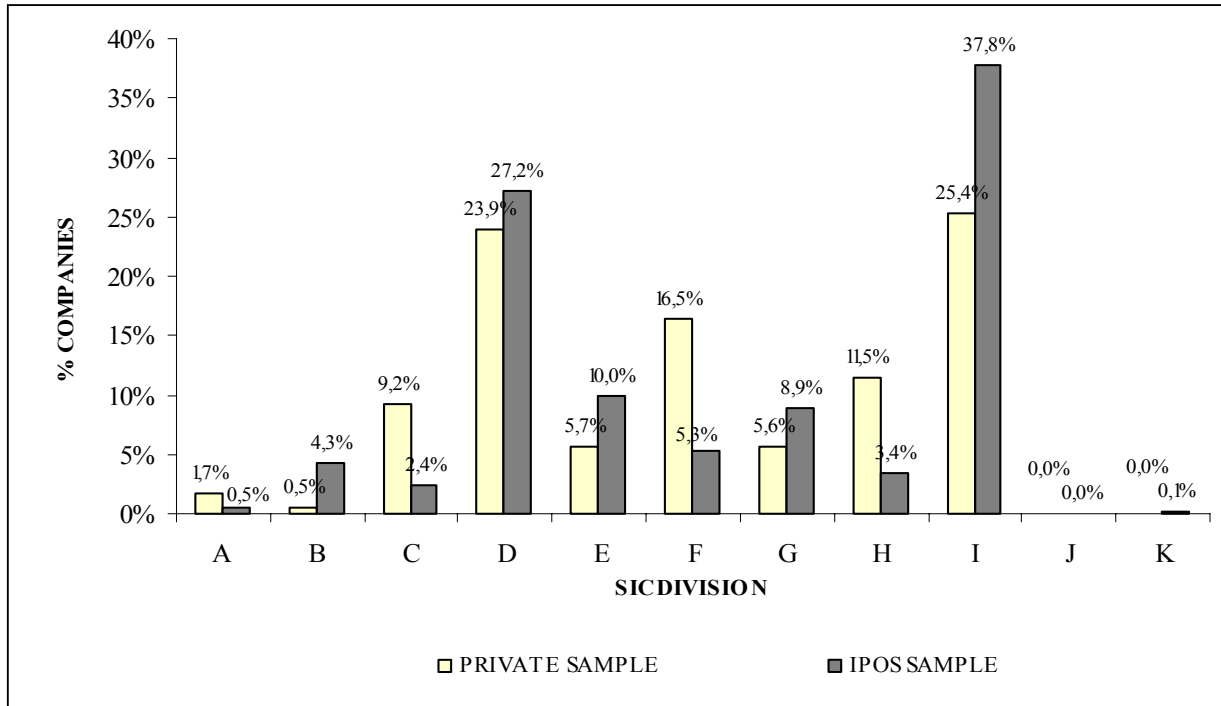
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<sup>16</sup> Specifically, we use section ‘b’ of the FAME database, which contains firms meeting the following criteria: turnover > £ 500,000 and current assets / liabilities > £ 200,000.

<sup>17</sup> In their study of willingness to raise outside equity amongst private German firms, these authors find that firms with significant minority block holdings, usually financial institutions, are much more likely to raise private than public equity.

**Figure 3**

*IPO and Private Samples Distribution by Industry*



*Bivariate Analysis*

Summary statistics of the analysis variables for the samples of IPO and private firms are reported in Table 4. The first two columns show the median values of the variables for all independent IPOs and private firms.<sup>18</sup> For the variable *INTANG* we show the percentage of firms reporting intangible assets. The next three columns present the statistics separately for each of the three IPO groups identified on the basis of the post-issue evolution of IPO companies (survivors, acquired IPOs and failed IPOs). P-values of the Wilcoxon tests for the medians comparison between private and IPO companies appear below each statistic of the corresponding IPO sample. To compare percentages we use a proportion test. Finally, the last two columns of Table 4 include p-values of the Wilcoxon tests that compare the median values of the variables between survivor IPOs and the other two groups of IPO firms.

