

2017 IPOS: QUICK WAY TO GET RICH?

by

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2017 IPOS: QUICK WAY TO GET RICH?

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## **Abstract**

This study shows the development and results of the 2017 IPO market during higher than average stock prices. Analysis of 147 IPOs from 2017 were used to obtain the results from the stock market. The SPY index was also used as a benchmark for IPO results. After performing several analyses on IPOs and the abnormal returns they produced, the IPOs obtained higher than average returns of around 31%, but still were not significantly different from zero, with healthcare and technology sectors obtaining the greatest returns.

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## **I. Introduction**

When a company goes public it must go through an initial public offering, which is where the company generally sells their stock to the public on public markets and receives cash in return. Initial public offerings (IPOs) are a very important part of public markets. When companies look to go public they must go through intense amounts of preparation and financial regulation before they can sell their stock. The purpose of these actions is to raise as much capital as possible to finance projects, pay back debt, or use this money for anything else a company might need to accomplish. Although the process is complicated, institutions called investment banks have lots of experience dealing with public markets and the entire procedure of taking a company public. These new companies rely on investment banks to become underwriters, or representatives who complete necessary procedures to raise capital for a company issuing securities. Investment banks will also go on roadshows, where the bankers will meet with potential investors and gauge interest in these companies trying to go public. Investors can be very interested in these companies trying to go public due to the fact that the companies present a chance at significant returns for their investors. Since not much is known about these new companies, their performance in the stock market is unpredictable, so investors can benefit greatly off this volatility.

After Trump's victory in 2016, the public markets reacted in a very positive manner. The Dow Jones (DOW) gained 25% in 2017, the S&P 500 (SPY) increased 19%, and the NASDAQ increased 28%. With record breaking market numbers and higher stock prices compared to historical norms, 2017 had been a favorable economic year for companies and a great landscape for corporations looking to go public.

With such large returns from the markets, IPOs must have obtained an even larger return to beat the market. Investors are always looking for ways to beat the market, and

IPOs have a great chance of obtaining large returns if they either use the capital raised in a way that increases shareholder wealth, get acquired by another company and therefore raises their stock price, or have plans for growth and are wanting to become the next Microsoft or Facebook. Although IPOs are not a simple and secure way to get rich, it is important for investors to know that IPOs could be a great investment for their portfolios depending on how much risk they would want to take on.

The objective of this paper is to analyze whether 2017 IPOs outperformed the market, and if so to calculate to what extent. Although there is extensive research on IPOs and specifically IPO underpricing and first day returns, I wanted to determine whether the findings of older research still hold up in our society that has been changed through the dissemination of information and the improvement of technology that facilitates secondary market trading. Furthermore, due to the performance of the stock market in 2017 a favorable environment for initial public offerings was present, so if returns on IPOs were to keep on track with historic numbers, they would have to obtain substantial returns to outperform the market.

The first step to starting the analysis would be to obtain the IPO data necessary to accomplish statistical analysis necessary to figure out if the returns provided by IPOs for 2017 was statistically different from zero. The objective of an IPO is to increase the shareholder value by consequentially increasing stock price, corporate efficiency and growth of the corporation. By providing an in-depth analysis of the IPO market in 2017 and potentially determining a pattern in stock returns based on days on the market, one might be able to determine an investment strategy to maximize personal returns. After performing tests on the data, the results concluded that, besides the first day, IPOs do not possess any significant returns as they all vary. By sector, technology and healthcare

provide the least amount of overall, but even then, the returns after the first day are not significant.

## **II. Review of Literature**

In this section a review of relevant and significant works relating to initial public offerings (IPOs) and historic returns will be surveyed. Several reports have been produced which include important pieces of information on various IPOs and market trends affecting IPOs. The literature on IPOs will be reviewed in sections based on factors for purposes of organization.

### **IPO Process and Why Companies Choose to Go Public**

The initial public offering process begins when an unlisted company decides to sell new securities to the public for the first time. There are multiple reasons a company might want to go public, but some reasons include raising capital for growth, offer an exit plan for existing investors who want to sell their portion or shares of a company, or even marketing themselves through a public offering to increase prestige and attract investors. Although there are many factors as to why a company might want to go public, there are several downsides associated with the process as well. First, by going public, companies must give up control (ownership) of the company and now have to answer to shareholders. Also, when a company goes public they now must register with the Securities and Exchange Commission, where they must follow all the rules and regulations to “keep shareholders and the markets informed on a regular basis in a transparent manner” (Anthony). To do so, companies now must incur large compliance costs to keep up with regulations due to legislation such as Sarbanes-Oxley.

