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Abstract

In an attempt to provide more opportunities for young start-ups to tap external capital market, policymaker has relaxed the minimum listing requirements and created some new markets for start-up ventures. However, after the burst of internet bubble in 2000, the volume of IPO has substantially dropped. How to reactivate the IPO markets should be the interest of both policymakers and academic researchers. To address this issue, a deep understanding of why do firms go public is the essential first step. Therefore, in this paper, we conduct a full review of the theory and evidence on the motivation of initial public offerings. We also present future research directions.

1. Introduction

High-growth firms make a significant contribution to macroeconomic growth in terms of job creation, investment and innovation, and it is also well documented that IPOs (initial public offerings) help high-growth firms to expand their business (Clementi 2002; Gao, Ritter and Zhu 2013; Haltiwanger, Jarmin and Miranda 2013; Kenney, Patton and Ritter 2012; Takahashi and Yamada 2015; Zingales 1995). In an attempt to provide more opportunities for young start-ups to tap external capital market, policymaker has relaxed the minimum listing requirements and some stock exchange has created some new markets for start-up ventures.[1)]

However, after the burst of internet bubble in 2000, the volume of IPO has substantially dropped. According to Gao, Ritter and Zhu (2013) while the annual number of IPO is 310 during 1980-2000, only 99 companies went public in 2001-2012, with the decline being most evident for small IPOs. In response to the inactive IPO market, the JOBS Act (Jumpstart Our Business Startups Act) was further passed on 2012 to reduce SOX (Sarbanes-Oxley Act) burdens for small

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1) NASDAQ in US, AIM in UK, CATALIS in Singapore, VENTURE BOARD in china were established. In Japan, to list on MOTHERS, which is one of the most representative stock markets for small and high-growth firms, there is no requirement for profits and net asset prior to the IPO.

firms and stimulate IPO markets.[2)] Although Dambra, Field and Gustafson (2015) do find that JOBS Act has increased the volume of IPO by 21 per year, most of the increase is concentrated on biotech industry and importantly, the annual volume is still far below the historical level. Consequently, how to reactivate the IPO markets should be the interest of both policymakers and academic researchers. To address this issue, a deep understanding of why do firms go public is the essential first step. Therefore, in this paper, we conduct a full review of the theory and evidence on the motivation of initial public offerings.

The remainder of the paper is organized as follows. Section 2 presents an overall literature review on the motivation of IPO. Section 3 summarizes this paper and presents some future research directions.

2 . Why do firm go public?

What motivates an initial public offering? There has prevailed a conventional wisdom until the beginning of 1980 that going public is no more than a stage in the growth of a firm (Boehmer and Ljungqvist 2004; Chemmanur and Fulghieri 1999; Helwege and Packer 2003; Pagano, Panetta and Zingales 1998). Indeed, many start-up ventures choose to go public at some point of their life cycle and eventually become the most-valuable companies all around the world. For instance, Apple, Amazon, Google, and Facebook, Alibaba, Tencent, to name a few. Although the so-called "life cycle" theory play an important role in explaining the going-public decision, the observed listing patterns in reality cannot be explained by itself alone.

First, in many continental Europe countries, public listed firms appear to be the exception rather than the rule. Even in the US and UK with highly developed capital markets, many well-known large companies—Cargill, Albertsons, Dell, Deloitte and Virgin Atlantic—actually choose to stay private. This fact indicates that going public is not necessarily the goal for all the growth companies. Second, even after going public, an increasing number of public listed firms decide to go private. According to Weir, Jones and Wright (2015) and Dasilas and Grose (2017), the past four decades have seen three main waves of public-to-private transactions: late 1980s, late 1990s and mid-2000 (2004-2007), suggesting that listing status seems to be a temporary situation, at least for some companies. Third, it is well-documented that the volume of IPO substantially fluctuates from year to year (Altı 2005; Banerjee, Güçbilmez and Pawlina 2016; Çolak and Günay 2011; Gao, Ritter and Zhu 2013; Lowry 2003; Lowry and Schwert 2002; Pástor and Veronesi 2005; Premti and Madura 2013; Ritter 1984; Yung, Çolak and Wang 2008), indicating that factors other than life-cycle have important bearing on the decision to conduct an IPO. Although there is an

2）SOX imposed additional compliance costs on publicly traded firms.

abundant of theoretical literature provides important implication for the going-public issue, there has been very limited empirical research directly attacking this issue probably due to the lack of data for firms refraining from going public. The prominent exceptions are Lerner (1994), Pagano *et al.* (1998) and Chemmanur, He and Nandy (2010b).

Lerner (1994) examines the choice between public and private equity issuance by using a sample of 350 private held biotechnology firms. He finds that venture capitals tend to bring these firms public when the market valuation is high and provide private financing when market valuation is low.

