

IPO Performance and Money Left on the Table

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Economics 190
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5/3/19

Abstract

This paper seeks to better understand the relationship between a stock's IPO pricing on its first day of trading in public markets and its 3-year returns. The term "money left on the table" is widely used in IPOs in reference to the change of stock price on a firm's IPO date of issuance, multiplied by the number of shares outstanding. Prior literature has investigated reasons for such mispricing as well as its magnitude, but it does not investigate possible correlations with a stock's long-run performance. The purpose of this paper is to fill this lacuna by looking at the amount of money left on the table (if any) and performances over a 3-year horizon of IPOs from 2008-2015. The results indicate that there is in fact, no relationship between an IPO's mispricing on its first day of trading and its long-run performance.

Introduction

An Initial Public Offering (IPO) marks a company's decision to "go public" by raising capital through public rather than private markets. A startup company in its earliest stages might only have a few equity investments from its founders or a small pool of investors. These investors do not have an established, formal market to sell their shares until the company decides to make a debut in public markets. Their decision to go through with an IPO can be due to a variety of reasons. An IPO offers the firm greater financial flexibility with its shares more easily bought and sold on an established platform. It also could satisfy the simple need for additional capital or provide an exit opportunity for early investors such as private equity and venture capital groups. Regardless of why a firm might decide to turn to public

markets, pricing its shares remains a crucial component of the process. If priced too high, investors might not anticipate enough of a return to warrant buying this stock, and if priced too low, an overload in demand will cause a price surge. That leaves money on the table. This study looks at the possible relationship between a stock's IPO price and its long-run performance.

The process of going public can be completed in a matter of a few months. After the company has chosen its underwriting banks, it begins a process of due diligence by filing paperwork. The company first files an S-1 Registration Statement to the Securities and Exchange Commission (SEC) that includes historical financial statements, the number of shares being issued, risk factors, the company overview, and so forth. Once the S-1 has been filed for SEC review, the company crafts its story to attract institutional investors. These institutional investors can include large endowments, pension funds, hedge funds, or other asset managers interested in buying shares of the stock. The underwriting banks then take the company on a "road show" to meet with investors in person or over the phone. This process is meant to gauge what price the shares could debut at. Based on the feedback from investor appetite, underwriters will decide on an IPO price accordingly.

The term "money left on the table" is defined as the difference between the offering price and the market price at the end of the first day of a company's IPO, multiplied by the number of shares issued. Any money left on the table accrues directly to investor and shareholders' pockets, rather than to the firm issuing the IPO. Large initial returns, as defined as large amounts of money left on the table, is one of the best-known anomalies regarding IPOs.

Prior studies on IPO underpricing have led to a variety of hypotheses on why such a phenomenon might occur, the extent to which it has occurred in prior decades, and how underpricing has changed throughout time. In one study, Jay Ritter (1994) posits that IPO underpricing may occur due to a “Winner’s Curse” in which demand will be unexpectedly strong if some investors are at an informational disadvantage, because of “Dynamic Information Acquisition” in which investment bankers purposefully underprice IPO’s to gauge investor appetite during the roadshow period before the actual IPO date, or because of “Information Cascades” in which investors pay attention to whether *other* investors are purchasing shares of a new stock. IPO underpricing also has changed throughout time, with initial returns on the first day of an IPO averaging 15% in the 1990s, jumping to 65% during the dot-com boom from 1999-2000, and dropped to 12% in the years immediately after the internet bubble burst from 2001-2003 (Loughran and Ritter, 2004).

Ritter and Welch (2002) also conducted a study looking at the return of an average IPO against the CRSP value-weighted market index from 1980-2001, finding that the former underperforms the latter by 23.4% given a three-year holding period. CRSP stands for the Center for Research in Security Prices, a widely-used database of stock prices used in academic research. To pinpoint what factors might be driving such long-run (3-year) IPO performances, a group of researchers found that IPO’s executed by a more prestigious underwriting bank had less severe underperformances than IPO’s underwritten by less reputable banks (Carter, Dark, Singh, 1998). While much of the prior literature around IPO’s uncovers why underpricing occurs or why IPO’s do not fare well in the long-run, this study hopes to examine the specific relation between certain IPO factors and long-run IPO performance. I specifically want to look at whether a company’s initial returns can be

indicative of its future IPO performance. Long-run performance will be measured as a three-year holding period, a common practice done by prior studies looking at IPO performance.