The first step in the process after a company decides to go public is to choose an investment bank to help and advise the corporation on its IPO and provide underwriting

services. The company lets multiple banks pitch for the business and will likely make a selection based on the reputation of said bank, relationship with the bank, IPO and industry expertise, and relationships with investors. After the bank is selected, they must perform due diligence and regulatory filings. This means that the banks must do market research and analysis on the company, legal work including reviewing contracts and registrations, and tax due diligence. After appropriate research is done, an S-1 Registration Statement is filed with the Securities and Exchange Commission (SEC) that includes financial statements, a company overview, risks, etc. Then, a company goes on a Roadshow, where they market the company trying to go public to institutional investors and collect orders from investors as well. As more feedback is given from investors, the bank is able to set a price range based on investor demand for the company. Finally, the bank will allocate shares to investors and then the stock will start trading, so the public can purchase and sell shares of the stock.

On the first day investors are known to achieve significant returns. This is understood as IPO underpricing. IPO underpricing can be explained due to “asymmetric information about the security’s value and with its fundamental risk” (Ellul & Pagano, 2006). For a company looking to go public, it must attract sufficient interest by leaving enough “money on the table” to reward investors for the uncertainty about the security’s value (Ellul & Pagano, 2006). Ellul and Pagano include in the underpricing argument that liquidity, or rather, illiquidity, is also a risk that affects underpricing. They state that liquidity expectancy in the aftermarket can significantly influence the IPO underpricing and since investors do not know how liquid the markets will be after the IPO, they must be compensated. For a firm issuing securities for the first time, the fee associated with underpricing can be greater than the fees paid to investment banks and other professionals that assisted with the deal (Boulton, Smart & Zutter 2017).



## Historical Returns of IPOs

First day IPO returns have been found to be significant due to IPO underpricing, but even underpricing has changed over time. In an article published by Loughran and Ritter in 2004 titled “Why Has IPO Underpricing Changed Over Time?” they state:

*‘In the 1980s, the average first-day return on initial public offerings (IPOs) was 7%. The average first-day return doubled to almost 15% during the 1990-1998, before jumping to 65% during the internet bubble years of 1999-2000 and then reverting to 12% during 2001-2003.’*

Ritter identifies several hypotheses that could explain the significant change in underpricing, such as the changing risk composition hypothesis, the realignment of incentives hypothesis, and the changing issuer objective function hypothesis (Loughran & Ritter 2004).

The changing risk composition hypothesis implies that IPOs with more risk behind them will be more underpriced than less risky IPOs. This observation comes from the fact that in order to convince investors to participate in an IPO there must be larger than normal underpricing. The risk can exemplify technological or valuation uncertainty. The realignment of incentives hypothesis states that managers gave in to leaving money on the table in the bubble era. Ritter then goes on to dismiss the realignment of incentives hypothesis due to finding no relation between inclusions of secondary shares in IPOs and underpricing (Loughran & Ritter 2004). The changing issuer objective function hypothesis states that issuing firms became more willing to accept underpricing because there was an increased emphasis on analyst coverage. Firms would rather hire a lead underwriter with a highly ranked analyst rather than avoiding underwriters with a reputation for excess underpricing. They were also more willing to leave money on the table due to spinning,

the practice of setting up accounts for venture capitalists and executives of issuing firms so that the underwriter could allocate IPOs to them. An increase amount of regulations on spinning is one explanation of how underpricing decreased back to 12%.

### **Long-Run Performance of IPOs**

Underpricing only affects companies for short periods of time. Firms that went public during 1975-1984 severely underperformed a sample of similar firms from the close price on the first day of going public to their three-year anniversary. The results are substantially variable across sectors, with companies that IPO'd during years where there was heightened IPO activity being affected the most. The patterns are consistent with IPO markets where investors are eager and optimistic about the earnings potential of a newly public company due to the growth potential present, and the fact that firms take advantage of these overoptimistic opportunities. When measuring these IPOs offering price to the close price at the end of the first day, IPOs exhibit an average first day return estimated at 16.4 percent (Ritter 1991). Long-run performance of IPOs can be important because it presents opportunities for investors to discover price patterns for trading strategies to maximize returns. It is also of importance because the number of IPOs per year varies over time and if high volume periods present long term lower returns, then taking advantage of periods where there is decreased amount of activity might present an opportunity for firms looking to go public and maximize their capital raising capabilities. The cost of equity at the time is highly influenced by the market and what investors might seek to obtain for taking on substantial risk in these new companies could impact returns. At times of low market returns, the IPO returns would also be lowered (Ritter 1991).

