Can success of an IPO issuance guarantee success of an IPO for investors?

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ABSTRACT

This study examines the factors contributing to the success of an IPO issuance and how this success is related to the firm's post-IPO performance. Grinblatt and Hwang (1989) find that due to the information assymetry, IPO pricing is dependent on the firm's ability to send positive "signals" while Jain and Kini (1994) discover that regardless of the success of an IPO issuance, a firm's operating performance following the IPO tends to decline. Using the data presented in CRSP, COMPUSTAT, EDGAR databases and ordinary least square regression analysis, for a sample of 48 randomly selected firms from the Jay Ritter's IPO list[1] for the period between 1985 and 2005, I firstly evaluate how underwriter's ranking, % of retained issues and firm's pre-IPO profitability affect the IPO issuance success and then determine the relationship between the mentioned success and the firm's post-IPO profitability. Statistically significant regression results revealed that successful firms with higher pre-IPO profitability tend to have a more successful IPO issuance, however, the latter does not guarantee the firm's post-IPO profitability. The paper informs investors that success of an IPO for owners might not ensure success of an IPO for investors.

Initial public offering (IPO) is the very first sale of the firm's shares to the public: before an IPO, a company is considered private and ownership in a firm is restricted to the initial stockholders. Decision to pursue an IPO has profound implications for the company's future operations and involves several advantages and disadvantages. As Joe Bou-Saba, cofounder of Alta Park notes, going public is usually an ultimate step for a company in its process of raising equity to support future growth and optimize profitability [2]. For the companies with relatively steady earnings and cash inflows, launching an IPO allows to raise the firm's public image and attract potential investors, employees and customers. Lastly, in the case of an issuance success, the IPO serves as a reward for the firm's employees as they can "cash out" the shares. On the other hand, there are several disadvantages that are intrinsic to public companies: they are subject to a greater

1. Ritter J (2018). Founding dates for IPOs from 1975-2017. University of Florida Leadership Lab, site.warrington.ufl.edu/ritter/ipo-data/

2. Bou-Saba, J (2018), Why It's Time To Go Public - Even When Staying Private Has Never Been Easier. Forbes.

public and legal scrutiny: the Securities and Exchange Commission's requirement to disclose all the financial information can benefit the firm's competitiors[3]. Also, offering new shares might decrease the initial stockholders' ownership position and ability to implement immediate and major changes to the firm's structure and operations when needed, a major concern for innovative tech giants like Spotify. [4] Also, the administrative costs incurred during the IPO process and the commonly observed phenomenon of IPO underpricing may further discourage a firm from going public. Lastly, the alluring"cashing out" benefit is also a subject to restrictions as the excessive supply of stocks will be detrimental to the stock's price and IPOs are legally bound to comply with the lockout period rules.

While the importance of IPOs for individual investors and firm owners is indubitable, the analysis of the IPO market tendencies is beneficial even on a broader scale : the number of IPOs serves as a useful indicator of the health of the stock markets and the economy in general. During the recessionary periods, costs of going public outweigh the potential benefits, resulting in a sharp decrease in number of IPOs. Steve Liesman, a Senior Economics Reporter at CNBC, draws from various sources to argue that IPOs serve to propel economic growth : although only 100 companies out of 600000 reach the IPO stage annually, the potential "cash-out" might serve as an effective insentive to start a business, promoting subsequent rise in employment, income and aggregate demand. Precisely, " IPOs from 1986 to 2000 added 822 employees resulting in a 60 percent average growth in employment over a decade"[5]. The state also seems to recognize the IPO's contribution: "encouraging public offerings is one of the main priorities being addressed by Congress and President Obama through the JOBS Act"[6] : the Act was aimed at facilitating the process of going public for growth firms.

After observing the contribution of IPOs to the economy in general, a more detailed analysis can be applied to the conditions that allow individual owners and investors benefit from being involved in the IPO market. IPO process consists of several core stages that include selection of an investment bank (underwriter) managing the IPO transition, due diligence and and regulatory filings (including the underwriter agreement, registration statement with the SEC, etc.), IPO pricing, stabilization and lastly, transition to the secondary market. Each step might require significant costs, thus, naturally, the first feature of a successful IPO from the point of investors might be an ability to generate proceeds sufficient to outweigh the costs arising from the mentioned procedures.

On the other hand, as previously indicated, regardless of the motivations behind the IPO decision, the higher price and proceeds serve as a metric in defining the IPO success for the owners: higher prices and number of shares sold translate in greater amount of equity raised, higher reputation for the firm, higher proceeds for the firm's employees seeking to "cash out"[7] From investors' viewpoint, an IPO success can have different implications dependent on the long-term or short-term nature of their investment plans. For investors, in contrast to the pre-IPO owners, the volume of the firm's proceeds raised during the IPO are not relevant, while the company's potential for post-IPO earnings are

3. Amadeo, K (2018). IPOs, Their Pros, Cons, and the IPO Process. The Balance.
4. Arnold, J (2018).What Are The Pros And Cons Of Spotify's $1BDPOOnTheNYSE?.Forbes.$
5. Liesman S(2012). Facebook IPO: How Stock Offerings Help the Economy. CNBC.
6. Schroter W (2014). Behind The IPO: Startups Before They Were Worth Billions, Forbes.
7. Schumpeter (2018). Life as you know it is IPOver. The Economist.

more important. For short-term and long-term investors, high earnings provide higher potential for a capital gain and greater liquidity of the purchased stock. [8]

