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THREE ESSAYS IN CORPORATE FINANCE

by

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Abstract

My dissertation consists of three chapters. In the first two chapters, using a large sample of proprietary transaction-level institutional trading data, I empirically analyze the role of institutional investors in corporate spin-offs, and seasoned equity offerings, respectively. In the third chapter, using the Longitudinal Research Database (LRD) of the U.S. Bureau of Census, I conduct the first large sample study of the going public decisions of U.S. firms in the literature. In particular, I examine the relationship between the product market characteristics of a firm and its decision to go public.
Kauffman Dissertation Fellowship Program - Executive Summary

by

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My dissertation, entitled "Three Essays in Corporate Finance", consists of three self-contained papers, designated as three chapters. The three essays have been presented at several prestigious international conferences, such as the American Finance Association Meetings, the European Finance Association (EFA) Annual Meeting, Moscow 2005; Financial Management Association (FMA) Annual Meeting, Chicago 2005; Third Annual Conference in Corporate Finance, University of Washington, St. Louis October 2006; RICAPE 3rd Entrepreneurship and Financing of Innovation conference, Moncalieri 2005; HKUST Finance Symposium, Hong Kong 2005; Northern Finance Association (NFA) Annual Meeting, Montreal 2006; Southern Finance Association (SFA) Annual Meeting, Key West 2005; Eastern Finance Association (EFA) Annual Meeting, New Orleans 2007; Census Research Data Centers Conference, Cornell University 2005; Corporate Governance in Family/Unlisted Firms Conference, Switzerland 2006.

The third essay, "The Going Public Decision and the Product Market," which was initiated as my first project of the dissertation and received the Kauffman Dissertation Fellowship, currently has a Review and Resubmission Invitation from the Review of Financial Studies. Hence, in the executive summary, I will first discuss this essay, followed with my two other essays.

"The Going Public Decision and the Product Market", with Thomas Chemmanur and Debarshi Nandy.¹

"Going public" is one of the most important events in the life of a firm. Since an IPO of equity is the first public offering of equity (and typically the first public offering of any security) undertaken by the firm, it not only satisfies the immediate capital requirements of the firm, but

also paves the way for the firm to make subsequent public offerings of equity and other corporate securities. Thus, going public allows the firm access to the public capital markets for the first time in its life, and hence may have important implications for a firm's product market performance as well. However, while the going public decision has generated considerable theoretical research in recent years (see, e.g., Boot, Gopalan, and Thakor (2006), Chemmanur and Fulghieri (1999), and Clementi (2002)), there has been very little empirical research on this topic: two prominent exceptions are Lerner (1994), who studies the timing of a sample of venture backed biotechnology firms; and Pagano, Panetta, and Zingales (1998), who study the going public decisions of a sample of Italian firms. Further, there has been no empirical research so far focusing on the relationship between the product market characteristics of a firm and its decision to go public.

The objective of this paper is to bridge the above gap in the literature by addressing two related questions. First, what is the relationship between the ex ante product market characteristics of a firm and its going public decision? Second, how does going public affect a firm's subsequent product market performance? Clearly, the answers to the above two questions are complementary, since the motivations of a firm to go public should, in the long run, be consistent with the actual effects of its going public. In the first part of our empirical analysis, we study the relationship between the ex ante product market characteristics of a firm immediately before going public and its likelihood of going public. In the second part of our analysis, we study the dynamics of a firm's product market performance in the years leading up to its IPO, and in the years after it has gone public. We conduct this latter analysis using two different samples. We first conduct this analysis of the dynamics of firm performance only using firms that eventually went public, comparing the performance of these firms in the years before and after the IPO to their performance in the IPO year. We then perform this analysis using both firms that went public during our study period and those that remained private throughout, thus allowing us to
compare the changes in the performance of firms going public to these changes in the performance of firms remaining private.

