Investors and Choice Overload: Evidence from IPOs

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Abstract

This paper provides evidence consistent with retail investors experiencing choice overload when presented with an increasing number of IPOs to choose from. We find that both the average first day return and trading volume are lower in weeks with higher number of IPOs. However, with more IPOs, average return during the week following the first day of trading is higher. These findings suggest that proliferation of choices either debilitates or delays investor participation due to cognitive limitations.

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I. Introduction

As a society, we face an ever-increasing number of options to pick from. For example, a thirsty individual has over 87,000 beverage choices at Starbucks.[1] If that number seems outlandish, consider the 168,000 drink concoctions available at Sonic.[2] While *Homo economicus* is often endowed with unrestricted cognitive capabilities, in reality, *Homo sapiens* suffer from various cognitive limitations. One of these limitations, often referred to as "choice overload" (e.g. Iyengar and Lepper, 2000; Botti and Iyengar, 2006; Diehl and Poynor, 2010; Scheibehenne, Greifeneder, and Todd, 2010) is the phenomena in which too many options to select from debilitates the choosers and renders them to inaction.[3,4] This goes against conventional economic and psychological theories which suggest more choices are always preferable since the probability of fulfilling a specific want is increased (Baumol and Ide, 1956; Arrow, 1963) as well as the chooser's sense of control and intrinsic motivation (Rotter, 1966; DeCharms, 1968; Deci and Ryan, 1985; Taylor and Brown, 1988). Yet, choice overload is empirically observed in many studies. In this paper, we provide evidence consistent with retail investors experiencing choice overload when presented with an overabundance initial public offerings (IPOs) to choose from.

Choice overload is by no means a new concept; the 14th century French philosopher Jean Buridan posited that an organism presented with two equally tempting alternatives would delay making a choice and tendered the illustration of a donkey pondering between two piles of hay

[1] http://blogs.wsj.com/numbers/starbucks-stays-mum-on-drink-math-309/

[2] http://blogs.wsj.com/numbers/counting-the-drink-combos-at-a-sonic-drive-in-230/

[3] This effect goes by other names as well. For example, "too-much-choice effect" (Jessup, Veinott, Todd, and Busemeyer, 2009; Scheibehenne, Greifeneder, and Todd, 2009), "tyranny of choice" (Schwartz, 2000; Fasolo, McClelland, and Todd, 2007; White and Hoofrage, 2009), "hyperchoice" (Mick, Broniarczyk, and Haidt, 2004), and "overchoice" (Gourville and Soman, 2005) all refer to the same problem of too much choice as does "choice overload".

[4] It is important to note choice overload differs from the concept limited attention in that choice overload is specifically considers the link between the number of available options and choice behavior while limited attention (also referred to as information overload) is not only concerned with the number of options but also the attributes of those options.

(Zupko, 2002). While more choices are not always disadvantageous, there does appear to be a tipping point where more options are detrimental to the decision-making process (Shah and Wolford, 2007) and post-choice satisfaction when a decision is made (Reutskaja and Hogarth, 2009). In the 21st century, evidence of choice overload is found in many settings such as consumer goods (e.g. Iyengar and Lepper, 2000; Chernev, 2003; Shah and Wolford, 2007; Mogilner, Rudnick, and Iyengar, 2008; Reutskaja and Hogarth, 2009), tourism (Park and Jang, 2013), and 401(k) retirement plan participation and fund selection (Iyengar, Huberman, and Jiang, 2004; Iyengar and Kamenica, 2010). In a laboratory experiment, Haynes (2009) finds choice proliferation makes decision makers more frustrated and less satisfied with their decisions, having a limited time to decide appears to worsen the effect.

In the primary market, investment banks use the bookbuilding process to place IPO shares almost exclusively to institutional investors (Aggarwal, Prabhala, and Puri, 2002; Ritter and Welch, 2002; Chemmanur, Hu, and Huang 2010). This leaves retail investors interested in purchasing IPO firm shares in the position of having to wait until the shares start trading in the secondary market.[5] A substantial research shows that retail investors drive underpricing for both behavioral and rational reasons (e.g. Rock, 1986; Carter and Manaster, 1990; Derrien, 2005; Cornelli, Goldreich, and Ljungqvist, 2006; Ljungqvist, Nanda, and Singh, 2006; Kaustia and Knüpfer, 2008; Dorn, 2009; Neupane and Poshakwale, 2012). However, if Haynes' (2009) laboratory experiments' results hold in the marketplace, if there is a glut of IPOs in a short time period then individuals may be overwhelmed by the sheer number of IPOs and choose to simply bow out of the market.