<sup>18</sup> Using means instead of medians leads us to similar conclusions. However, some discrepancies attributable to skewness in financial ratios are observed.

Table 4 reveals substantial differences between firms that choose to raise public equity and those that decide to remain private. In general, as shown in the second column of Table 4, IPO firms are larger both in terms of total assets and sales, have higher growth and investment opportunities, are more profitable, less leveraged, have higher levels of intangible assets and belong to industries with higher market to book values. However, these results may lead to invalid conclusions about the typical IPO company in the UK since important differences are also observed after the IPO firms are segmented on the basis of their post-issue state into survivors, acquired firms and failed firms.

Interestingly, at the IPO date, IPO firms that survive as independent entities after going public present a similar pattern to IPOs that subsequently fail outright in terms of size, investment and growth opportunities, level of intangible assets and industry market to book ratios. For these variables, observed differences between survivor and failed IPOs are not significant (see last column of Table 4). But results also reveal different economic profiles for these two groups of IPO firms, mainly as regards profitability and leverage. Survivor IPOs present significantly lower leverage and higher profitability than the group of failed IPOs. In fact, as shown in column five of Table 4, leverage levels for failed IPOs and private companies are not significantly different and our second proxy for profitability (*OPPR/TA*) is significantly lower for failed IPOs than for private companies at the IPO date.

IPO firms that are subsequently acquired are also larger, have higher growth rates and capital expenditure levels, are less leveraged and present median industry market to book ratios higher than private firms. However, this group of IPOs presents significant differences from the survivor IPO group in all the variables, except for *GROWTH* and *CAPEX*. Acquired IPOs are larger, more profitable and leveraged, have a smaller proportion of intangible assets and belong to industries with lower market to book ratios than survivor IPOs.

**Table 4. Bivariate Analysis: Comparison at the IPO date between IPOs and Private Firms and between Survivor, Acquired and Failed IPOs**

VARIABLE <sup>b</sup>	PRIVATE	TOTAL IPOs	SURVIVOR IPOs	ACQUIRED IPOs	FAILED IPOs	SURVIVOR vs ACQUIRED	SURVIVOR vs FAILED
LOGTA	8.22	9.59	9.55	9.92	9.45		
<i>Wilcoxon test p-value</i>		< 0.0001	<0.0001	<0.0001	<0.0001	0.003	0.925
LOGSALES	8.79	9.49	9.33	9.95	9.36		
<i>Wilcoxon test p-value</i>		< 0.0001	<0.0001	<0.0001	0.171	0.0007	0.707
CAPEX	0.00	0.21	0.23	0.17	0.20		
<i>Wilcoxon test p-value</i>		< 0.0001	<0.0001	<0.0001	0.0002	0.128	0.596
GROWTH	0.07	0.21	0.21	0.18	0.35		
<i>Wilcoxon test p-value</i>		< 0.0001	<0.0001	<0.0001	0.002	0.458	0.461
EBITDA/TA	0.10	0.11	0.09	0.13	0.09		
<i>Wilcoxon test p-value</i>		0.001	<0.0001	0.142	0.437	0.027	0.862
OPPR/TA	0.05	0.08	0.08	0.09	0.00		
<i>Wilcoxon test p-value</i>		0.002	<0.066	<0.0001	0.033	0.0075	0.063
LEVERAGE	0.23	0.09	0.07	0.12	0.20		
<i>Wilcoxon test p-value</i>		< 0.0001	<0.0001	<0.0001	0.108	0.004	0.037
INTANG = 1	19%	33%	35%	24%	37%		
<i>Proportion test p-value</i>		< 0.0001	<0.0001	0.101	0.014	0.022	0.799
INDUSTRYMTB	1.79	2.59	2.69	2.38	2.49		
<i>Wilcoxon test p-value</i>		< 0.0001	<0.0001	<0.0001	<0.0001	0.038	0.765

Notes:

<sup>a</sup> Values provided for all the variables are medians except for INTANG that shows the percentage of observations in each sample that report intangible assets. P-values of the Wilcoxon tests for the comparison of medians appear below. To compare percentages we use proportion tests.