Ritter found that, in the first three years after going public, where the time is measured from the closing price of the first day to the closing price three years after the IPO debut, the IPOs observed returned an average of 34.47 percent, while similar stocks

matched by industry and market value obtained an average return of 61.86 percent over the same period.

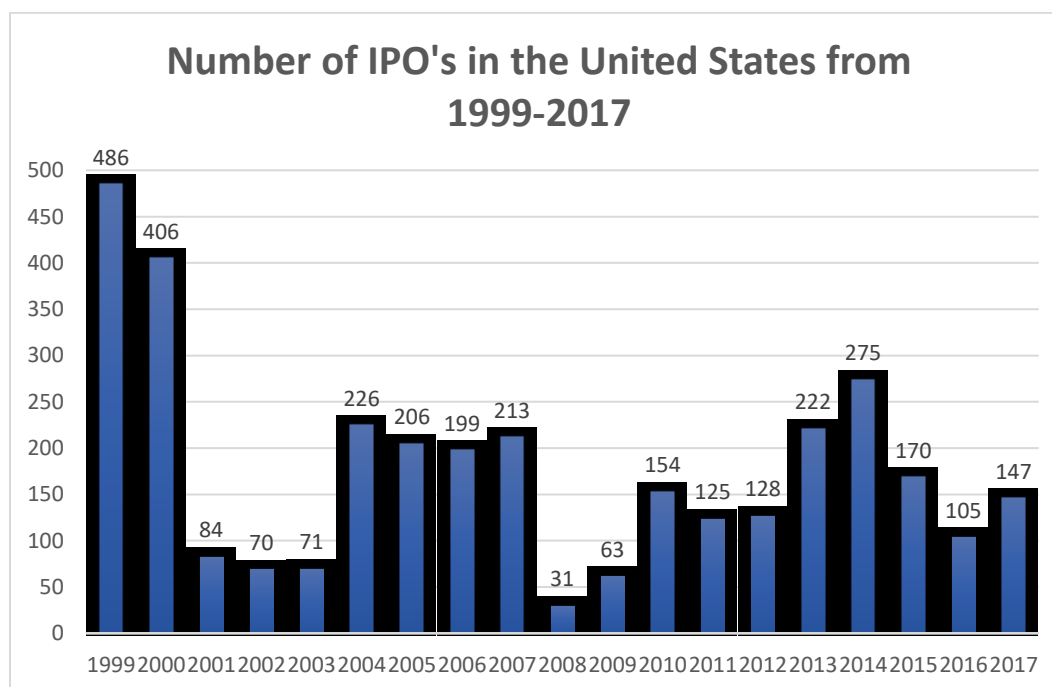
Some explanations for underpricing could include risk measurement, bad luck, or fads and over optimism (Ritter 1991). A pattern that emerges when looking at underperformance of IPOs largely arises among young growth companies, especially companies going public during high volume years. This finding goes hand in hand with a situation where firms go public due to periods of time where investors are overly optimistic about future potential in certain sectors, which Ritter refers to as the “fad” explanation (Ritter 1991). Ritter then goes on to quote several other studies, such as research from Forbes magazine focusing on 205 small offers, found that, “in the short run, the stock in the sample showed remarkable price appreciation... In the long run, investors in small firms did not fare so well...” (Ritter 1991). More studies show that IPO performance and returns do not generally differ from market returns over a 10-year period, but there is a generally positive performance during the first year, negative performance in the next three years, and generally positive performance in the fifth year (Ibbotson 1975).

Another more recent study done in 2005 suggests that the low returns can be explained due to the risk factors of IPOs. This study found that small cap stocks that had recently gone public have lower leverage when compared to non-IPO firms on the stock exchange. IPO firms tend to not have many assets and lower earnings to engage in extreme borrowing as compared to older companies (Eckbo & Norli 2005). However, this did not make the results significantly different from zero. Their study also found that, when using a portfolio of 6000 IPOs on the NASDAQ during a 30-year period of 1973-2002, IPOs during the first five years underperformed the NASDAQ index.