Though by no means exhaustive in its explanatory power, initial returns should not be interpreted as the sole factor in driving an IPO's long run performance. In fact, prior literature indicates many IPO stocks tend to underperform relative to the overall market in a three-year time horizon (Schultz, 2003). As IPO mispricing studies have mostly been conducted prior to the financial crisis, a look at the wave of public offerings since the crash will add valuable insight to the existing literature. This study seeks to look at whether a company's performance on the first day of trading can be a significant indication of its three-year performance. By looking at public offerings conducted after 2008, I hope to improve the current understanding around the topic with more recent data from the past decade.

Methodology

IPO Data Sample

For the purpose of this paper, I constructed a data sample of IPOs taking place between the years of 2008 and 2015 in the U.S. The last IPO date in the sample was constrained to be before December 31, 2015 in order to be able to calculate a 3-year holding period return on the stock. Using Capital IQ to screen for public offerings within the time frame listed above, I also filtered for companies that were incorporated in the United States and listed on one of the following exchanges: NASDAQ, NYSE, and AMEX. The exchanges selected were those that the CRSP dataset tracks to ensure I had data on the resulting set of IPO stocks.

The resulting set of 1,089 companies from Capital IQ were then screened for any incomplete data points (for example, some companies were no longer existent after three years and therefore not viable to use in for the purposes of this analysis) when merging the dataset with CRSP. As a result, the final analysis was conducted with 617 companies.

Measuring Financial Performance

In choosing to view the IPO as an investment on behalf of an actual investor, I chose to measure performance as a holding period return. As such, a stock's long-run performance is defined as the total return on a stock held over a three year time horizon. The choice of three years was rooted in its usage in the prior literature and studies. CRSP lists the daily returns on the S&P 500's composite index. Using these 617 stocks and the CRSP dataset, one can find the daily returns on each stock in excess of the daily S&P 500 return, for that corresponding day. Since a holding period of three years was assumed, it is also possible to calculate the return on the stock given its IPO price and the price of the stock three years thereafter.

As such the three year holding period returns can be calculated by finding the return on the stock since its IPO less the return on the S&P over that same 3-year period for any stock "i".

$$3\text{-Year Return}_i = [\text{Stock Return Since IPO}_i] - [\text{S\&P 500 Return Since IPO}_i]$$

Regression Control Variables

When understanding how initial returns affect post-IPO returns, important factors to control for include the IPO's deal size, firm size, and underwriter reputation. The model chosen is based on a combination of prior literature, specifically the papers of Carter, Dark,

and Singh (1998), Carter and Manaster (1990), as well as Ellul, Andrew, and Marco (2006). Three-year returns and excess returns are both measured in decimals rather than percentages. In choosing these variables to control for, I hope to isolate the effects of initial returns on long-run performance.

Excess Return: This variable is the variable I intend to focus on in the analysis. The Excess 1 Return is defined as a stock's return in excess of the S&P market's performance the day of its IPO on the first day of trading in public markets. This would be the proxy measurement for how much money a company left on a table. I anticipate a negative relationship between excess return and three-year performance. My hypothesis is that the more severely mispriced a company's stock is on its first day trading in public markets, the more indicative of other factors (for example: unwarranted excitement around the stock) that would ultimately drive the IPO performance down over the course of three years.

Underwriter Reputation: In their 1998 study, Carter, Dark, and Singh show that IPO stock underperformance tends to be less severe relative to the market when the underwriter is more prestigious over a three-year time horizon. Though the study uses the Carter-Manaster method for measuring underwriter reputation, I plan on using a measuring reputation with a binary variable that equals 1 if the lead underwriters are within the top 10 rankings of Bloomberg U.S. Equity IPO league tables and 0 if not. The league table was pulled from the 2015 rankings, to match the dates of the corresponding IPO issuances used in this analysis. See Figure 1 for more information on underwriter ranking data.