<sup>b</sup> Variables definition: LOGTA is the logarithm of total assets; LOGSALES is the logarithm of sales; CAPEX is capital expenditures divided by total fixed assets; GROWTH is the annual growth rate in sales; EBITDA/TA is EBITDA (earnings before interests, tax, depreciation and amortization) divided by total assets; OPPR/TA is operating profits divided by total assets; LEVERAGE is book value of total debt divided by total assets; INTANG = 1 is the percentage of sample firms reporting intangible assets; INDUSTRYMTB is the median value of the market to book ratio (market capitalization at the end of the year divided by book value of equity) for all public firms in the same two-digit SIC code industry.

## 5. Logistic Analysis Results

Tables 5 and 6 report the maximum likelihood estimates of the logistic regressions performed considering respectively the whole IPO sample and the three separate IPO groups. We use four different model specifications that combine our alternative measures for firm size and profitability. Models 1 and 3 use logarithm of total assets (*LOGTA*) and models 2 and 4 include logarithm of sales (*LOGSALES*). Models 1 and 2 include EBITDA over total assets (*EBITDA/TA*) and models 3 and 4 use operating profit over total assets (*OPPR/TA*). We report coefficient estimates together with adjusted odds ratios. For the continuous variables this measure represents the increase in the odds (i.e. the probability of going public over the probability of remaining private) when the corresponding independent variable increases by one standard deviation. For the two indicator variables (*INTANG* and *RETAIL*) the adjusted odds ratios represent the increase in the odds when the variable varies from 0 to 1.

Unsurprisingly, size is one of the main factors affecting the probability of an IPO in the UK, consistent with both the theory and prior empirical evidence found in other countries (Pagano et al., 1998; Helwege and Packer, 2001). Considering the whole sample, a one standard deviation increase in the log of total assets raises the odds by 2.481 in model 1 and by 2.306 in model 3. The marginal effect diminishes when using the log of sales as proxy for firm size (models 2 and 4), and is insignificant for the failed IPO group. This finding is consistent across all four model specifications, for the three IPO samples -survivors, acquired, and failed-, and using both the log of total assets and the log of sales to measure firm size, although using log of sales the marginal effect is lower and even becomes not significant for the failed IPO group in model 2. Alternative explanations for a positive relationship between size and the IPO decision have been discussed in section two: larger companies face lower adverse selection costs because they have longer track records and are more visible; the portfolio rebalancing motive to go public also suggests a positive relationship between size and the likelihood of an IPO since the larger the stake in the stock the greater would be the initial owners' disutility and their incentives to divest would be also greater; finally, as pointed out by Pagano et al (1998), the initial costs associated to the process of going public (underwriting fees, registration fees...) as well as the periodic expenses derived from the fact of being publicly listed (stock exchange fees; auditing fees; costs of elaborating and disseminating accounting and financial information about the firm...) are another reason for smaller companies not to go public since many of these expenses do not depend on firm size and therefore weigh relatively more for small firms.

In contrast to findings for the bivariate analysis shown in Table 4, where we observe that IPO firms have significantly higher growth rates than private companies, *GROWTH* is not significant in any of the logistic regressions presented in Tables 5 and 6. Nevertheless, we still observe differences in the effect of growth on the decision to go public between the three IPO groups. As expected, *GROWTH* has a slightly stronger effect in the survivor IPOs than in the other two groups, and also in the acquired IPOs than in the failed group, where this variable actually has a negative sign. On the other hand, our proxy for firm investment opportunities (*CAPEX*) has a positive effect on the probability of going public. Considering the whole IPO sample (Table 5), this effect is significant at conventional levels only in models 3 and 4. Interestingly, when we segment the sample into the three IPO groups (Table 6), *CAPEX* is significant, again in models 3 and 4, only for survivor IPOs. For the other two IPO samples, this variable is not significant at conventional levels in any model specification, becoming even negative in some cases. Overall, these findings suggest that, although its marginal effect is low compared to other factors, obtaining external funds to finance investments and growth is an underlying reason for IPOs in the UK, but not all.