Although there is extensive research mostly concluding that IPOs underperform in the long run, there is still research that points to other conclusions. In a study of 6,686 IPOs

from 1981-2005 and using a Fama-French three factor framework, “IPOs do not underperform in the aftermarket on a risk-adjusted basis and do not underperform a matched sample of nonissuers” (Carter et al., 2011). Also, according to their findings, IPO underperformance was concentrated in the 1980s and early 1990s, and after this period, IPOs actually either performed about the same as the market or outperformed the market on a risk-adjusted basis between 1998 to 2005. The outperformance is also driven by larger firms. They justify their conclusion based on the fact they used more recent data and joint factors such as skewness, liquidity, and firm investment (Carter et al., 2011).

### Historical Analysis and IPO Trends



Historically we have seen that IPO booms can come with a lot of concerns. If we look back to the year 2000 and the Dot Com era we can see that prior to the bubble bursting, there were around 200-plus IPO’s being issued for ten straight years. Then, looking at the period before the 20007-2009 recession there was also a heightened activity in the public markets, which also resulted in heightened prices in the securities

market and then a bubble bursting to begin one of the worst financial crises since the Great Depression. Then, in 2013 we saw another monumental IPO year, where the stock market reached new heights among an improving economy and made it easier for companies to go public. In that year, 222 companies went public and were able to raise approximately \$55 billion. This marked the first time since the recession that the stock market acquired more than 200 new public companies and was the best year for stock IPO's since 2000. The previous record was during 2000, when 406 companies went public. During 2014 we saw another 275 companies go public raising almost \$85 billion in capital, with most of the issuances coming from healthcare and technology companies. Then, in 2016 there was a complete slowdown of IPO's to recession era levels, only accounting for 105.

If we analyze the market, we can also see that companies are opting to stay private longer. In a study performed by Fortune magazine they state that the number of companies that follow through with an initial public offering has been declining, but also the number of publicly listed companies has been on the decline as well. In fact, there is a 65% decline in the number of U.S. initial public offerings from the 2014 records and slowed to recession levels in 2016, with no signs of picking back up. There has also been a 37% decline in the number of U.S. listed companies since a high in 1997. Trends show that more companies are looking to the private markets to acquire capital instead of hassling over all the requirements needed to go public and so the number of public companies has fallen to 5,734, which is on par with levels in the early '80s.

In 2017, there have been a total of 147 IPO's across all sectors, the most coming from healthcare with a total of 41 companies going public. According to an article in Investor's Business Daily published in May, IPO's were up 73% from the same period a year ago, with total earnings of \$21 billion by May and \$39.5 billion for the entire year.

Even at that rate, IPO's are coming to the market at rates much slower than in past years. The IPO market, by standard measurements, should be stronger due to the fact that on average prices are up 12% from their IPO price, with an average increase of 11% on the first day of trading. One of the primary reasons that there is no heightened IPO activity could be that financial advisors are suggesting exchange-traded funds rather than buying individual stocks for their portfolio.

The low level of IPOs in this decade has generated a lot of discussion between government officials, private executives, policymakers, as well as venture capitalists and other firms that depend on an active IPO market for financial opportunities (Ritter, Gao & Zhu 2013).

The most common explanation for the decline in initial public offerings is a series of regulatory changes, with Sarbanes Oxley (SOX) being the most prominent. After massive frauds by WorldCom and Enron, SOX required external audits of control systems for public companies to guarantee their financial statements were accurate. For smaller firms, these costs can be detrimental to keep up with. IPO activity decline has especially been prominent and pronounced amongst small corporations (Ritter, Gao & Zhu 2013). These costs were so excessive that, at the end of 2007, small firms were exempt from many of the requirements (Ritter 2014). Although SOX was a very important part of why there was a decrease in IPOs, they would have rebounded in 2007. The Recession of 2008 would have affected the rebound, but 2010-2012 saw less small cap company IPOs compared to 2004-2007. Evidence from Europe also suggests that heavy regulation has not been the only factor for small company IPO deterrence (Ritter 2014).

Ritter then argues that the SEC's regulations and technology changes have contributed to a decline in coverage for small cap stocks. When analysts cover stocks, it

makes a larger awareness of the stock's existence. This decline in focus can be attributed to the incentives for analysts to cover smaller firms. It has been proven that smaller corporations who have a multitude of analyst coverage see higher valuation ratios, such as price-to-earnings or market-to-book, due to information asymmetry. With more analyst coverage we can see a lower cost of equity from the public markets (Ritter, Gao & Zhu 2013).