Interestingly, the popular literature and media coverage on IPOs mostly defines the IPO success in terms of the immediate proceeds from the IPO, which reflects the perspective of the initial shareholders, while the quality of an IPO as an investment, an indicator of the value of an IPO to investors, is not given the same level of attention. There are also other alternative definitons of an IPO success that reflect not only pre-IPO shareholders' perspective. Particularly, some articles analyze the IPO success from the perspective of underwriters, investment banks that oversee the IPO process. As Harriet Agnew, City Correspondent for Financial Times notes : "As for the banks, they continue to define IPO success on whichever metric allows them to outscore their rivals" [9]

The investment banks might have their own definition of a successful IPO: they are paid by the company owners for meeting their criteria of a successful IPO (higher prices and higher proceeds), however, they hugely benefit from the spread between the initial offer and the close end market price of an IPO. This definition aligns with the pre-IPO stockholders' focus on higher prices and number of shares issued, however it might not consider the long-term performance that is relevant to investors of the firm since, according to Agnew, performing due diligence is not part of the underwriters' business model. Overall, the perspective of the underwriters neither supports nor rejects a causal relationship between an IPO issuance success and the success of an IPO as an investment. This study will attempt to shed a light on the mentioned relationship and also identify the factors contributing to success of an IPO issuance.

The rest of the paper is organized as follows. Section I discusses other related work. Section II introduces the data and method used to examine our research question. Section III expands the analysis with results from tests. Section IV presents the conclusion. Lastly, Section V describes directions this study might take as well as an extended study.

I. Related Literature

In the analysis of the relationship between success of an IPO for the initial shareholders and for the investors, it is necessary to unfold the motives behind the choice of an IPO issuance success as a proxy for estimating an IPO success for pre-IPO shareholders, and similarly, an explanation needed for the choice of post-IPO performance as a measure of an IPO success for investors. Apart from the theories presented in the popular media, vast empirical evidence indicates that financial success, i.e. the amount of capital raised during the IPO, is the main objective for the initial shareholders. Kim and Weisbach (2008) conducted a study of the key reasons why the firms in 38 countries chose to offer both primary and seasonal equity shares to the market; the research confirmed that the primary motive behind going public is raising funds for financing the growth projects. Similarly, the survey of 336 company CFOs conducted by Brau and Fawcett (2006) also revealed that apart from establishing the firm's reputation and stable market valuation, raising capital is the primary motivation for pursuing an IPO.

As for the definiton of an IPO success from the point of investors, it might be generally

8. Should You Buy an IPO for Short-Term or Long-Term Gains? Investor Guide.
9. Agnew H (2014) IPO banks seek measure of success. Financial Times.

acknowledged that investors seek to maximize gains from their investments, thus, the primary characterisic of a successful IPO would be an ability to generate returns in excess of the initial costs, an ability which is reflected in firm's post-IPO profits, dividends, prices, etc. Thus, the definition of an IPO success for investors might be relatively irrefutable. The important phenomenon to consider, however, is the investors' perception that firm's pre-IPO profitability might serve as an indicator of the mentioned success, i.e the firm's future financial performance.However, despite the common perception that after going public a firm will use its resources as efficiently as prior to the IPO, Teoh, Welch, and Wong (1998) observed that investors who heavily rely on the information on the firm's pre-IPO earnings have a risk of falling victims to potential manipulations of the pre-IPO financial reports. Thus, the study of the relationship between the success of an IPO issuance (IPO success from the viewpoint of pre-IPO firm owners) and post-IPO profitabiltiy (IPO success for the investors) might be a particularly rewarding research topic.

To investigate the aforementioned relationship, firstly, it is necessary to identify the main factors that lead to the success of an IPO issuance. The IPO Issuance success has been a basis of numerous empirical studies for several decades and is conventionally measured by the ability of an IPO to raise funds via the sale of primary shares. These studies have established a positive relationship between success of an IPO issuance and several firm and market related variables such as prestige of the lead underwriter overseeing the IPO process, percentage of issues retained by the initial shareholders during the IPO, pre-IPO profitability of the firm. The firm's post-IPO performance was a subject of research for both academic and business purposes. In the academia, Ritter and Welch (2002) observed decline in the post-IPO profitability for companies in both assymetric and non-assymetric markets.

Although the general consensus has not been achieved, the majority of studies characterize the IPO market as a highly assymetric market, a market with an existing information disequilibrium between pre-IPO shareholders' and potential investors. To explain the behavior of buyers (investors) and sellers (pre-IPO shareholders), the "Signalling" theory was developed by Engers (1987) who discovered that under the information assymetry, sellers have to convey the quality of their products by engaging in particular activities called "signals". To be effective, these "signals" have to be difficult to imitate by the sellers of lower quality products. The research conducted by Carter and Manaster (1990) was one of the most articulated interpretations of the "Signalling" theory to the IPO market. Under the information assymmetry, current firm owners have a superior knowledge about the firm's future prospects, quality of human capital, internal operations, while the investors have a relatively constrained access to this data.

The "Signalling" theory provided a reliable framework for explaining the behavior of investors and pre-IPO stockholders. Grinblatt and Hwang (1989) also utilized a signalling model to determine positive "signals" that affect the IPO prices and proceeds. This research discovered that degree of underpricing and the relative percentage of issues retained by the initial shareholders convey high quality of the firm's stocks. Both of these "signals" are based on the assumpion that the pre-IPO owners' are confident about the future rise in the firm's profitabiltiy. Precisely, only the firms with high quality issues can afford greater levels of underpricing as they can recover the losses due to the future improvements in the firm's performance. Similarly, for the same reasons, the initial

shareholders tend to retain higher level of ownership in a firm with high quality stocks while firms with poor prospects or "shell" IPOs seek to "cash out" most of the shares as the current market value for a firm might be even higher than the future.