A number of theoretical models have implications not only for the relationship between a firm’s ex ante product market characteristics and its going public decision, but also for the dynamics of these characteristics before and after a firm’s IPO. Chemmanur and Fulghieri (1999) model the going public decision in an environment of asymmetric information. In their setting the decision to go public emerges from the trade-off between raising capital from a number of well-diversified investors in the public equity market (thus avoiding the risk-premium charged by private financiers who provide a significant fraction of the capital required for any given firm), and the duplication of outsiders’ evaluation (information production) costs that arises from raising capital from a larger number of investors. This theory implies that larger and more capital intensive firms, with riskier cash flows, and those operating in industries characterized by lower evaluation (information production) costs (and a smaller extent of asymmetric information) are more likely to go public. Bhattacharya and Ritter (1983) and Maksimovic and Pichler (2000) argue that the decision to go public emerges from the trade-off between the costs of increased product market competition arising from the firm having to release confidential information (helpful to competitors) at the time of IPO, and the benefits arising from raising capital at a cheaper rate in the public equity markets. These theories imply that firms with greater existing market share, and those operating in industries characterized by a lower degree of competition, are more likely to go public. Finally, Clementi (2002) argues that firms go public as a result of a positive and persistent productivity shock: while a borrowing constraint kept the firm operating at a suboptimal scale before the shock, the deviation between actual and efficient scale becomes wider after the shock, making it optimal for the firm to go public (and expand scale) despite the fixed costs of going public. This theory implies that firms characterized by greater productivity, output growth, and capital expenditures are more likely to go public. We test these and other implications in this paper.
Ours is the first large sample study of the going public decisions of U.S. firms in the literature. As noted before, the empirical research on the going public decisions is scant, since privately held firms are typically not required to report their financial results and consequently, the data required for this research is not readily available (especially with regard to U.S. firms). There are only four pieces of direct research on the going public decision to date. Lerner (1994) studies the timing of IPOs and private financings of a sample of privately held venture backed biotechnology firms. He shows that these companies go public when equity valuations are high and employ private financings when values are lower. Pagano, Panetta, and Zingales (1998), investigate a sample of Italian firms using a data set provided by a consortium of Italian banks: we discuss their findings in more detail later. In more recent research, Fischer (2000) investigates a sample of privately held German firms, some of which went public on the Neuer Market. While providing important insights into the going public decision, it is difficult to generalize the results of the above papers to draw broader conclusions about the going public decision of the majority of U.S. firms. For example, only 69 of the more than 2000 firms eligible to go public in the PPZ sample went public in over 10 years; of these, more than 40 percent were equity carve-outs. Further, the typical newly listed company in Italy is several times larger and older than its counterpart in the U.S. Finally, the tax and regulatory environment in the U.S. and the stage of development of the U.S. capital markets are dramatically different from those in Italy. Several concerns apply to generalizing German evidence to the U.S. as well. A recent paper which provides some evidence regarding the going public decisions of U.S. firms is Helwege and Packer (2003), who make use of a sample of 178 non-financial firms mainly consisting of firms which had to file financial reports with the S.E.C. since they issued publicly traded bonds prior to their IPO. While providing some insight into the going public decisions of U.S. firms, it is difficult to generalize their results also to the bulk of private firms in the U.S., given that private firms which issue public bonds before their IPO tend to be large and highly leveraged (in contrast to the average firm going public in the U.S. which tends to be small and with much less leverage), and
that only about 35 firms (one fifth) of their sample attempted to go public during their study period. Our paper complements the above empirical research by developing the first large sample study of the going public decisions of U.S. firms, using the Longitudinal Research Database (LRD) of the U.S. Bureau of Census (which covers the entire universe of private and public manufacturing firms in the U.S.).