Taking advantage of the Italian data set which include private companies, Pagano *et al.* (1998) explore the motivation of going public. They find that the probability of going public increases in industry's market-to-book ratio. High industry's market-to-book ratio can either reflect good growth opportunities in corresponding sector (growth story) or mis-valuation (window of opportunities). To disentangle the two stories, they examine the investment intensity during the post-IPO period. Consistent with the story that CEOs have an incentive to exploit the window of opportunities by selling overvalued stock, they find that investment level and profitability deline after the IPO. In addition, they also find a significant redcution in leverage, taken together, they argue that firms are more likely to go public to rebalance their capital structure.

Chemmanur, He and Nandy (2010b) examine the interaction between firms' product market characteristics and the going-public decision. They illustrate that firms that have higher sales growth, greater TPF (total factor productivity), greater market share are more likely to conduct an IPO. In addition firms operating in more competitive industry are more likely to go public. These results are in line with their conjecture that firm's ex ante product market characteristics significantly affect the going-public decision. Conversely, they also examine how IPO affects the product market performance. Their findings reveal that, both TPF and sales reach a peak in the IPO year and then decline in years subsequent to the IPO. This pattern is consistent with the prediction of the model proposed by Spiegel and Tookes (2008)that firms' productivity peaks around the IPO. Overall, their findings reinforce the implications generated from the aforementioned theoretical paper by providing convincing evidence (Bhattacharya and Ritter 1980 Chemmanur and Fulghieri 1999 Maksimovic and Pichler 2001).

After a brief review of the empirical work, we next turn to discuss some well sited reasons and theoretical works on the going-public decision.

2.1 To finance investment project

Generally, IPOs provide firms with a vital opportunity to access public equity market through primary offering. The convention wisdom is that the primary offering is motivated by capital raising needs. In an attempt to address the question when do firms go public, Chemmanur and

Fulghieri (1999) explore at what stage should a firm finance its projects through IPO rather than private financing. Their model explicitly assumes that the primary share is sold to fund investment projects and that there is information asymmetry between CEOs and outsider investors. The equilibrium timing of going public is determined by the trade-off between the costs and benefits of IPO and that of private financing. If CEOs choose a private financing from a single large investor (e.g., a venture capitalist), on the one hand, they can minimize the cost of information production while on the other, they have to pay a higher premium for less-diversified venture capitalists.[3] If CEOs prefer a public offering through IPO, on the one hand, they can increase the bargaining power against each shareholder with only a small stake, while on the other have to pay a higher premium for information production. Importantly, their model predicts that firms which have larger capital needs are more likely to go public.

This view is supported by Kim and Weisbach (2005), which examine whether raising capital is an important motivation to conduct an IPO by using a large international data (16,958 IPOs from 38 countries between 1990 and 2003). Specifically, their findings reveal that primary proceeds and the proportion of primary share as a percentage of total offering are positively associated with the increase in capital expenditures, R&D expenditures and inventory during the post-IPO period. In addition, they also show that primary-only IPOs are more likely to conduct primary-only SEOs (seasoned equity offerings) while, secondary-only IPOs tend to conduct secondary-only SEOs.

Likewise, Lowry (2003) compares the extent to which the aggregate capital needs (e.g., GDP, industry-level investment growth ratio), the costs of equity issuance associated with adverse-selection (e.g., the dispersion of analyst forecasts of public firms' earnings) and individual investor sentiment (e.g., the discount on closed-end funds) can explain the fluctuation of IPO volume.[4] Results indicate that both aggregate capital needs of private firms and individual investor sentiment have significant explanatory power on the going-public decision. In addition, the probability of German firms going public also increases in firms' investment opportunities (Boehmer and Ljungqvist (2004)).

2.2 Insider's liquidity need

In addition to the primary shares, IPOs also allow CEOs and other initial shareholders to realize capital gains, to hold a more diversified portfolio by selling part of their shares, to exit (e.g., venture capitalists) and to increase the liquidity of a company's stock. Bodnaruk et al. (2007) study the effect of controlling shareholders' diversification needs on the going-public decision. They

3) In addition, a concentrated ownership also renders venture capitalists with a stronger bargaining power.
4) The rationale is that closed-end funds and small stocks are mostly held by individual investors, who are occasionally either over-optimistic or over-permissive.

argue that founder-CEOs are highly non-diversified because their wealth is closely related to their companies. This situation not only reduces their utilities due to excess nonsystematic risk but also may force them to act sub-optimally. They findings can be summarized as follows: the degree of diversification of controlling shareholders is negatively related to the probability of an IPO and the propensity to sell their shares at the IPO. In addition, less-diversified controlling shareholders are more willing to accept a more discounted offering price. Importantly, these relationships are not evident for non-controlling shareholders and firms whose only goal is to raise capital, indicating that one of the main reasons for IPOs is the diversification need (Amihud and Mendelson 1988 Pagano, Panetta and Zingales 1998).