[5] We use the terms retail investors and individual investors interchangeably.

Invoking the concept of choice overload, we hypothesize that retail investors interested in initial public offerings are affected by choice overload when faced with an excessive number of IPOs in a given week enter the secondary market. If retail investors are demotivated to make investments in IPOs due to choice overload, then empirical evidence should exist that suggests, during periods of large numbers of IPO choices, investors should 1) choose to participate less in first-day trading of the IPO, affecting both underpricing and trading volume, and 2) seek out less information about the IPOs as they choose to simply not participate.

As predicted by the choice overload hypothesis, we demonstrate a strong negative relation between the number of IPOs per week and both first day IPO underpricing and trading volume. The relations are robust to controlling for firm characteristics and various other effects including hot and cold IPO periods and investor sentiment (Ritter, 1984; Loughran and Ritter, 2004; Ljungqvist, Nanda, and Singh, 2006). Although individual IPO investors have preference for lottery type IPOs and bid up the price of IPOs that exhibit skewness in returns (Green and Hwang, 2012), we find that abundance of choice also reduces the price run up in IPOs that belong to industry with return skewness. Next, using Google searches as a proxy for investor information gathering (Da, Engelberg, and Gao, 2011), we find that there is an order of magnitude reduction in information gathering related to IPO firms when the number of IPOs per week is high versus when it is low. Given time, investors can devote more attention and take up the postponed investment decision. So, we examine the one-week return after the first-day of trading and find that returns are higher during the high issuance week. Taken all together, the evidence is consistent with choice overload and suggests that investors reduce participation in the secondary market IPO trading during high choice periods.

We contribute to the extant IPO literature in several ways. First, no prior study examine the consequences of limited attention or choice overload faced by investors in the market for IPOs. This paper fills the gap in the literature. Second, the behavioral theories in IPO literature are typically aimed at explaining first day price run up. This paper shows that bounded rationality can also rein in the price run up. Finally, the role of the retail investor in shaping the price pattern is of interest to many, and this paper adds to this general inquiry.

The rest of the paper is organized as follows. Section II presents related literature and develops the hypotheses. Section III describes the data and empirical methods used in the analyses. Section IV presents the results of the analyses. Section V concludes.

II. Related Literature and Hypotheses

II.A. Choice Overload and Limited Attention

Individuals have a limited amount of attention that they can devote to investing, and this can affect the trading behavior of investors in two distinct ways. First, having to allocate limited attention to too many choices can result in a delayed reaction. This may lead to a decrease in the participation of investment or not investing at all. This phenomenon, as discussed in the introduction, is characterized as choice overload, which highlights the tendency of individuals to be put off from making a choice as alternatives proliferates (see Schwartz, 2004). Second, individuals facing overwhelming choices may rely on heuristics, instead of expending significant effort in analyzing information, to identify and invest in satisficing investments.

Many decisions involve selecting alternatives from a large choice sets, and may result in choice overload. For instance, financial retirement planning and health care insurance selection

present individuals with a vast number of options. While a rational decision maker benefits from a wealth of choice, studies have found that larger choice sets can reduce one's satisfaction with the decision and consequently diminish the willingness of making a decision (Iyengar and Lepper, 2000; Irons and Hepburn, 2007). Iyengar, Huberman, and Jiang (2004) find a negative correlation between the number of investment options offered in the retirement plan and participation rates. They estimate that the addition of ten funds to the menu of investment options reduces the likelihood of employee participation by two percentage points.

In many cases, investors may rely on heuristics when faced with more information and limited attention. For instance, the naive "1/n rule" heuristics may lead people to invest $1/n^{th}$ of their investable wealth in each of the assets in their portfolio. Indeed, Huberman and Jiang (2006) find the vast majority of retirement fund participants choose a small number of funds, with the median between three and four funds, and tend to divide assets equally among the funds chosen. They also find a positive correlation between the fraction of equity funds offered and the resulting allocation to equities that offer up to ten investment choices, but the correlation is no longer significant in plans with more than ten funds. Iyengar and Kamenica (2010) also find larger choice sets, in settings such as investing for retirement or choosing a drug plan, induce a stronger preference for simple, easy-to-understand options. This may suggest that the heuristics people use depend on the complexity of the situation.