It is also important to note that, while some earlier papers have documented the operating underperformance subsequent to IPO of firms going public relative to seasoned firms (e.g., Jain and Kini (1994) and Mikkelsen, Partch, and Shah (1997)), most of our empirical results on the dynamics of a firm's performance around its going public decision (especially with respect to variables such as TFP, market share, capital expenditures, employment, total labor costs, materials costs, and sales and administrative expenses) are novel to the literature as well. A secondary objective of this paper is to shed new light on the operating underperformance of firms subsequent to IPOs. The reasons underlying this operating underperformance have been controversial. Several alternative explanations have been proposed for this underperformance, including the idea that operating underperformance is due to earnings management or "creative accounting" by firms going public. Our analysis is able is provide new insights on the relative merits of these hypotheses for two reasons. First, we are able to examine the operating performance of firms going public for a number of (five) years before the IPO, in contrast to existing studies, which focus only on operating performance in the two years before the IPO and the years subsequent to the IPO (possibly due to the data limitations discussed before). Second, in contrast to earlier studies (which focus on accounting numbers), we focus on performance measures such as the total factor productivity (TFP) which are derived from a variety of different measures of firm performance, and are thus less subject to manipulation compared to accounting numbers.

Our findings on the relationship between the ex ante product market characteristics of a firm and its likelihood of going public can be summarized as follows. First, we find that firms
which are larger in size and have higher sales growth are more likely to go public. Second, firms which have greater productivity (TFP) than their industry peers, greater market share, and those with projects which are cheaper for outsiders to evaluate are more likely to go public. Third, we find that firms operating in less competitive and more capital intensive industries, and those characterized by riskier cash flows are more likely to go public. Fourth, we find that firms in industries characterized by less information asymmetry between firm insiders and outsiders (as measured by the averages of various proxies of information asymmetry for firms already listed in that industry, like standard deviation of analyst forecasts, and analyst forecast error) and greater average liquidity of already listed equity are more likely to go public. While the first set of findings above is consistent with those documented by Pagano, Panetta, and Zingales (1998) for Italian firms, and Helwege and Packer (2003) for bond-issuing U.S. firms, we are the first in the literature to document the second, third, and fourth set of results above. The above findings are consistent with the implications of three of the theories of going public mentioned above, namely, the information production theory of Chemmanur and Fulghieri (1999); the confidential information release theory of Bhattacharya and Ritter (1983) and Maksimovic and Pichler (2000); and the productivity shock theory of Clementi (2002).

Our analysis of the dynamic pattern of firm performance before and after the IPO indicates that total factor productivity (TFP) increases steadily in the five years prior to the IPO, reaches a peak in the IPO year, and declines steadily in the years subsequent to the IPO (i.e., TFP exhibits an inverted-U shape). Sales growth exhibits a similar pattern, increasing in the years prior to the IPO, and declining in the years subsequent to the IPO. However, sales, capital expenditures, employment, total labor costs, materials costs, and sales and administrative expenses exhibit a consistently increasing pattern both in the years before and after the IPO. Our results indicating declines in productivity post-IPO, and the pattern of sales and capital expenditures of firms subsequent to the IPO, are consistent with the prior empirical literature (e.g., Jain and Kini (1994) and Mikkelsen, Partch, and Shah (1997)) which has documented
operating underperformance subsequent to the IPO (albeit using accounting measures such as return on assets (ROA)). However, the dynamic pattern in various firm performance variables before and after the IPO (and especially the inverted-U shaped pattern of productivity changes) that we document around the IPO is inconsistent with the notion that the operating post-IPO underperformance of firms is generated solely by earnings management by firms immediately prior to the IPO. In particular, the consistent growth in firm productivity that we document for five years before the IPO is unlikely to be generated purely by the manipulation of accounting numbers, since the performance effects of such manipulation are likely to be confined to the years immediately prior to the IPO, and would not persist over so many years (especially given the fact that measures of economic performance such as TFP, being derived from a variety of different performance measures, are much harder to manipulate compared to accounting numbers). Instead, the above dynamic pattern of various variables (and especially the inverted-U shaped pattern of productivity changes) is broadly consistent with the performance implications of a firm increasing its scale of operations around the IPO (making use of the external financing raised), as characterized by the theoretical analysis of Clementi (2002).

