Journal of Financial Economics 101 (2011) 382–412

Contents lists available at ScienceDirect

Journal of Financial Economics

journal homepage: www.elsevier.com/locate/jfec

IPO waves, product market competition, and the going public decision: Theory and evidence ☆

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ARTICLE INFO

Article history:
Received 30 December 2009
Received in revised form
19 July 2010
Accepted 25 October 2010
Available online 16 March 2011

JEL classification:
G32

Keywords:
IPO waves
Product market competition
Going public

ABSTRACT

We develop a new rationale for initial public offering (IPO) waves based on product market considerations. Two firms, with differing productivity levels, compete in an industry with a significant probability of a positive productivity shock. Going public, though costly, not only allows a firm to raise external capital cheaply, but also enables it to grab market share from its private competitors. We solve for the decision of each firm to go public versus remain private, and the optimal timing of going public. In equilibrium, even firms with sufficient internal capital to fund their new investment may go public, driven by the possibility of their product market competitors going public. IPO waves may arise in equilibrium even in industries which do not experience a productivity shock. Our model predicts that firms going public during an IPO wave will have lower productivity and post-IPO profitability but larger cash holdings than those going public off the wave; it makes similar predictions for firms going public later versus earlier in an IPO wave. We empirically test and find support for these predictions.

1. Introduction

The existence of IPO waves, otherwise known as "hot" IPO markets, has been widely documented: see, e.g., Ritter (1984). The reasons for the existence of such IPO waves, however, are less widely understood. Two recent theoretical models of IPO waves are Pastor and Veronesi (2005) and Alti (2005). Pastor and Veronesi (2005) argue that IPO waves are generated due to the "real option" effect of going public: entrepreneurs possess a real option to take their firms public, invest part of the IPO proceeds, and begin producing, and, in a setting of time-varying

☆ For helpful comments and discussions, we thank Kenneth Ahern, Pierluigi Balduzzi, Walid Busaba, David Chapman, Craig Dunbar, Joseph Fan, Shan He, Clifford Holderness, Gang Hu, Jiekun Huang, Tim Jenkinson, Yawen Jiao, Karthik Krishnan, Praveen Kumar, Alan Marcus, Ronald Masulis, Debarshi Nandy, Tom Noe, Neil Stoughton, Paul Povel, Jun Qian, Jonathan Reuter, Ronnie Sadka, Philip Strahan, Robert Taggart, Hassan Tehranian, and Xuan Tian. We also thank seminar participants at Boston College, The Chinese University of Hong Kong, Concordia University, George Washington University, Hebrew University of Jerusalem, Nanyang Technological University, National University of Singapore, Oxford University, Singapore Management University, Tel-Aviv University, University of Georgia, University of Houston, University of Illinois at Chicago, University of New South Wales, University of Western Ontario, and conference participants at the RICAFE 2008 conference at Amsterdam, the FIRS 2009 Meetings at Prague, the 2009 Southwestern Finance Association Meetings, the 2009 Financial Management Association Meetings, the 2009 Midwestern Finance Association Meetings, the 2009 Eastern Finance Association Meetings, the 2009 Northern Finance Association Meetings, and the 2009 Southern Finance Association Meetings for helpful comments. Special thanks to Bill Schwert and an anonymous referee for several helpful comments. The research presented in this paper was conducted while the authors were special sworn status researchers at the Boston Research Data Center of the U.S. Census Bureau. Any opinions and conclusions expressed herein are those of the authors and do not necessarily represent the views of the U.S. Census Bureau. All results have been reviewed to ensure that no confidential information is disclosed. Any remaining errors or omissions are the responsibility of the authors.

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doi:10.1016/j.jfineco.2011.03.009

market conditions, choose the best time to exercise this option. When stock market conditions are sufficiently favorable (expected market return is low, expected aggregate profitability is high, and prior uncertainty is high), many entrepreneurs exercise their options to go public, thus generating an IPO wave. Alti (2005) focuses instead on information spillovers across IPOs to generate IPO waves. He considers a setting in which IPOs are sold to institutional investors, who are asymmetrically informed about a valuation factor common across private firms. Since IPO offer prices are set based on investors' indications of interest, the outcome of an IPO (a high versus low IPO offer price) reflects information that was previously private, reducing information asymmetry across investors and reducing valuation uncertainty for future issuers, thereby triggering an IPO wave.