Industry market to book ratio is positively related to the probability of going public. For the whole sample (Table 5), a one standard deviation increase in the median industry market to book ratio increases the odds by between 1.606 and 1.694, depending on the specification used. In the multinomial logistic model (Table 6) *MEDIANMTB* has positive sign for the three IPO groups and is statistically significant at conventional levels except for the failed IPO group. Our results are consistent with the findings of Pagano et al. (1998) and Helwege and Packer (2001) for Italy and US bond issuers respectively. As pointed out in section two, the positive effect of the industry market to book value on the probability of going public has several alternative explanations. Firstly, it may reflect a high market valuation of the industry's growth and investment opportunities. Secondly, it is also consistent with the windows of opportunity hypothesis under which firms go public by taking advantage of the market's overvaluation of firms in their industry. Finally, the industry market to book ratio measures the stock price level and therefore the portfolio rebalancing reason to go public is also consistent with the positive relationship found between *MEDIANMTB* and the probability of going public. Sensitivity analysis, not presented in the paper for the sake of brevity, reveals that industry market to book ratios decrease considerably after the IPO for the three IPO groups, providing evidence in favor of the windows of opportunity hypothesis.

Leverage is negatively related to the probability of an IPO in our sample. The coefficient of *LEVERAGE* is always negative and very significant, except for the failed IPO group in models

3 and 4. This result is similar to Fischer's (2000) finding for firms that went public in Germany in market segments other than the *Neuer Markt*. In all the model specifications, the effect of leverage on the probability of going public is more negative for the survivor IPO group than for the other two IPO samples. Therefore, contrary to Pagano et al. (1998), we cannot conclude that UK firms go public to reduce leverage. In fact, leverage seems to be a deterrent to going public.

As regards profitability, in principle our findings for the UK differ from those for Italy and Germany in Pagano et al. (1998) and Fischer (2000) respectively. For the whole sample (Table 5), the coefficients of our two profitability measures are negative and significant, at least at the 5% level, although the marginal effect considerably diminishes when profitability is measured as *OPPR/TA*. In view of these findings, and contrary to the bivariate results presented in Table 4, we would conclude that profitability is negatively related to the decision to go public in the UK. However, differences observed when we consider our three IPO samples separately are worthy of further discussion.

As for the whole sample, both *EBITDA/TA* and *OPPR/TA* have negative and significant coefficients in the survivor and failed IPO samples, although again the marginal effect of *OPPR/TA* is much lower.<sup>19</sup> In contrast, for the acquired IPO group the coefficient of *EBITDA/TA* remains negative and significant but *OPPR/TA* becomes positively and significantly related to the probability of an IPO. The positive relationship between profitability and the probability of going public for the acquired IPO group is consistent with the portfolio rebalancing motive to go public: the insiders of a profitable firm will have a strong incentive to divest entirely, first stage through the IPO and second stage through the takeover, as the value of their investment, and hence the disutility from being overinvested in their own firm, increases with the money made by the firm. Therefore, the results suggest that these group of firms were actually taken public by initial owners to divest. Finally, the observed differences in our results for the two alternative profitability measures are worthy to be highlighted. These differences are consistent with the window-dressing explanation, whereby entrepreneurs may engage in earnings upwards

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<sup>19</sup> Our results for the survivor and failed IPOs groups in the UK are consistent with the evidence found in the US context by Helwege and Packer (2001). Although they do not directly investigate the determinants of the going public decision, these authors find that US private firms are significantly more profitable than the typical Compustat public firm.



manipulation at the IPO date (Degeorge and Zeckhauser, 1993), since *OPPR/TA* includes more discretionary items than *EBITDA/TA*.<sup>20</sup>