Apart from the factors pertaining to the firm's operations, the investment bank that overviews the IPO process also indirectly affects IPO prices and proceeds. Carter, Dark, and Singh (1998) used Carter-Manaster method to rank the investment banks and investigated the relationship between the underwriter's reputation and initial returns on the sales of IPO shares. The study arrived at two important conclusions: (i) during the first three years after the IPO, firms tend to underperform relative to pre-IPO levels; (ii) for the firms with more prestigious underwriters, the decrease in performance was less severe. The data on the impact of the underwriters was significantly extended by Bajo, Chemmanur, Simonyan, and Tehranian (2016) who discovered that the lead underwriters with more central location in its network of investment banks tend to attract the media and investors' attention, resulting in higher initial returns and greater market valuations for an IPO.

Finally, the use of accounting information on the firm's pre-IPO performance is highly recommended by **?** who determine the ability of historical and forecasted comparable firm multiples such as price-to-earnings, market-to-book, and price-to-sales ratios to affect the IPO valuation, i.e. market price. The study concludes that the firm's earnings (a basis for the calculation of firm's valuation ratios)- both historical and projected - affect the IPO valuation and provide a proxy for estimating the firm's post-IPO profitability, a reflection of an IPO success for the new investors.

After considering the impact of various factors affecting success of an IPO issuance, a relationship between this success and the firm's post-IPO profitability is examined. Numerous studies posit that firms tend to experience decline in operating performance and profitability following the IPO. Jain and Kini (1994) explored the operating performance of the firms during the first three years following an IPO and arrived at two conclusions: (i) retention of the issues, a factor that can be postitively related to the success of an IPO Issuance, also has a positive relation to the firm's post-IPO long-term performance; (ii) on average, firms experience decline in profits at least in the first three to five years following the IPO. Moreover, the main factors contributing to the post-IPO underperformance include (i) increased agency costs, (ii) initial "window dressing" of the financial reports, which results to overstated pre-IPO and understated post-IPO performance, and lastly, (iii) the coincidence of the primary issue offerings with the periods of unusually high profit levels as firms are aware that these high profitability is not sustainable.

Similarly, Pástor, Taylor, and Veronesi (2009) conducted an extensive empirical research on the firms' post-IPO profitability, analyzing a sample of 7,183 IPOs in the U.S. between 1975 and 2004. This study describes the post-IPO decline in profits as an expected outcome given the specificities of the firms pursuing an IPO. In this model, firms with lower incentives for private control and higher volatility of earnings tend to go public: the market value of such a firm is more sensitive to the expected future profitability than the firm's private value, thus, when the expected profitability rises, the market value rises faster than the private value, creating an incentive for the firm to go public. Under the conditions of volatile profitability, a decline in the performance is a natural part of the cycle.

The aim of this study is to conduct an empirical analysis to determine whether the

success of an IPO Issuance can serve to predict the profitability of the firm following an IPO, reflecting the value of an IPO as an investment. The study executes this analysis in close relation to the work performed by and Carter, Dark, and Singh (1998) by examining the relationship between the IPO Issuance success and (i)ranking of the lead underwriters overseeing the IPO process, (ii) percentage of issues retained by the pre-IPO shareholders and (iii) the firm's pre-IPO profitability. If the factors contributing to the pre-IPO issuance success are not relevant to the post-IPO profits of the firm, then it is expected that, contrary to the investors' expectations popularized by the media's focus and observed in the previous studies, success of an IPO issuance might not guarantee success of an IPO as an investment.

II. Descriptions of Data, Sample, and Tests

A. Description of the Data

All of the data for this research was collected from Wharton Research Data Services (WRDS), and the Electronic Data Gathering, Analysis, and Retrieval system (EDGAR). WRDS is an online data service provided by The Wharton School of Business at the University of Pennsylvania. The service allows access to Compustat database from which the information on the firm's profitability for the year prior to an IPO and three years following the IPO was extracted. Compustat North American Database was used to extract annual data on the balance sheet, income statement, statement of cash flows and financial ratios for the observed 48 companies from the Jay Ritter's IPO list. Particularly, COMPUSTAT was used to collect data on net income, total assets, and total equity in order to calculate the return on equity (ROE) and return on assets (ROA), used as measures of profitability for the 48 companies that offered primary shares between the years 1985 and 2005.

EDGAR Database performs automated collection, validation, indexing, acceptance, and forwarding of submissions by firms who are legally required to report the financial information with the U.S. Securities and Exchange Commission. The EDGAR Database is accessible to the public and contains the EDGAR Pro database, a tool specifically designed to provide access to the comprehensive SEC filing information. This database allowed to gain information on each company's IPO profile, including the IPO date under the status column, issue share price, number of shares offered during the IPO, shares outstanding (sum of the shares retained and offered during the IPO), net income, total assets and stockholders' equity at the time of the IPO. The information can be extracted after entering the ticker code or company name in the search tool. Also, EDGAR database provides the list of the lead underwriters for the IPO, data that was utilized in estimating the impact of the underwriter's ranking on an IPO issuance success.

B. Description of the Sample

The sample used for this study consists of 48 randomly selected firms listed in the file "Founding dates for IPOs from 1975-2017 (updated January 2018)" in the IPO Database provided by the Professor Jay Ritter from University of Florida. This dataset contains the company names, founding dates, permanent IDs from the CRSP, the first trading dates for firms that went public in the U.S. during the period between 1975 and 2017. Professor

Jay Ritter's extensive research on IPOs is recognized as one of the most comprehensive, reliable and frequently updated sources on the IPO Data.

My sample includes the firms that became public between 1985 and 2005. The period was chosen due to accessibility restrictions beyond 2006 presented by the Compustat database.The studies conducted by Jain and Kini (1994) and Pástor, Taylor, and Veronesi (2009) are utilized in the analysis of the firms' post-IPO decline in profitability and the period selected for the sample coincides with the dates selected for these two studies. The period directly precedes the 2007/8 financial crisis to avoid potentially highly negatively skewed data, since during the 2007/8 and four years after, as observed by Lowry (2003), macroeconomic factors, i.e. recession significantly outshadowed other factors that might affect the success of an IPO issuance.