As for the value of market liquidity, many previous studies have attempted to demonstrate it from different angles. Holmström and Tirole (1993) stress that the effect of a monitoring role by stock markets on managerial performance depends on the liquidity of a stock. The increased liquidity reduces the cost of monitoring and thereby improves the informativeness of the stock price, which enable firms to market a more efficient managerial contract.

Zingales (1995) develops a model to capture how an entrepreneur can maximize the total proceeds from selling his company. Given that the market for cash flow right, dominated by a large number of individual investors is fully competitive, by going public, the initial owner can fetch the full value from the dispersed investors. By contrast, the market for corporate control is less than fully competitive. Consequently, it is difficult for the initial owner to fetch the full value through direct negotiation with a few large investors. Under these assumptions, his model suggests that the initial owner can maximize the total proceeds through going public at first and then eventually exiting from the companies. Indeed, consistent with the implication derived from the model of Zingales (1995), Rydqvist and Högholm (1995) show evidence that approximately 35% of Swedish IPOs are sold within five years after going public. In addition, Lian and Wang (2012) find that compared to private targets, firms that file for IPOs first but choose to exit through M&A before their withdrawal can sell at a significantly higher premium. In the similar vein, Poulsen and Stegemoller (2008) also document that valuations for IPOs are significantly higher than that of private target firms. Furthermore, the high valuation provided by the IPO enhances the exit strategies of Venture capitalists (Black and Gilson 1998 Fan and Yamada 2017).

2.3 To facilitate further M&A

Surveying 336 CFOs (chief financial officers), Brau and Fawcett (2006) overcome the data constraints and directly examine why do firms go public. Surprisingly, the most important consideration is to create a public share for future M&A (mergers and acquisitions). While informative, one caveat should be noted that this survey is conducted during the internet-bubble period, during which managers' excess appetites to acquire motivated many IPO transactions

(Schultz and Zaman 2001). As such, it remains agnostic whether the conclusion can be generalized for other periods.

To fill this void, Celikyurt, Sevilir and Shivdasani (2010) analyze the post-IPO acquisition by using a long sample period from 1985-2004. They show that, within the first five years subsequent to IPO, 77% of IPO conduct at least one M&A, and on average, IPO firms in their sample conducting four M&A transactions. This result is striking given that the average IPO firms only make 0.43 M&A in the five years prior to the IPO. There are three potential stories can explain why IPOs stimulate M&A transactions. First, the infusion of capital through primary offerings at the IPO can facilitate cash-financed M&A. Second, firm can pay for an acquisition with their overvalued stock. Third, IPO resolve the uncertainty about the valuation of a stock, leading to a more efficient M&A strategy (Hsieh, Lyandres and Zhdanov 2011). Yet they cannot disentangle whether firms go public to conduct M&A or whether IPO enable them to conduct more M&A, these results are consistent with their hypothesis.

Anderson, Huang and Torna (2017) investigate whether IPO deal characteristics can predict post-IPO M&A activities. Consistent with their hypothesis that some firms conduct IPO to pursue M&A strategies, their findings show that firms with larger primary proceeds, higher underpricing, more diffused ownership structure, more reputable underwriters, more all-star analyst coverages are more likely to conduct M&A shortly after going public. In addition, if the public information available at the time of IPO can predict post-IPO M&A activities, it is plausible to predict that the announcement effect of M&A for more likely bidder should be attenuated compared to that of less anticipated one. Indeed, the announcement abnormal return is decreasing in the probability of becoming a bidder. Furthermore, if investors tend to overreact to the "surprise", then the unlikely bidder-IPO firms may then experience worse long-term performance after the announcement of M&A, which is exactly what they observed in additional analyses. Overall, their findings highlight the M&A as a motive of IPO (Hovakimian and Hutton 2010). In addition to non-financial sectors, Rosen, Smart and Zutter (2005) also observe a similar trend in banking sector.

Turning to the theoretical discussion, Hsieh, Lyandres and Zhdanov (2011) propose a model that link the IPO decisions and subsequent takeover decisions. The idea is that it is extremely difficult for a private bidder to precisely estimate the synergy effect without knowing its own valuation. Meanwhile, IPOs substantially reduce the valuation uncertainty and change the ability of firms to pursue M&A strategy.