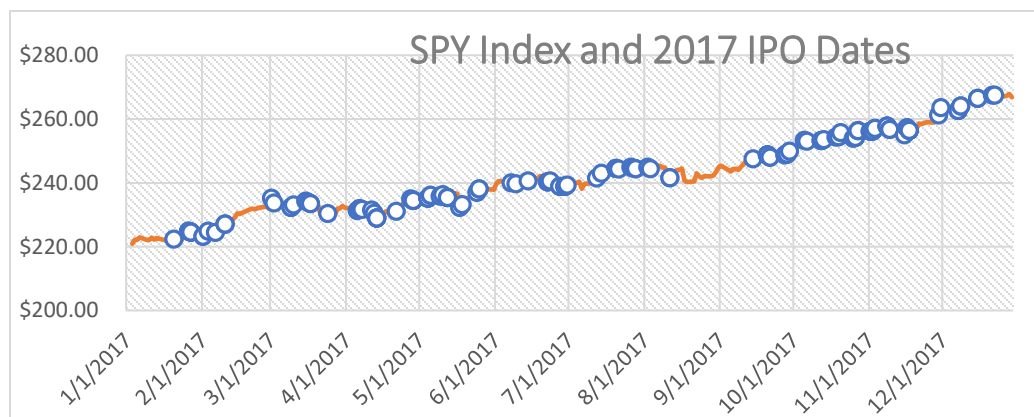
A lack of IPO activity with strong markets could limit or decrease gross domestic product and employment growth. In a study by Martin Kenney, Donald Patton, and Jay Ritter on "employment and revenue growth for US companies that went public from June 1996-December 2010," researchers found that, on average, a company might add 822 employees after its IPO. In the 10 years after a company's IPO, a company increased employment sixty percent, equating to a 4.8 percent compound annual growth rate (Ritter 2014). In the study they also found that due to a shortfall of 2472 "missing" IPOs, there was also a shortage of 2.03 million jobs that were not created because of decreased IPO activity.

However, there have been attempts to generate more IPO activity, such as the Jumpstart Our Business Startups (JOBS) Act that was signed into law in April 2012. The JOBS Act's main purpose is to encourage funding to small companies by initially easing some of the regulations imposed on public companies. It encourages crowdfunding; it creates a specific category of firms, emerging growth companies, that for their first five years as public companies exempts them from certain regulations of the Sarbanes-Oxley Act; it also raises the number of shareholders of record from 500 to 2,000 before public disclosure requirements are triggered (Ritter 2014).

As 2017 comes to an end we can see that the markets have been favorable to support more IPO listings and increased valuations for companies looking to go public.

According to the Ernst & Young, the United States alone accounted for 13% of global deals and 27% of global IPO proceeds in 2017. American IPO activity ends the year on a high note due to record setting equity market performance and bolstered an increase in investor demand.

### 2017 IPOs and the Market



The number of IPOs offered this year increased around 50% from last year, with 147 this year compared to 105 from 2016. The top performing IPOs include streaming firm Roku and biotech company, AnaptysBio. As far as the total number of IPOs, according to Renaissance Capital, a company that provides institutional research specialized in IPOs, there should have been a stronger count due to the strength of the stock market in 2017. Some notable stories of companies who went public in 2017 include Snapchat and Blue Apron.

Snapchat, a social network app focusing on photos and videos, had the largest capital raising this year with \$3.4 billion. The shares were priced at \$17 and increased 44% to 24.48 on the first day. At the end of 2017 Snapchat was below its IPO price at \$14.61.

Blue Apron, a company that focuses on delivering and providing fresh ingredients to make home cooking accessible, had its initial stock price valued between \$15 and \$17



before its IPO debut on June 29<sup>th</sup>, 2017. A few days before Blue Apron was set to go public, Amazon, Inc. revealed that they were acquiring Whole Foods and entering the grocery/food space. Due to this event, Blue Apron slashed its IPO price to \$10. On the first day the company's stock price closed at \$10 and has not recovered.

### **III. Data**

All companies are required by the Securities and Exchange Commission to release information before going public, such as corporate summaries, business strategies, plans for using funds raised, financial positions, and the terms of the IPO (SEC). Therefore, the data required is public information and accessible; however, it would be hard to find in one location.