As in the German IPOs analyzed in Fischer (2000), the level of intangibles is positively and significantly related to the probability of going public in our UK sample. The relationship between our indicator variable *INTANG* and the probability of an IPO only holds for the survivor IPO sample. This result, together with the negative signs of leverage and profitability and the positive sign of *CAPEX* for the survivor IPO group, suggests that our sample period includes many risky companies facing borrowing constraints that were not able to generate sufficient internal funds and went public as their only way of getting funds to finance their investments. At this point, further analysis is required to investigate whether these results are driven by the wave of .com companies that were taken public during the late 90s.

Finally, consistent with predictions derived from recent theories that the benefits of going public should be higher for those firms with larger customer bases, our indicator variable representing retail sectors (*RETAIL*) is positively and significantly related to the probability of going public. The odds increase by between 1.533 (in model 4) and 1.892 (in model 1) when a firm belongs to one of the retail trade industries. Again, this result only holds for the survivor and the failed IPO samples, and is more significant in the survivor group.

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<sup>20</sup> As shown by Stein (1989), even in efficient capital markets, myopic behaviour such as ‘window- dressing’ may persist since it is a Nash equilibrium.

**Table 5. Logistic Regression Analysis for the Whole IPO Sample**

VARIABLE	Model 1		Model 2		Model 3		Model 4	
	$\alpha$	<i>Odds<sup>1</sup></i>	$\alpha$	<i>Odds<sup>1</sup></i>	$\alpha$	<i>Odds<sup>1</sup></i>	$\alpha$	<i>Odds<sup>1</sup></i>
<i>INTERCEPT</i>	-10.80***	-	-6.33***	-	-10.10***	-	-6.27***	-
<i>LOGTA</i>	0.743***	(2,481)	-	-	0.669***	(2.306)	-	-
<i>LOGSALES</i>	-	-	0.263***	(1.446)	-	-	0.267***	(1.508)
<i>CAPEX</i>	0.0009	(1.008)	0.0015	(1.014)	0.0026*	(1.031)	0.0030*	(1.035)
<i>GROWTH</i>	0.0012	(1.029)	0.0011	(1.027)	0.0009	(1.023)	0.0008	(1.021)
<i>LEVERAGE</i>	-2.505***	(0.153)	-2.437***	(0.161)	-2.600***	(0.140)	-2.548***	(0.145)
<i>EBITDA/TA</i>	-1.996***	(0.718)	-1.679***	(0.757)	-	-	-	-
<i>OPPR/TA</i>	-	-	-	-	-0.200***	(0.946)	-0.125**	(0.966)
<i>MEDIANMTB</i>	0.468***	(1.658)	0.439***	(1.606)	0.486***	(1.694)	0.447***	(1.624)
<i>INTANG</i>	0.208***	(1.517)	0.285***	(1.768)	0.193***	(1.471)	0.246***	(1.636)
<i>RETAIL</i>	0.319***	(1.892)	0.220**	(1.551)	0.282***	(1.758)	0.214***	(1.533)
IPO = 1	450		449		603		602	
IPO = 0	37,497		37,489		39,636		39,619	
% Concordant	84.3		77.4		83.6		76.9	
Nagelkerke R <sup>2</sup>	20.43%		12.09%		18.24%		11%	

Notes:

<sup>1</sup> Odds ratios disclosed represent the increase in the odds (i.e. the probability of going public over the probability of remaining private) when the correspondent independent variable increases by one time its standard deviation, except for the dummy variables *INTANG* and *RETAIL* where they represent the increase in the odds when the variable changes from 0 to 1.

All the models are estimated including calendar year dummy variables, for which coefficients are not reported.