The data sample consists of the firms with a complete set of data values, that is, no firms were used where data was found to be missing from the data set. Also, in conjuction with the previous empirical studies, financial institutions were excluded from the sample. In the analysis of the post-IPO performance, although Jain and Kini (1994) restricted the research sample to include the firms with the minimum 1.5 million $ raised and minimum price of 5 $ per share, in this study, due to a smaller sample size and therefore, greater proneness to bias, the aforementioned restriciton will not be imposed. In the evaluation of the role of underwriter's ranking and pre-IPO earnings, the samples for the studies by Carter and Manaster (1990) and Kim and Ritter (1999) included only firms that went public during the early 1980s and 1990s while this study aims to examine the validity of previous research findings by testing the application of the models to more recent periods and inlcudes the firms that went public in the early 2000s and late 1990s. Twenty year time period was utilized to allow the effects rising from the volatility in macroeconomic environment to level out (recession in early 1990s and dot com boom 2000s).

The proxy I use for the IPO Issuance success, which is calculated as a % increase in the initial owners' shareholders equity per % of ownership sold [10] is consistent with the proxies used by previous studies. As mentioned previously, the main objective of the initial shareholders is raising funds via the issuance of primary shares, therefore, measure of an IPO success should include the proceeds from an IPO, defined as share price multiplied by the number of shares sold at IPO. On the other hand, the initial stockholders might not want to sell too many shares as it would negatively affect their ownership position in the firm. The IPO Issuance success measure defined in this study also takes this into consideration. This proxy considers the trade-off between raising additional funds and renouncing a portion of the control over the firm. IPO Issuance success ratios were calculated for the 48 firms spanning for the period over the 20 years between 1985 and 2005.

The firm's pre-IPO and post-IPO profitability is measured by the weighted average of Return on Equity (ROE)[11]and Return on Assets(ROA)[12]. ROE was chosen as the primary measure of the firm's profitability by Pástor, Taylor, and Veronesi (2009), in this study,

10. IPO Issuance success is:
$S = [Proceeds from the IPO issuance/Pre - IPO total equity]/[(shares issued in IPO)/(Pre - IPO shares + shares issued in IPO)] where [Proceeds from the IPO = offered price * shares issued in IPO]$

11. Return on equity is:
$ROE = [Net Income]/[Total shareholders' equity]$

12. Return on assets is:
$ROE = [Net Income]/[Total Assets]$

however, to account for the impact of debt on the firm's liquidity, a factor significant for the firm valuation, ROA is also included in the calculation of the firm's profitability, which is given as a weighted average of both ROA and ROE. The firm's pre-IPO profitability was calculated from the net income, total assets and total equity from the financial statements for the year preceding the firm's IPO date. The post-IPO performance was measured for the first three years following the IPO date. Three year period is a conventionally used as a benchmark in evaluating the firm's post-IPO performance. Precisely, both studies that analyze the post-IPO decline in operating performance and profitability: research by Jain and Kini (1994) and Pástor, Taylor, and Veronesi (2009) respectively calculate profitability and valuation ratios for the three consecutive years following the IPO.

The ranking of the underwriter was computed according to the Carter-Manaster method as provided in the Appendix ii to the research paper by Carter and Manaster (1990), where the ranking score from 0.0 to 9.0 was assigned to 117 underwriters. The score was calculated based on the underwriter's position in the tombstone announcement in the Investment Dealer's Digest and Wall Street Journal for the studied period. Carter-Manaster method is a widespread method used for quantifying the "reputability" of the underwriters involved in the IPO process. The lead underwriter for a firm is obtained from the EDGAR Database, and in case if several lead underwriters have different rankings, the rankings are averaged.

C. Description of the Research Design

As previously mentioned, this study attempts to determine the factors most contributing to the success of an IPO issuance and the relationship of this success (reflecting the viewpoint of the initial shareholders) to the post-IPO profitability of the firm. According to the previously mentioned studies, firm's pre-IPO earnings and subsequent profitability, the ranking of the investment bank regulating the IPO process and % of issues retained by the shareholders are the primary factors contributing to the success of an IPO issuance. If the success of an IPO is not related to the post-IPO profitability of the firm as studies by Pástor, Taylor, and Veronesi (2009) and Jain and Kini (1994) suggest, then success of an IPO for initial shareholders does not guarantee success of an IPO for the investors.

If the IPO Issuance success has a positive relationship to the post-IPO profitability of the firm, then firms with high IPO Issuance success ratio would not experience decline or at least will experience smaller decline in post-IPO profitability measures. The design of this test is based on the assumption that the estimation of the underwriter's ranking still holds for data within recent years and for a different sample than used in the original study by *Carter and is the most accurate model available for predicting bankruptcy risk.

The two hypotheses suggest a test of the question raised by this study. The null hypothesis and a refutable alternative regression model hypothesis are presented as follows:

H1: The success of a firm's IPO issuance leads to a higher post-IPO profitability.
H2: The success of a firm's IPO issuance does not ensure the firm's high post-IPO profitability, and therefore success of an IPO for the initial shareholders does not ensure success of an IPO as an investment.