A large part of finance literature is devoted to documenting and explaining various facets of private firms offering their shares of ownership to public through IPOs. IPO firms are typically young, immature, and relatively informationally opaque. Moreover, with no prior share price history, they are harder to value. Therefore, investors planning to invest in IPOs are undoubtedly overwhelmed by the sheer amount of information that needs to be processed to make investment

decisions. However, there is dearth of studies on the consequences of choice overload when investors are presented with the opportunity to invest a great number of IPOs within a short period of time. This paper is aimed at shedding light on this.

II.B. Initial Public Offerings

It is a well-documented fact that IPOs are widely underpriced at the offer price and as a result market observes a significant price run up on the first day of trading. There is a substantial literature that provides theoretical explanations of IPO underpricing. These theories fall broadly under four rubrics: asymmetric information, institutional, control, and behavioral (see Ritter and Welch, 2002; Ljungqvist, 2007 for reviews of this literature). The first three classes of these theories explain underpricing as an equilibrium condition that results from 1) various forms of information asymmetry among issuers, underwriters and investors, 2) institutional setups of the financial market, litigation and tax environments, and 3) monitoring and control over mangers as responses to agency problems, respectively. The behavioral theories, in contrast, commonly assume that 'irrational' investors bid up the price of IPO shares beyond true value.

Institutional investors receive the lion's share of IPO allocation in the primary market. This is not surprising as the roadshow and bookbuilding activities are centered upon promoting the IPO to the institutional investors. The first day of trading, on the other hand, represents the first time the public at large (i.e. the retail investors) can purchase shares in the company. The fact that underwriters typically penalize retail and infrequent investors for flipping the IPO allocations also suggests that retail investors are the net buyers in the first day of trading (Ljungqvist, Nanda, and Singh, 2006). Since IPO firms are notoriously hard to value, investors have a wide range of beliefs about IPO stocks' market values, and some are more optimistic than others. Consequently, the

trading behavior of the retail investors can explain a great deal about the price patterns of the first day trading.

Underscoring the retail investors' overenthusiasm, Ritter and Welch (2002) conjecture that investor behavior can explain the significantly high first-day returns and subsequent low long-run returns. Ljungqvist, Nanda, and Singh (2006) similarly argue that that issuer firms take advantage of the optimistic belief of the sentiment investors by leaving the 'surplus' money on the table to woo the regular institutional investors. Ofek and Richardson (2003) show that high initial returns occur when institutions sell IPO shares to overoptimistic retail investors on the first day.[6] The finding of a significant positive relation between promotional activities and the first day return also suggests that retail investors are influenced by IPO marketing activities (Cook, Kieschnick, and Van Ness, 2006). Da, Engleberg and Gao (2011) use Google search frequency, Search Volume Index (SVI), to measure investor attention and find that investors increase their search of IPO stocks by 20% on the IPO week. They also find that high abnormal SVI is related to greater level of price run-up on the first day of trading, which is consistent with attention-induced (which captures investor enthusiasm) price hypothesis.

Behavioral explanations of IPO underpricing in the literature are not only limited to investor irrationality. Loughran and Ritter (2002) offer an explanation for IPO underpricing where issuer's initial valuation beliefs are reflected in the offer price. They argue that issuers are content with underpricing as wealth gain through retained shares are substantial as prices jump in the after-market. This explanation is a combination prospect theory (Kahneman and Tversky, 1979) and mental accounting (Thaler, 1980, 1985). Ljungqvist and Wilhelm (2005) test some of the

[6] Ofek and Richardson (2003) argue that if stocks are short sales constrained, then optimistic retail investors can move prices higher that the stocks' fundamental value.

behavioral underpinnings of Loughran and Ritter's premise and find IPO management teams' behavior is consistent with the theory.

All the above behavioral theories are aimed at explaining first day price run up. But this paper argues that choice overload of retail investors lead to a tepid price run up, and no other studied have examined this before.

II.C. Hypotheses

If choice overload play significant roles investment decision, many IPO investors would opt to postpone investment. And those who still invest on the first day of trading could possibly follow some heuristics to overcome their limited cognitive capacity. For instance, they may invest 1/n of their investable fund each of the IPOs offer in that given week. In both scenarios, the demand for average demand for each IPOs will be reduced in weeks when may IPOs are offered. This lead to our first two hypotheses.