Total Transaction Value: Total transaction value, or deal size, is calculated by multiplying the offer price by the number of shares offered at the IPO. It is important to control for, because it should be positively correlated with an IPO’s long-run performance. Larger companies raising larger amounts of capital through their IPO issuances tend to be a stronger issuers as well (Krishnan, Ivanov, Masulis, and Singh, 2011).

With these variables combined, the model used for analysis is shown below:

$$3Y \text{ Return}_i = \beta_0 + \beta_1 * \text{ExcessReturn}_i + \beta_2 * \text{Underwriter}_i + \beta_3 * \text{TotalTransactionValue}_i + \mu$$

Results

VARIABLE	OBSERVATIONS	MEAN	STD. DEV	MIN	MAX
IPO 3Y RETURNS (%)	617	-0.01	1.42	-1.67	11.20
EXCESS RETURN (%)	617	0.01	0.18	-0.30	4.32
UNDERWRITER REP	617	0.38	0.48	0.00	1.00
TOTAL TRANSACTION VALUE (\$, MM)	617	360.82	1196.35	1.71	17864.00

Figure A: Summary of variables collected

To give an overview of the data used in the analysis, the 617 firms used for IPO data had an average three-year return of -0.01 or -1%. The average excess return for an IPO's first The average of 0.38 for underwriter reputation indicates the IPO's analyzed were primarily underwritten by banks outside of those ranked in the top ten of Bloomberg's U.S. Equity IPO League Tables in 2015. Total transaction value was on average \$360.82 million for these IPO issuances debuting between 2008 and 2015.

Observations = 617
R-Squared = 0.0009

Variables	Coefficient	Std. Error	P-Value
Excess Return	0.63	0.31	0.04
Underwriter Reputation	-0.08	0.12	0.53
Total Transaction Value	0.045	4.97	0.37

Figure B: Summary of regression results

Though one might suspect initial returns to be somehow indicative of a stock's long-run, 3-year performance, the results do not support this hypothesis. My predictions about the sign of the coefficient on the Open Price variable (negative) and the Total Transaction Value variable (positive) were affirmed in the results, but they were not significant. The regression yielded an R-squared of 0.9%, and the coefficient on Excess 1 Return (initial returns) was

0.63. The coefficient had a standard error of 0.31, and a P-value of 0.04, indicating it is was close to a 5% significant threshold level. literatures

None of the other variables were as close as Excess 1 Return (initial returns) to achieving a similar significance level. Since the R-squared value is just under 1%, this means that only 1% of the variation in stock 3-year returns can be accounted for by the variables I have set forth here: Open price, excess 1 return (initial returns), underwriter reputation, and total transaction value. This indicates that we should reject my initial hypothesis of finding a correlation between a stock's performance on the first day and a stock's long-run, 3-year performance.

Conclusions

In this paper, I look at the potential relationship between an IPO firm's initial returns and its three-year performance. The initial return on an IPO is defined as the money left on the table, calculated by looking at the difference between the IPO price at the start and end of its first day trading in public markets. To further investigate this relation, I regressed three-year returns on initial returns, underwriter reputation, and transaction size. The results of the regression are depicted in the above table, Figure B.

Ultimately, I have found that long run performance of an IPO does not hinge on its performance on the first day of trading in the public markets. Although I was close to finding statistical significance for the variable of focus (Excess 1 Returns) in measuring how much money on the table was left, the regression results decisively point to no correlation. This is an interesting find and proves useful in adding to the current literature on IPO performance and

initial returns. Moving forward, perhaps looking at IPO's from only a specific sector (one such as technology) could yield further insight on the topic of underpricing and IPO performance.