To test the hypothesis, firstly, the relationship between the IPO issuance success ratio and its relationship to (i) underwriter's ranking, (ii) the firm's pre-IPO profitability and (iii) % of retained issues retained by the initial shareholders is analyzed. The abovementioned measure effects are used as control variables in the test due to empirical evidence that these three variables are strong predictors of the success of an IPO Issuance. Then average IPO Issuance success ratios for different firms are organized into four portfolios. Two regression analyses are performed to test the study hypothesis: (1) to estimate the IPO issuance success ratio and (2) to examine the effects of the IPO Issuance success on the post-IPO profitability. The current study examines the IPO issuance success and post-IPO profitability separately since this approach allows to break down the contribution of each variable to the success of an IPO issuance and include only relevant factors in the ultimate calculation of the post-IPO profitability. This approach addresses potential multicollinearity issues and enhances the significance of the overall regression model measured by R square.

$$S_t = b_0 + b_1 U + b_2 P_{t-1} + b_3 R_t + \epsilon_t \quad (1)$$

$$P_t = b_0 + b_1 S_t + \epsilon_t \quad (2)$$

This hypothesis is investigated in two steps. Firstly, the regression analysis will be conducted to determine the most significant factors affecting an IPO issuance success. Based on the readings, pre-IPO profitability and % of retained issues might be those factors. The second step will be to calculate the IPO issuance success ratio for each firm and organize the results in 4 portfolios, where each portfolio will include 12 firms with success ratios in the same range. Portfolios are organized based on the number of firms, for example, if the highest issuance success ratio will be 90.0, and among 30 firms, 10 will have Issuance success ratio between 3.0 and 4.0, 10 firms between 4.0 and 5.5 and 10 between 5.5 and 90.0, then the first portfolio will include firms with the the Issuance success ratio between 3.0 and 4.0; second- between 4.0 and 5.5; and third- between 5.5 and 90.0 etc. The portfolios start from the top to bottom in an increasing order of issuance success ratio: the first portfolio (from top) represents firms with the lowest success ratios. IPO Issuance success ratios, if negative, will be assumed to be zero.

After the securities are segmented into their respective portfolios, the average post-IPO, pre-IPO profitability measures and average ranking for firm's underwriters and average percentage of the issues retained by the initial stockholders will be calculated for each portfolio. The portfolio analysis primarily analyzes the relationship between post-IPO profitability and IPO issuance success, so all other individual variables considered for the portfolio analysis, should be proven to be significant for explaining the IPO issuance success; an individual variable (underwriter's ranking, pre-IPO profitability, percentage of retained issues) can be excluded from the portfolio analysis if its impact proves to be insignificant for the determination of the IPO issuance success.

An ordinary least squares (OLS) regression is also performed twice on the data using the regression model depicted above, whereby firstly, the IPO Issuance success is regressed against the firm's pre-IPO profitability, the underwriter's ranking, and percentage of retained issues by the pre-IPO owners. Then, only the relationship between the success of an IPO issuance and the firm's post-IPO profitability is examined. A positive value

for b_1 in the second regression equation indicates that firms with lower St value (thus higher IPO issuance success ratios) are characterized by higher profitability levels and vice versa. If it is determined that firms that are more successful during the IPO Issuance process, or those with higher St values, in the post-IPO period generate lower profits than the firms that were less successful during the IPO Issuance, then the null hypothesis is rejected. This will lead to the conclusion, in support of the alternative hypothesis, that success of an IPO Issuance as defined for the initial shareholders does not guarantee the high post-IPO profitability, and therefore does not ensure success of an IPO from the viewpoint of investors.

III. Empirical Results

A. Descriptive

Table I shows the descriptive statistics for the variables outlined in the regression model. St is a measure of an IPO Issuance success calculated for the sample of 48 firms randomly selected from the Jay Ritter's IPO Database over a 20 year period. The higher the value of $Pt-1$ or pre-IPO profitability, the higher the St or IPO Issuance success ratio. Based on the St rankings, there is a wide range for the levels of IPO issuance success, with the lowest success ratio having an St value of 0.6 and the highest St having value of 69.7. As previously mentioned, U is the underwriter's ranking according to the CM method outlined in the study by Carter and Manaster (1990) and Rt is the percentage of retained issues, calclulated as pre-IPO shares divided by the sum of Pre-IPO shares and shares issued during the IPO. $Pt-1$ is measured as an average of return on equity (defined as net income divided by total equity) and return on assets (defined as net income divided by total assets) for the year prior to the IPO. Pt calculated in the same way as $Pt-1$ but for three years following the IPO with the results for three years averaged.

The table also illustrates the standard deviation for each variable in the model. One significant observation from the data is that for the selected sample of 48 firms the underwriter's ranking has a very low standard deviation, indicating a low variability in the data: the average ranking is very high, closer to the maximum value, which might signal that for the particularly studied sample, underwriter's ranking might not be statistically significant. This finding does not dispute the previous study by Carter, Dark, and Singh (1998) as given a comparatively small size of the current sample (48 versus 2292) and small range of the ranking scores (only between 0.0 and 9.0) skeweness in results can be expected. However, for this particular sample, we exclude the effect of underwriter's ranking from the portfolio analysis.

Table II displays the Pearson correlation between regression coefficients which serves to present the study's introductory findings. The positive (even excessively significant) relationship between St and pre-IPO profits indicates that firms characterized by a more successful IPO issuance (higher stock prices, greater volumes of sales) tend to be more profitable in the periods preeceding the IPO. The highly significant correlation of 0.76, although supports the general conclusion of the previous studies, is still statisitically unusual. According to the study by Kim and Ritter (1999),one of the potential reasons for the existence of outliers e.g. unusually positive outcomes, might be the fact that only

Table I
Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
S(t)	48	0.6	69.7	8.4	10.1
U	48	5.0	9.0	7.18	0.05
P(t-1)	48	-3.14	5.73	0.8	12.57
R(t)	48	0.109	0.6	87	8.4
P(t)	48	-15.4	0.8	-2.71	5.3

historical earnings and individual firm measures were used to calculate profitability. This study concludes that in order to obtain more precise estimates for the firm's profitability and IPO valuation, comparable firm multiples should be used to calculate valuation and profitability measures. The study suggests that along with historical values, the effect of projected earnings should also be considered. Additionally, a relatively small sample size could also be a reason for skewedness in the data (the sample for the aforementioned study was four times as big). In general, a positive relationship between pre-IPO profitability and IPO issuance success is observed in both this study and the readings.