\* $p < 0.1$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

**Table 6. Multinomial Logistic Analysis**

VARIABLE	Model 1						Model 2					
	SURV vs PRIV		ACQ vs PRIV		FAIL vs PRIV		SURV vs PRIV		ACQ vs PRIV		FAIL vs PRIV	
	$\alpha$	<i>Odds<sup>1</sup></i>	$\alpha$	<i>Odds<sup>1</sup></i>	$\alpha$	<i>Odds<sup>1</sup></i>	$\alpha$	<i>Odds<sup>1</sup></i>	$\alpha$	<i>Odds<sup>1</sup></i>	$\alpha$	<i>Odds<sup>1</sup></i>
<i>INTERCEPT</i>	-8.03***	-	-10.86***	-	-20.35	-	-2.23***	-	-7.22***	-	-16.14	-
<i>LOGTA</i>	0.70***	(2.367)	0.91***	(3.034)	0.70***	(2.348)	-	-	-	-	-	-
<i>LOGSALES</i>	-	-	-	-	-	-	0.19***	(1.309)	0.57***	(2.235)	0.27	(1.463)
<i>CAPEX</i>	0.0012	(1.011)	-0.0003	(0.998)	-0.0008	(0.992)	0.0019	(1.018)	-0.0001	(0.999)	0.0003	(1.003)
<i>GROWTH</i>	0.0012	(1.030)	0.0009	(1.022)	-0.0097	(0.789)	0.0011	(1.028)	0.0009	(1.021)	-0.019	(0.625)
<i>LEVERAGE</i>	-2.78***	(0.124)	-1.72***	(0.276)	-1.55**	(0.311)	-2.77***	(0.125)	-1.30**	(0.378)	-1.58**	(0.305)
<i>EBITDA/TA</i>	-1.99***	(0.719)	-1.73***	(0.751)	-2.37***	(0.676)	-1.67***	(0.758)	-1.42***	(0.790)	-2.18***	(0.697)
<i>MEDIANMTB</i>	0.47***	(1.658)	0.50***	(1.707)	0.20	(1.240)	0.44***	(1.603)	0.47***	(1.654)	0.12	(1.339)
<i>INTANG</i>	0.45***	(1.571)	0.30	(1.350)	0.35	(1.424)	0.63***	(1.873)	0.38	(1.462)	0.41	(1.510)
<i>RETAIL</i>	0.75***	(2.112)	-0.27	(0.763)	1.44*	(4.214)	0.56***	(1.752)	-0.51	(0.600)	1.27	(3.567)
IPO2 = S	357						357					
IPO2 = A	82						81					
IPO2 = F	11						11					
IPO2 = P	37,497						37,489					
Nagelkerke R <sup>2</sup>	20.14%						12.83%					

**Table 6 (continued). Multinomial Logistic Analysis**

VARIABLE	Model 3						Model 4					
	SURV vs PRIV		ACQ vs PRIV		FAIL vs PRIV		SURV vs PRIV		ACQ vs PRIV		FAIL vs PRIV	
	$\alpha$	Odds <sup>1</sup>	$\alpha$	Odds <sup>1</sup>	$\alpha$	Odds <sup>1</sup>	$\alpha$	Odds <sup>1</sup>	$\alpha$	Odds <sup>1</sup>	$\alpha$	Odds <sup>1</sup>
INTERCEPT	-7.96***	-	-10.82***	-	-22.59	-	-3.17***	-	-7.85***	-	-17.13	-
LOGTA	0.64***	(2.220)	0.80***	(2.717)	0.66***	(2.277)	-	-	-	-	-	-
LOGSALES	-	-	-	-	-	-	0.207***	(1.375)	0.53***	(2.241)	0.31*	(1.599)
CAPEX	0.003*	(1.034)	-0.0002	(0.998)	-0.0018	(0.980)	0.003**	(1.040)	-0.0002	(0.998)	-0.0009	(0.989)
GROWTH	0.0009	(1.025)	0.0006	(1.015)	-0.0035	(0.913)	0.0008	(1.022)	0.0006	(1.016)	-0.0038	(0.907)
LEVERAGE	-2.92***	(0.108)	-1.61***	(0.296)	-0.20	(0.363)	-2.96***	(0.106)	-1.28**	(0.379)	-0.02	(0.984)
OPPR/TA	-0.22***	(0.942)	1.77***	(1.633)	-0.29**	(0.924)	-0.14**	(0.962)	1.52***	(1.525)	-0.22*	(0.942)
MEDIANMTB	0.49***	(1.708)	0.50***	(1.726)	0.08	(1.096)	0.45***	(1.638)	0.46***	(1.650)	0.02	(1.020)
INTANG	0.41***	(1.519)	0.14	(1.149)	1.08**	(2.944)	0.55***	(1.726)	0.19	(1.208)	1.08**	(2.942)
RETAIL	0.62***	(1.859)	-0.05	(0.951)	1.58***	(4.238)	0.49***	(1.638)	-0.21	(0.809)	1.38**	(3.961)
IPO2 = S			475						475			
IPO2 = A			110						109			
IPO2 = F			18						18			
IPO2 = P			39,636						39,619			
Nagelkerke R <sup>2</sup>			18.15%						11.79%			