Graphics

Bloomberg U.S. Equity IPO League Tables, 2015

<i>1</i>	Citi
<i>2</i>	Deutsche Bank
<i>3</i>	Bank of America Merrill Lynch
<i>4</i>	Goldman Sachs
<i>5</i>	Morgan Stanley
<i>6</i>	Barclays
<i>7</i>	JP Morgan
<i>8</i>	Credit Suisse
<i>9</i>	Wells Fargo
<i>10</i>	RBC Capital Markets

Figure 1: Bloomberg league table used for underwriter reputation

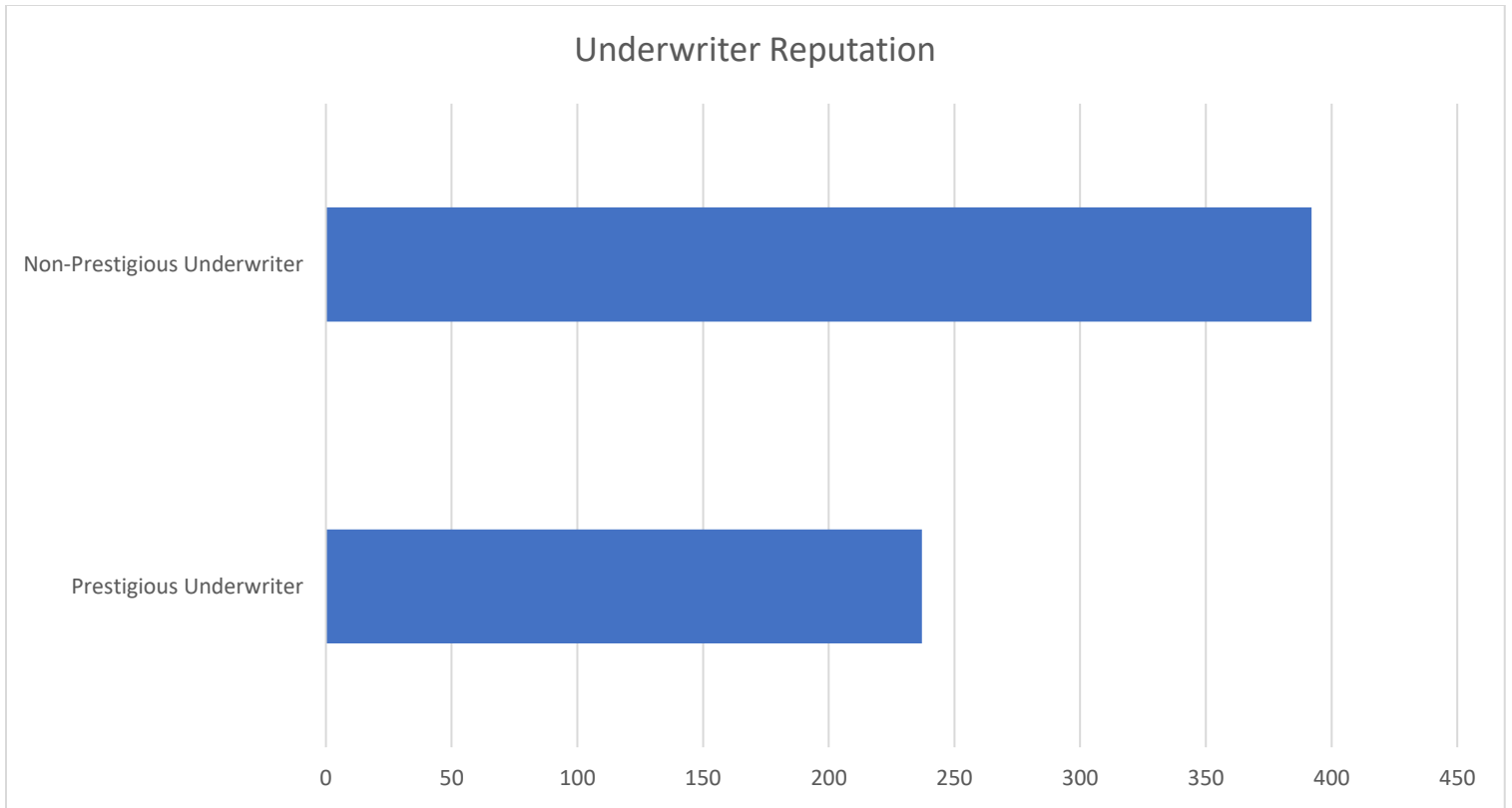


Figure 2: Companies grouped by underwriter reputation (prestigious defined as a top 10 bank according to Bloomberg U.S. Equity IPO League Tables)