In the support of the null hypothesis, the post-IPO profitability and IPO issuance success also have a positive relationship. However, there are two factors necessary for consideration. Firstly, the correlation between the IPO Issuance success and post-IPO profitability is 2.5 times smaller than the correlation between the former and pre-IPO profitability respectively., given the potentially postive skewedness of the data, additional empirical analysis might be required. Moreover, there is a negative relationship observed between Pt and $Pt-1$, which indicates that (i) pre-IPO profits have a low predictive ability in regards to the post-IPO profitability and (ii) firms tend to earn less in the years following the IPO. Thus, the overalll conclusion of the analysis supports the alternative hypothesis and is consistent with the study by

In contrast to the initial assumptions of the study, percentage of retained issues does not have a significant impact on the issuance success, however, it has a significant statistical relationship with the firm's post-IPO profitability. This result is consistent with the findings of Jain and Kini (1994) who discovered a positive relationship between the percentage of issues retained by the owners and the operating performance of the firm in three years following the IPO; it was concluded that both pre-IPO and post-IPO performance is positively related to the relative number of retained issues. This result is consistent with the outcomes of this study, however, the main emphasis in this is put on the impact of retained issues on the IPO issuance success, not post-IPO performance of the firm. As in this sample the % of retained issues is not significant for the estimation of IPO issuance success, as mentioned previously, the former will be excluded from the porfolio analysis.

The results of further investigation using portfolio deciles are presented in the table below. As mentioned in the previous Section II, portfolios were constructed based on the $S(t)$ values of the sample firms. Portfolio 1 represents the firms with the lowest IPO issuance success ratios and Portfolio 4 represents the firms with the highest IPO issuance success ratios. Refer to Data and Methods Section II for further details. Based

Table II
Pearson Correlations

		S(t)	P(t-1)	P(t)	R(t)
IPO Issuance success	Pearson Correlation	1	.76**	.31	0.09
	Sig. (2-tailed)		.000	.001	.367
pre-IPO profits	Pearson Correlation	.76**	1	-.23**	0.21
	Sig. (2-tailed)	.000		.0065	.008
post-IPO profits	Pearson Correlation	.31	-.23**	1	0.455**
	Sig. (2-tailed)	.001	.0065		.000
% retained issues	Pearson Correlation	0.09	.21	.455**	1
	Sig. (2-tailed)	.367	.008	.000	
** Correlation is significant at the 0.01 level (2-tailed).					

on the previous analysis, we find that pre-IPO profitability is the most pertinent factor in determination of the issuance success, thus, in the portfolio analysis, the post-IPO profitability of the firms will be compared against their IPO Issuance success and their pre-IPO profitability.Table II demonstrates that the public firms with the highest $S(t)$ value, indicating highest IPO issuance success ratio, tend to have higher than average profits prior to the IPO. This can be verified by observing the simulataneous increase in IPO issuance success and pre-IPO profitability from portfolio 1 to portfolio 4. In the portfolio 1, firms with the lowest values of IPO issuance success ratio ranging from 0.5 to 2.8 also display the lowest pre-IPO profitability mean and median values. Notably, the differences in pre-IPO profits between the first and second portfolios are not statistically significant, which might imply that for the firms with low pre-IPO profitability, its impact on IPO Issuance success is weak. In contrast, it can be observed that there is a weak statistical significance for the differences between the second and third portfolios and a very strong statistical significance between the fourth and the first portfolios. Thus, it can be deducted that only high profitability of the firm can efficiently signal value of an IPO and significantly contribute to the IPO issuance success.

On the other hand, post-IPO profitability of firms might vary independently from their portfolio identities. In the analysis of the relationship between post-IPO profitability and an IPO Issuance success, it is observed that only for the firms in the third and first portfolios (based on median values), there is a positive relationship between an issuance success ratio and post-IPO profitability. Moreover, it is notable that both the portfolios with the lowest and highest IPO issuance success scores have approximately the same post-IPO profitability median values. The non-existence of a clear pattern between the issuance success and profits following the IPO vaidates the previously observed research outcomes. Furthermore, post-IPO profitability mean and median values have a remarkable difference for all portfolios- this might indicate a presence of outliers with exceptionally large decreases in post-IPO profits, significantly bringing down the statistical mean of the the post-IPO profitability for all firms in the portfolio. The portfolio analysis suggests that success of an IPO issuance which measures success of an IPO from the perspective of initial shareholders is positively related to the firm's profitability prior to

the IPO and has no relation to the firm's profitability in the post-IPO period, a measure of an IPO success for investors.

Table III
Portfolio Results

IPO Issuance success	P(t-1) Mean	P(t-1) Median	P(t) Mean	P(t) Median
(0.5 - 2.8)	10.3	7.5	2.6	6.13
(2.82- 5.63)	10.6	9.12	-3.34	7.6
(5.63-10.11)	20.32	5.15	3.64	10.1
(10.11-69.7)	35.1	25.87	-5.3	6.54

Regression results illustrated in Table IV further support the findings that pre-IPO profitability of the firm is highly significant to the firm's IPO issuance success, $S(t)$. The coefficient of $P(t-1)$ is both positive and statistically significant at the 99 percent confidence level, which is concurrent with the outcomes of the study by Kim and Ritter (1999). Restrictions of the sample size, and relatively small variance in the rankings might affect the predictive ability of U,an indicator of the IPO underwriter's ranking, which is reflected in the regression analysis. Similarly, from the Pearson Correlation analysis performed previously, it was discovered that $R(t)$, a relative measure of the retained issues might not be a pertinent factor in describing the success of an IPO issuance, however, according to Jain and Kini (1994) it might have a significant relationship to the firm's post-IPO performance as higher equity retention by managers reduces their incentives to undertake nonvalue projects. The mentioned study estimated the equity retention percentage on the basis of exercise of overallotment issues; the WIlcoxon two-sample signed ranking test revealed that operating return on assets positively depends on the percentage of retained issues by original stockholders. Our findings are concurrent with these results.