"The Role of Institutional Investors in Corporate Spin-offs"\(^2\)

Using a large sample of proprietary transaction-level institutional trading data, I empirically analyze, for the first time in the literature, the role of institutional investors in corporate spin-offs. In the first part of the paper, I study the imbalance in post-spin-off institutional trading between parent and subsidiary, and analyze this imbalance to test three different hypotheses regarding institutional investors' role in spin-offs: information production, pure play, and risk management. In the second part of the paper, I examine the information

\(^2\) This paper has been presented at the following conferences: Shareholders and Corporate Governance conference, Oxford University 2007; First Singapore International Conference on Finance, Singapore 2007; Financial Management Association Doctoral Student Consortium, October 2006; Eastern Finance Association (EFA) Annual Meeting, New Orleans 2007.
production role of institutional investors further by analyzing the predictability of institutional trading around corporate spin-offs for the short-term and the long-term stock returns following spin-offs. In the third part of the paper, I study the pattern and profitability of institutional trading following spin-offs. My empirical results can be summarized as follows. First, there is significant imbalance in post-spin-off institutional trading between parents and subsidiaries; this imbalance increases corresponding to the difference in the extent of information asymmetry characterizing the two entities, beta risk, and long-term growth prospects. Second, institutional trading in the combined firm two months prior to the spin-off has significant predictive power for the announcement effect of a spin-off. Third, institutional trading in the subsidiary immediately after spin-off completion also has predictive power for its subsequent long-term stock returns; this predictive power is greater when the subsidiary’s size constitutes only a smaller fraction of the combined firm’s size. Fourth, the predictive power of institutional trading is weaker for the parent firm’s long-term returns; further, unlike in the case of the subsidiary, institutional investors start exploiting their private information after the spin-off announcement, but before the spin-off is completed. Finally, institutional investors are able to realize superior profits by trading in the equity of the subsidiary in the first quarter after the spin-off. While my results provide some support for all three hypotheses regarding the role of institutional investors in corporate spin-offs, they provide particularly strong support for the information production hypothesis.

"The Role of Institutional Investors in Seasoned Equity Offerings", with Thomas J. Chemmanur, and Gang Hu.3

The theoretical literature has suggested two possible roles for institutional investors with private information in seasoned equity offerings (SEOs): a "manipulative trading" role, where institutional investors with private information sell shares prior to the SEO in order to lower the SEO offer price, and profit subsequently by obtaining allocations at this lowered offer price; or an "information production" role, where institutional investors produce information about firms making SEOs, request allocations in SEOs about which they obtain favorable private information, and also buy shares before and after the offering. We make use of a large sample of proprietary transaction-level institutional trading data to study several important issues surrounding the role of institutional investors in SEOs in the above theoretical context. We study whether institutional investors indeed have private information about SEOs, and its consequences for: SEO share allocation; institutional trading before and after the SEO and trading profitability; and the SEO discount. Our results can be summarized as follows. First, institutions are able to identify and obtain more allocations in SEOs with better long-term returns. Second, more pre-offer net buying of the SEO firm's equity by institutional investors is associated with more institutional SEO share allocations, and also more post-offer net buying. Third, institutions "flip" only a very small fraction of their SEO share allocations: 2.20 percent during the first two days post-SEO. However, this lack of flipping does not appear to be costly to institutional investors: there is no significant difference between the extent of underpricing and the realized profitability of institutional SEO share allocation sales. Fourth, institutional investors' post-SEO trading significantly outperforms a naive buy-and-hold trading strategy in SEOs. Further, the profitability of post-offer trading in SEOs where institutions obtained allocations is higher than that of trading in SEOs where they did not obtain allocations. Finally, more pre-offer institutional net buying and larger institutional SEO share allocations are associated with a smaller SEO discount. Overall, our results are consistent with an information production rather than a manipulative trading role for institutional investors in SEOs.