The resources needed to successfully initiate analysis on all IPOs from 2017 was substantial. First, a list of all IPOs needed to be collected, including what market sector they fell under, what the initial valued stock price was when sold to investors, and the date the company went public. This information was collected from "Accompany," which claims to be the largest database of senior decision makers in the world. I used Accompany because the information provided was comprehensive and contained all the information needed in one convenient website to begin my research.

After IPO information was obtained, daily returns for the market were needed. There are three major indexes in the United States markets that could be used for a benchmark: the S&P 500, the Dow Jones Industrial Average, and the Nasdaq. The Standard & Poor's 500 (S&P 500) index is calculated using the market capitalization of 500 large companies having stock listed on the New York Stock Exchange (NYSE) or the NASDAQ. To be included in the S&P 500, the companies listed must meet strict requirements including a market cap of \$5.3 billion and the company's headquarters in the U.S. The

Dow Jones Industrial Average (DJIA) is a price-weighted average that is calculated using 30 publicly owned companies. Finally, the NASDAQ is an index of more than 3,000 stocks listed on the NASDAQ exchange.

I chose the S&P 500 index as my benchmark because it is the most commonly used benchmark for determining the state of the economy. It is also widely used by investors as a benchmark against their portfolios. Since the S&P 500 also has a broad number of sectors and large cap companies, it will serve as the most accurate representation of the U.S. overall economy. Some of the problems faced when picking this metric as a benchmark is that it only includes large cap stocks, and a lot of the IPOs analyzed are small cap stocks, so there could potentially be a misrepresentation of the benchmark due to lack of returns on small cap stocks.

After the benchmark was chosen, I now needed to obtain returns for all 147 IPOs. Although there are paid services, such as Bloomberg, where I could get the most accurate data, I used free resources to obtain returns. Between free services, the most prominent are Yahoo! Finance and Google Finance. Both websites provide financial information regarding stock quotes, financial news, and general business news. However, Yahoo! Finance has an estimated 70 million users per month, while Google Finance only has 40 million. Also, Yahoo! Finance has had a 10-year lead with the services they provide and devotes much more time to its finance channel, as seen by a comparison of the two company's financial statements. For these reasons, I have chosen Yahoo! Finance.

However, when collecting market returns, there have been some discrepancies found with some of the company returns not matching the IPO debut dates. Therefore, when confronted with this, I chose to use NASDAQ information that was consistent with the rest of the IPO market returns from Yahoo! Finance. I also left out previous company stock prices if they already had a history in the public markets before their IPO date.

## Data Limitations

Since I'm working with a large number of IPOs, the list I obtained from Accompany might not be complete, and therefore, would make the analysis incomplete or skewed if I left out a large number of companies in one sector. Second, although I'm using a reliable source, I'm still using a free service, which means that the data might not be as accurate as if I were to use a paid service to obtain all my information. Finally, the data only comprises a range from January 3<sup>rd</sup> to December 28<sup>th</sup> 2017 IPO dates, which means some IPOs have been in the market longer than others and so not having a full year to conduct analysis on returns could skew the results.

## IV. Methods

There are a multitude of determining and calculating excess return measure. Most specifically, in the journal "Using Daily Stock Returns" by Brown and Warner, they composed three possible alternatives on how to calculate daily stock returns depending on different measures. They examined the property of daily stock returns and how a set of specific characteristics using the same data set can affect study methodologies (Brown & Warner, 1985).

In the methodologies, let  $R_{i,t}$  be the observed return for security  $i$  at day  $t$ . Let  $A_{i,t}$  be the excess return for security  $i$  at day  $t$ .

One method could be mean adjusted returns:

$$A_{i,t} = R_{i,t} - \bar{R}_i$$

where  $\bar{R}_i$  is the simple average of security  $i$ 's daily returns in the period

Another method is the market adjusted returns:

$$A_{i,t} = R_{i,t} - R_{m,t}$$

where  $R_{m,t}$  is the return on the index for day  $t$ .

The last method is the OLS market model:

$$A_{i,t} = R_{i,t} - \hat{\alpha} - \hat{\beta}R_{m,t}$$

where  $\hat{\alpha}$ , and  $\hat{\beta}$  are OLS values from the estimation period.

In the end, I decided to use the market adjusted returns due to the fact that the information and data I was working with would be most suited for this model. Since this method does not rely on any averages or historic prices and my data set is working with a set number of IPOs with different total days on the market, I would have a limited amount of information. The mean adjusted returns and OLS market model require more data points to accurately exhibit results.