Table IV
Regression Results

$Return_t = b_0 + b_1 Z_t + b_2 MV_t + b_3 (B/M)_t + \epsilon_t$				
		Coefficients	Std. Error	Sig
underwriter's ranking		0.12	0.05	0.000
pre-IPO profits		0.425	0.053	0.000
% of retained issues		0.09	0.051	0.000
R	0.635			
R^2	0.403			
F	35.575			

The results in Table V are the outcomes of the single linear regression analysis performed on $S(t)$, an IPO Issuance success ratio, and $P(t)$, firm's post-IPO profitability. The empirical findings are consistent with the previous empirical findings, particularly, with the studies by Pástor, Taylor, and Veronesi (2009), who assume the success of an IPO issuance given the firm's high pre-IPO profitability and instead directly examines

the relationship between pre-IPO and post-IPO profitability of the firm without neither considering other factors affecting post-IPO profits, nor calculating the IPO issuance success separately. According to the model, only firms with currently high yet volatile profitability levels decide to go public, thus, IPO issuance success is expected to be a reflection of the pre-IPO profitability. The result outcomes observed in our study are concurrent with the method research and conclusions of the aforementioned study, except for the fact that the latter assumes perfectly assymetric market (all information is available to buyers) and employs a distinctive Toy model in the proof of its research hypothesis. Based on the performed regression model, it is observed that IPO issuance success has a weak relationship to the firm's post-IPO profitability. Given the previous analysis of the relationship between pre-IPO and post-IPO profitability (inverse relationship) and the strong positive impact of pre-IPO profits on the IPO issuance success, a weak relationship perfectly complies with assumptions of this study and questions the practice of focusing on pre-IPO profitability in determining the value of an IPO as an investment.

Table V
Regression Results

$P_t = b_0 + b_1 S_t + \epsilon_t$				
		Coefficients	Std. Error	Sig
IPO Issuance success		0.11	0.047	0.000
R	0.635			
R^2	0.403			
F	35.575			

B. Test Results of the Hypothesis

Based on the results of this study, I reject the null hypothesis that the firm's post-IPO profitability is ensured by the success of an IPO issuance. Moreover, I find that the former has a strong positive correlation with the firm's pre-IPO profitability. The results of this research are generally consistent with the findings of the guided empirical analysis performed by (i) Jain and Kini (1994) on the post-IPO performance measured with the valuation ratios and performed by (ii) Pástor, Taylor, and Veronesi (2009) where the profitability ratios were employed. Various types of analysis have been performed on the sample data, and each analysis indicated a statistically significant relationship between the pre-IPO profitability and the IPO issuance success. Most investors, might rely on the firm's profits prior to the IPO and expect that after going public the company will perform with the same level of success. These sentiments might translate into success of an IPO issuance for firms with high pre-IPO profits. However, the regression analysis shows that IPO Issuance success has only weak relationship to the post-IPO profitability. Moreover, the correlation coefficient estimated specifically for pre and post IPO profitability is negative and the portfolio analysis demonstrates that firms characterized by high IPO issuance success do not necessarily have a high or low post-IPO profitability levels. Such results lead me to support the alternative hypothesis that success of an IPO issuance, a

measure of success of an IPO for investors, does not ensure high post-IPO profitability of the firm, a measure of success of an IPO for investors.

IV. Conclusion

Initial pubic offerings are important on both overall market and individual dimensions: news about IPOs instantly receive extensive media coverage. However, the media usually analyzes the outcomes of the IPOs from the perspective of pre-IPO shareholders as the proceeds from the IPO are emphasized. Investors, in their own turn, often assume that higher pre-IPO profitability is positively linked to the firm's post-IPO performance, an assumption that results in higher IPO proceeds for better performing firms when they enter the primary shares market. This study attempts to determine factors pertinent for ensuring a successful IPO issuance, and then analyze the relation of this success to the post-IPO proceeds or, in other words, the study seeks to assess whether success of an IPO for the initial shareholders guarantees success of an IPO for the new shareholders.

The study is based on the empirical analysis performed by Pástor, Taylor, and Veronesi (2009) and is based on the theory that success of IPO issuance is determined in terms of relative increase in IPO proceeds per ownership lost while success of an IPO for investors is determined in terms of post-IPO profitability of the firm measured for three years following the IPO date and estimated as an average of return on equity and return on assets. Data is collected from CRSP, Compustat and EDGAR databases and the sample consists of 48 randomly selected firms in the Prof. Jay Ritter's list of IPOs from his IPO Database. The sample period is a 20 year period from 1985-2005 which overlaps with the period analyzed by Pástor, Taylor, and Veronesi (2009).

For the examination of the factors affecting the IPO issuance success, the research model incorporates controls for the ranking of the underwriter who oversees the IPO process, the percentage of equity retained by the original shareholders and the pre-IPO profitability because previous studies indicate that these three variables are strong predictors of success for an IPO issuance. For the analysis of the research hypothesis, the relationship between the post-IPO profitability and issuance success is examined using the Pearson correlation and regression analysis models. The proxy used to measure profitability prior and after the IPO date is an average of return on equity and return on assets for the year prior to the IPO and three years after the IPO respectively. Profitability is based on annual data for the 1985-2005 period.