While the above two theoretical analyses have driving forces quite different from each other, they also have one feature in common: they are both driven by considerations of stock market valuation and stock returns: the aggregate stock market in the case of Pastor and Veronesi (2005), and stock valuation in the IPO market in the case of Alti (2005). While stock market valuation is indeed an important driving force behind the creation of IPO waves, another driving force that has not been analyzed so far in the literature is product market competition. The objective of this paper is to develop a theory of the timing of a firm's going public decision and IPO waves based on product market considerations that allow us to answer several interesting questions: First, which industries are most likely to have an IPO wave? Second, what are the differences between firms that go public "on the wave" (i.e., as part of an IPO wave) versus "off the wave" (i.e., either individually, or as part of a cold IPO market) both in terms of pre-IPO productivity and post-IPO product market performance? Third, within the set of firms going public as part of an IPO wave, does timing matter: i.e., is there a difference in productivity and post-IPO performance (as well as other firm characteristics) between firms that go public earlier in an IPO wave versus later in the wave?[1] Our theoretical model answers these and related questions, and we empirically test the implications of our theory.

Our theory departs from existing analyses with the assumption that going public not only allows a firm to raise capital at a lower cost than if it were a private firm, but also allows it to grab market share from competitors who remain private. It is particularly interesting to examine, both theoretically and empirically, the implications of the notion that going public enables a firm to grab market share from competitors in the product market, since there is some anecdotal evidence from practitioners that this is indeed the case in practice.[2] We do not make any assumptions regarding the precise mechanisms through which firms going public early are able to grab market share from their competitors: possible mechanisms include gaining additional credibility with customers and suppliers; being able to hire higher-quality employees as a public firm and rewarding them more efficiently using stock and stock options; and being able to acquire related firms in the same industry (holding patents valuable for introducing various product innovations) through takeovers paid for using their own (publicly traded) stock.[3]

We consider an industry with two firms: firm 1 and firm 2, both of which are private to begin with. Each firm has a scalable project with decreasing returns to scale, which it proposes to implement. Firm 1 has higher productivity of capital compared to firm 2, so that its equilibrium scale of investment is higher than that of firm 2. Each firm has a certain amount of internal capital available to it as a private firm. However, if the amount of capital required for investment exceeds the above internal capital, the firm needs to either scale back its investment (i.e., operate at a scale smaller than its optimal level) or raise external financing by going public.[4] Thus, going public has two benefits in our setting: it allows the firm to raise external financing if necessary, and also allows it to grab market share from other firms in the industry that are private. On the other hand, going public is costly: we assume that each firm has to incur a significant cost if it chooses to go public.

Each firm knows its own productivity, and also that their industry may soon experience a positive productivity shock with a certain probability. We assume that, in the absence of a productivity shock, the available internal

[1] While we are not aware of any prior empirical analyses of this question, there is some anecdotal evidence that higher-quality firms go public earlier in an IPO wave: see, e.g., the Harvard Business School Case ImmuLogic Pharmaceutical Corporation (B-2). To quote: "The one certainty about the current open window for biotechnology initial public offerings (IPOs) was that sooner or later it would shut again. Furthermore, he (Henry McCance) has observed that in past periods of intense IPO activity, the best firms tended to go public early in the cycle, while lower-quality firms went public later." See also Ritter and Welch (2002) for a discussion of practitioner arguments on the timing of firms going public within an IPO wave.

[2] To quote Killian, Smith, and Smith (2001): "An IPO can establish its brand and gain loyal customers ahead of competitors. Palm established itself as the leader with a suite of spiffy handheld devices and great marketing, grabbing 80% of market share. Then Handspring, founded by Palm alums, created a device with a twist: add-on modules that allow Handspring users to download and play music or to access the Internet. Handspring priced its PDAs aggressively and captured most of the remaining (market) share. With these two aggressive players dominating PDA sales, it was very difficult for a new entrant to compete. Even Microsoft, with its billions of dollars of marketing clout, retreated from the field." Killian, Smith, and Smith (2001) also give a number of examples from other industries where firms that went public earlier were able to grab significant market share in their industry. Examples include Affymetrix, the maker of microchips that identify and analyze gene sequences; Petsmart, the pet superstore, which went public ahead of its competitor, pets.com, and grabbed significant market share; and Capstone Turbine, the maker of microturbines, which was the first to introduce such turbines for commercial use.

[3] Another possibility is that a public firm may compete more aggressively in the product market than a private firm, since a risk-averse entrepreneur may find it easier to diversify his personal portfolio and therefore care less about operating risk after going public: see Chod and Lyandres (2011), who develop a model formalizing this argument.

[4] Thus, for simplicity, we assume that it is prohibitively costly for the firm to raise external financing as a private firm. However, note that all our results go through as long as the cost of external financing is significantly cheaper for a public firm compared to that for a private firm.