After calculating daily returns using the market adjusted returns formula for all 147 IPOs, I then lined up all IPO returns by first day on the market and took the average of all first day returns and applied the same formula to all IPO days on the market, taking into consideration how many IPOs were on the market for each day. I then calculated the standard deviation of the IPOs and used that number to calculate the standard deviation of the average.

Using these results, I was able to calculate a t-value for each day all IPOs were on the market. The t-value is used to try and find evidence to support a claim of significant difference between a population mean, in this case IPO returns. The greater the t-value, the more significant the results presented are.

Finally, using the t-value, I then determined a p-value. The p-value is basically meant to represent the likelihood that I would end up with a t-value, or in other words, the probability I can obtain said t-value. The lower the number the less likely I am to obtain

these results. By using the p-value I was able to determine the significance of returns for each day.

## V. Results

The first question that we are trying to solve is in general how IPOs performed in comparison to the market. The S&P 500 returned 19% in 2017, while IPOs returned 31.32%. IPOs for 2017 returned a market adjusted rate of around 22 percent, which means it did in fact beat the market. Although this number seems high, we can't say that it's statistically significant and different from 0. So, by obtaining market adjusted returns and performing some statistical analysis on the data set we can solve this question.

The average first day market adjusted return for IPOs on the first day was 10.99 percent. By obtaining standard deviations by day, I was able to calculate a standard deviation from the average of 2.04 percent. Using this number, I was then able to calculate a t-value for the first day of 5.37 by dividing the average return by the standard deviation of the average. Using the t-value, I then calculated a p-value of  $1.47 \times 10^{-7}$  for the first day, which means that the first day returns were significant.

If the first day returns were significant, I wondered if any other day also had any significant returns or if there was a cyclical pattern to IPO returns. I conducted the same tests on every day of the year and found that, besides a bit of significance with the second day, by the third day the average abnormal return was 6.96 percent, while the standard deviation of the average was 6.22 percent, meaning there's a great amount of risk associated with achieving the high returns on the third day. This led me to conclude that the only day that has significance was the first day and, besides that, all other days are random and cannot be predicted.

## **VI. Summary**

The results of 2017 IPOs are in line with the rest of the research that has already been exhibited on IPOs. Even though there were record years in the stock markets, banks took the market returns into account when pricing IPOs and IPO returns were not significantly different from zero, with most of the returns being attributed to first day returns. However, by breaking down IPOs into sectors and doing a sector analysis, I found that technology and healthcare have the most returns associated with risk on average, with the lowest p-values on the first day.

When we look to the future of IPOs and process for a company to go public, on a base level they might be changing. Recently, in 2018 Spotify Technology (SPOT), a music streaming service, is using a different approach to go public. Instead of traditionally going through an investment bank, Spotify is using a direct listing approach that would allow it to avoid having to pay banks IPO fees and would also evade having bankers set the initial price of shares through a typical book creation. The stock price will be determined by supply and demand factors from orders collected by broker-dealers. For a company as large as Spotify, which is valued at around \$20 billion, to go public without an investment bank sets a precedent as to how much bargaining power change there could be between companies and banks when considering an IPO.

### **Further Research**

Some of the questions that remain for further research are how IPO performance has changed since the 2008 recession. Since there has been an IPO volume decrease over the past 10 years, there could be differences in first day returns, in IPO underpricing, or in general returns for IPOs during that time. This could also include sector analysis, since technology and healthcare stocks are so popular.

Second, since the IPO information is only documented until 2017, it is not a true representation of a whole year look at IPOs that debuted in 2017. Due to this, there would still be a lot of questions around the short run yearly returns of all IPOs to get a more accurate analysis of the 2017 IPOs and market returns.

Finally, 2017 IPOs should be tracked long term to determine whether the effects of IPO underpricing are present to the extent that they have been throughout history, or whether technological and business factors are playing a role in IPO return rates and IPO deals.

### **Implications for the future**

The goal of future research would be to determine whether modern finance has made a change in the expectations of investors in sectors like technology or healthcare, or less modern sectors like oil and gas, and if markets have increased or decreased returns based on modern technological factors such as diminished information asymmetry due to the internet or the availability of information at our fingertips. IPOs have been studied over time and have seen consistent results, but maybe the adaptation of technology might change the future of banking and investor expectations.

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