IPO issuance success ratio is measured as a % increase in total equity per % of the firm ownership sold during the IPO; this measure of an issuance success is chosen to reflect the trade-off for the pre-IPO shareholders and a modified version of a proxy for estimating the firm's performance that was used by Kim and Ritter (1999). The only difference is that the aforementioned study uses valuation ratios while this study uses profitability ratios to estimate the firm's post-IPO performance. The proxy used to measure underwriter's ranking is a rank assigned to a firm based on the study by Carter and Manaster (1990). This model was chosen because of its popularity as a measure of the underwriter's ranking. Percentage of issues retained is calculated as a ratio of outstanding shares not offered during the IPO. Data on proceeds, number of shares sold and retained during the IPO are extracted from the EDGAR Database.

In order to test the hypothesis that the firm's post-IPO profitability is determined by

the success of an IPO issuance, two regression models were created; the first regression model used an IPO issuance success as a dependent variable and underwriter's ranking, pre-IPO profitability and % of retained issues as independent variables. Regression results indicated a statistically significant positive coefficient for the pre-IPO profitability, $P(t-1)$. This indicates that firms with higher profits prior to going public experience a more successful IPO issuance. The second regression model was a simple linear regression model performed on the firm's post-IPO profitability as a dependent and IPO issuance success as an independent variable. Regression results indicated a weak positive relationship between the IPO issuance success rato and post-IPO profitability. This outcome, with the consideration of an inverse relationship between pre-IPO and post-IPO profitability (as determined from the Pearson correlation analysis), shows that an IPO issuance success, even with the assumption of a high pre-IPO profitabilty, is not a pertinent factor in determination of the firm's post-IPO profitability. This conclusion is concurrent with the outcomes of the research conducted by Pástor, Taylor, and Veronesi (2009).

It was observed that underwriter's ranking is positively related to the firm's post-IPO profitability, however, these results require an additional empirical test with an extended sample size as the mean and median for an underwriter ranking measure were very close to each other and to the maximum value; standard deviation or variability of the values for the measure was also small, suggesting that underwriter ranking, as an independent variable, might have a limited explanatory value in this sample. For this reason, the measure was removed from the analysis, potentially increasing the significance of the regression model, R square. The % of retained issues, contrary to the studies conducted by Grinblatt and Hwang (1989) also had no significant impact on the success of an IPO issuance, however, this measure had a high and positive correlation with the firm's post-IPO profitability, an outcome theorized and mathematically proven by Jain and Kini (1994). High positive correlation between the firm's pre-IPO profitability and success of an IPO issuance showed were consistent with the regression analysis and previous studies; positive skewedness of the data could be adjusted by using projected earnings and comparable firm multiples in estimation of the post-IPO profitability as suggested by Kim and Ritter (1999).

The outcomes of the regression models and Pearson correlation analysis indicate that pre-IPO profitability of the firm is the most decisive factor in the estimation of the firm's issuance success while the ranking of the underwriter involved in the IPO and the % of issued retained by the initial shareholders have a weak relationship to the issuance success. Furthermore, all firms for the sample period were strategically placed into 4 portfolios where each portfolio included 12 firms with the IPO issuance success ratio falling in the same range of values. Portfolio 1 contained the lowest S(t) values which correspond to the lowest pre-IPO profitability, and Portfolio 4 containing the highest S(t) values which corresponds to the highest pre-IPO profitability. However, no similar pattern was discovered for the relationship between portfolios (IPO issuance success ratios) and post-IPO profitability. Profitability values (weighted average of ROE and ROA) was calculated for each portfolio. The underwriter's ranking and the percentage of retained issues were not included in the portfolio analysis based on the derived relative insignificance of those factors for this particular sample of firms - as indicated by the Pearson correlation and regression analysis that did evaluate the impact of the mentioned factors. The portfolio results also indicated that pre-IPO profiability is significant for a firm's IPO Issuance

success, particularly, high pre-IPO profitability is a good predictor of a success of an IPO issuance; however, the impact of an IPO issuance success on the firm's post-IPO performance cannot be clearly established.

Based on the results of this study, I am inclined to reject the null hypothesis in support of the alternative hypothesis that success of an IPO issuance, measure of success of an IPO from the viewpoint of initial shareholders, does not ensure the firm's high post-IPO profitability, which indicates success of an IPO from the investors' viewpoint for the U.S. IPOs selected from the Prof. Jay Ritter's database during the period preceding the financial crisis.

V. Future Research

The regression model placed a great deal of reliability on estimating profitability levels based on ROE and ROA, however, other measures of profitability and even other valuation ratios such as price-to-sales, market-to-book ratios can be used to estimate the long-performance trends for the IPOs. Kim and Ritter (1999) suggested that including projected and comparable firm multiples to measure the financial ratios can add more precision to the valuation of IPOs. Additionally, non-parametric Kruskal-Wallis test can be performed on the portfolios as the method allows to further break down the portfolio ranges and is usually used in addressing the differences between profitability rates calculated with the return on equity versus with the return on assets (i.e. ROA accounts for liabilities).

Furthermore, the Pearson correlation revealed that the percentage of issues retained by initial shareholders is highly significant for the firm's post-IPO profitability; since this study examines the impact of only one factor on the firm's post-IPO performance, adding another factor, the percentage of retained issues, and calculating the correlation between these two factors can be a first step in establishing a model that determines the post-IPO profitability of an IPO. Additionally, other factors apart from the three tested can be included in the anlalysis of an IPO issuance success: quality of the human capital, liquidity, macroeconomic environment and many other factors can be utilized as independent factors with the IPO issuance success ratio being a dependent factor.

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