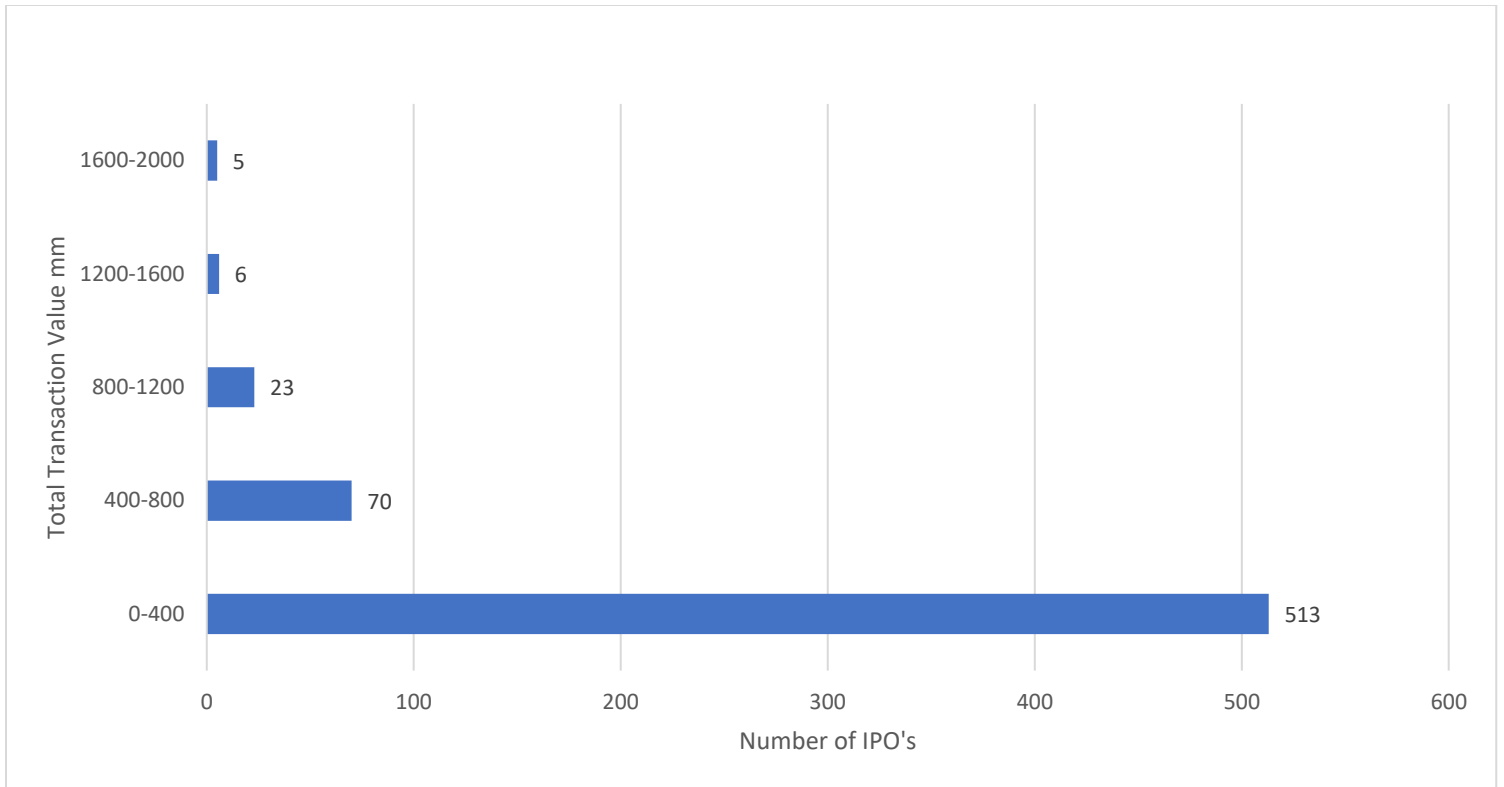


Figure 3: IPO debuts, grouped by Total Transaction Value (deal size)

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