2.4 To rebalance capital structure

High leverage increases the probabilities of getting into financial distress, which will lead to high costs of financing. Furthermore, debt overhang will also lead to underinvestment (Myers

1977), which will hinder firm growth. Meanwhile, IPO provides firms an opportunity to rebalance their capital structure (Alti 2006; Baker and Wurgler 2002; Fan 2017; Pagano, Panetta and Zingales 1998). In particular, firms can raise large amount of equity capital and repay existing bank debt, which will substantially decrease leverage and increase debt capacity (Amor and Kooli 2017; Andriansyah and Messinis 2016; Busaba, Benveniste and Guo 2001; Dunbar and Foerster 2008; Wyatt 2014). Baker and Wurgler (2002) further document that the effect of IPO on capital structure is persistent.

2.5 To decrease the cost of capital

Generally, bank debt is an important financing source for high-growth companies (Berger and Udell 1995; Berger and Udell 2002; Robb and Robinson 2014). Banks tend to keep long-term relations with borrowing companies, which significantly mitigates problems arising from information asymmetry (Diamond 1984). However, firms' reliance on bank financing also provides banks with monopolistic power to extract wealth from borrowing firms (Pinkowitz and Williamson 2001; Weinstein and Yafeh 1998; Wu and Yao 2012). Banks are likely to charge high interests rates on borrowing companies as a form of expropriation (Hale and Santos 2009; Santos and Winton 2008). Weinstein and Yafeh (1998) find that firms with main banks pay higher average interest spread on their liabilities than those without main banks. Wu, Sercu and Yao (2009) argue that expropriation by banks is so severe in Japan that even building multiple relationships with banks seems ineffective for alleviating holdup problems by banks.

Meanwhile, IPO substantially reduce the degree of asymmetric information between lending and non-lending banks and thereby reduce the adverse selection costs faced by uninformed banks. As a consequence, borrowing firms can reduce interest burdens due to the increased competition of banking relationships. Another potential channel through which borrowing firms can increase the bargaining power against banks is the availability of equity and public debt financing. Pagano, Panetta and Zingales (1998) and Fan (2017) find that firms successfully improve their bank financing conditions after going public.

2.6 To increase publicity

There is a rich set of literature examining the dynamics between product market and the going-public decision, both theoretically and empirically (Akhigbe, Borde and Whyte 2003; Braun and Larrain 2008; Chemmanur and Fulghieri 1999; Chemmanur and He 2011; Chod and Lyandres 2011; HSU, Reed and Rocholl 2010; Maksimovic and Pichler 2001). It is also easy to find anecdotal evidence that IPO enhances a company's publicity and reputation. According to Stoughton, Wong and Zechner (2001) it is advantageous for firms in competitive industry to be the first firm to go public. Slovin, Sushka and Ferraro (1995) find that when a firm goes public, its

industry peers usually experience a negative abnormal return. By contrast, Slovin, Sushka and Bendeck (1991) document that when a firm goes private, rival firms' stock price increase. These results clearly indicate that IPO can increase a firm's long-term competitiveness.

If this is the case, a follow-up question is whether IPO firms can successfully fetch the market shares from their rival firms? HSU, Reed and Rocholl (2010)address this issue by examining the operating performance of public listed firms around the time of large IPO in their industries. They report that industry peer of a large IPO experience a significant deteriorating operating performance after the IPO. To confirm that the decline is really a response to the IPO firm, they also examine the effect of a withdrawn IPO and find an opposite effect for it. Chemmanur and He (2011) reinforce above argument by directly showing evidence that IPO firms successfully increase their market share during the post-IPO period.

3 . Conclusion

In an attempt to provide more opportunities for young start-ups to tap external capital market, policymaker has relaxed the minimum listing requirements and created some new markets for start-up ventures. However, after the burst of internet bubble in 2000, the volume of IPO has substantially dropped. How to reactivate the IPO markets should be the interest of both policymakers and academic researchers. To address this issue, a deep understanding of why do firms go public is the essential first step. Therefore, in this paper, we conduct a full review of the theory and evidence on the motivation of initial public offerings.

Future research can contribute to this strand of literature by focusing on the heterogeneity of IPO firms (e.g., independent firm; carve-out; spin-off; family business). While a large body of literature has examined the motivation of spin-off or carve-out (Ahn and Denis 2004; Allen and McConnell 1998; Chemmanur, Krishnan and Nandy 2014; Çolak and Whited 2006; Ghosh et al. 2012; Jain, Kini and Shenoy 2011; Powers 2003; Prezas, Tarimcilar and Vasudevan 2000), the motivation and timing to conduct IPO by family business is relatively unexamined.

Another direction is to examine how the motivation of IPO can affect the timing of IPO. To date, previous studies have paid too much attention to explore the motivation to go public in bull market (Banerjee, Güçbilmez and Pawlina 2016; Çolak and Günay 2011; Helwege and Liang 2004; Lowry and Schwert 2002; Ritter 1984), there has been very little empirical research on the motivation to go public in bear markets.

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