Notes:

<sup>1</sup> Odds ratios disclosed represent the increase in the odds (i.e. the probability of going public over the probability of staying private) when the correspondent independent variable increases its standard deviation by one time, except for the dummy variables INTANG and RETAIL where they represent the increase in the odds when the variable changes from 0 to 1.

These models are estimated using IPO2 = P as the reference category. All the models are estimated including calendar year dummy variables, for which coefficients are not reported.

\* $p < 0.1$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$ .

## 6. Conclusions

This paper investigates the determinants of IPO decisions in the UK, by far the largest stock market in Europe. In contrast to prior research in the US, we are able to study this issue directly by comparing firms that raise public equity with those that choose to remain private through access to a unique database that contains accounting information for a large number of privately held firms. Our research combines the analysis of *ex ante* and *ex post* firms' characteristics. On the basis of their post-issue evolution we segment our IPO firms into three groups: survivors, acquired firms and failed firms. We then use logistic analysis to test several predictions related to the going public decision by comparing IPO firms with private companies. Apart from confirming some well-established empirical regularities in other contexts, our findings contribute by casting more light on the association between certain firm characteristics and the probability of going public.

The positive relationship between firm size and the likelihood of an IPO observed reinforces results obtained in very different market contexts and is consistent with the predictions derived from both the adverse selection models and the portfolio rebalancing motive to go public. Also, initial and subsequent expenses associated with the fact of being listed in the stock exchange create a barrier for smaller firms to go public. Similarly, our finding that the probability of an IPO is positively affected by the stock market valuation of firms in the same industry confirms results obtained previously for other countries. As in Pagano et al. (1998), we favor the windows of opportunity hypothesis to explain this result since the industry market to book ratios diminish after the IPO.

Our results suggest that on average financing needs are not a major factor in IPO decisions in the UK. However, contrary to the findings of Pagano et al. (1998) for Italian IPOs, raising external funds to finance large investments underlies the going public decision for firms that survive IPOs *ex post*. Our results also suggest that reduction of leverage is not a motivation for UK IPOs. Indeed, leverage is significantly negatively related to IPO probability except for post-IPO failures. Therefore, our results suggest that a primary motivation for IPOs in other European countries does not apply in the UK.

Finally, the relationship between profitability and the likelihood of an IPO for our full sample is negative and significant. When firms that go public have higher investment rates than other firms, as is the case of our survivor IPOs, the negative relation between profitability and

the probability of going public may reflect the fact that these firms cannot generate sufficient internal funds to finance large investments. In this cases, the negative sign of leverage together with the positive signs of the intangible assets dummy and capital expenditures level indicates that firms suffer borrowing constrains and go public to get funds to finance their investments. In fact, the relationship between profitability and the likelihood of an IPO becomes significantly positive for the acquired IPO group, where investment opportunities variables have no significant effect on the going public decision. The positive relationship between profitability and the probability of an IPO in this group is consistent with the prediction derived from the portfolio rebalancing motive to go public.

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