H1. *The average first day return is lower in weeks with higher number of IPOs*

H2. *The average stock turnover on the first day of trading is lower in weeks with higher number of IPOs*

Green and Hwang (2012) find that individual investors treat IPOs very much like lotteries. Their evidence suggests retail investors desire the positively skewed, lottery-like return distribution of IPOs and are willing to pay a premium for it despite the high probability of low returns, resulting in higher first-day returns (i.e. underpricing) for more highly skewed IPOs.[7]

[7] Institutions, which generally hold well-diversified portfolios, are considered more sophisticated than individual investors and are less likely to suffer from cognitive biases and limitations since they employ capital and labor resources to overcome such barriers (e.g. Battalio and Mendenhall, 2005). For example, institutions can hire more financial analysts in order to maintain a ceiling on the number of firms covered per analyst, thus bypassing cognitive

However, if limited attention and choice overload hinders investors to identify lottery type IPOs, the price run up on the lottery type stock would be lower than usual.

H3. *The average first day return of lottery type IPOs on the first day of trading is lower in weeks with higher number of IPOs*

A wealth of information creates a poverty of attention and can ultimately lead to less desire for information (Simon, 1971). Therefore, if potential investors decide not to participate in the first day of trading then they would seek out less information about the IPOs.

H4. *The average internet search for IPOs is lower in weeks with higher number of IPOs*

If potential IPO-investors indeed postponed investment due to limited attention, then the days following the first day of trading would may have greater demand for IPOs, resulting higher return during those days.

H5. *The average return of IPOs during the week following the first day of trading is higher in weeks with higher number of IPOs*

III. Data and Empirical Methods

The data for this study consists of IPOs issued between 1990 and 2013 obtained from the Securities Data Company (SDC). From SDC, offer price, proceeds, and venture backing information are obtained. All issues under $5, utilities and financial, and insurance firms are omitted. We also exclude IPOs of foreign firms, closed-end mutual funds, unit trusts, and REITs.

limitations associated with an individual. As such, Kumar (2005, 2009) and Autore and DeLisle (2016) find institutions are averse to highly positively skewed investments.

First day ending price, shares outstanding, and post-IPO returns are obtained from CRSP. Industry classifications are obtained from Kenneth French's website[8].

Because we are examining the effects of increased IPOs during the issue period, we count the number of IPO issues for each calendar week. The issues are also obtained from SDC. Since we are examining the number of issues that may affect the attention of the investors, we do include utilities and financial firms. However, since issuances where the offer the initial offer price is under $5 have trading restrictions due to the Penny Reform Act of 1990, these issuances are still excluded (Ljungqvist, 2007). We calculate the spike in IPO as the issue week number of IPO scaled by the 26 moving average lagged by 26 weeks. Thus, the spike in IPO is computed as:

$$ScaledIPO_T = \frac{\#\ of\ IPOs_T}{\frac{\sum_{t=27}^{52} \#\ of\ IPOs_{T-t}}{26}}. \quad (1)$$

We control for the GDP growth over the same period by including the growth of GDP over the prior 6 months. We obtained the monthly GDP data from the Bureau of Economic Analysis. We compute the six month growth in GDP as:

$$GDP\ Growth_T = \frac{GDP_T}{GDP_{T-6}}. \quad (2)$$

Because we intend to examine the effects of investors' limited cognitive capacity, we control for the increase in the number of employees in the financial industry. The Change in Financial Industry Employees is computed as the average percentage increase in the number of employees for firms in the financial industry. Thus, for each calendar month, all firms where the first two digits of the SIC code is 62, the number of employees is scaled by their number of

[8] http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html

employees from the prior two quarters. The percentage increase is averaged over all of the financial firms. Thus it is computed as:

$$Change\ in\ Financial\ Industry\ Employees_T = \frac{\sum_{i=1}^{n} Number\ of\ Employees_{T,i}}{\sum_{i=1}^{n} Number\ of\ Employees_{T-6(months),i}}. \quad (2)$$

The balance sheet values are obtained from Compustat and are from the last year-end information prior to the IPO. The IPO founding year is obtained from Jay Ritter's website[9] and used to compute the firm age as the difference between the year of issue and the founding year. Firms are defined as "High Tech" if the industry definition in SDC is high-tech. A venture-backed dummy is included as defined by SDC. Underwriter reputation data also from Jay Ritter's website is used. The primary underwriter, as given in SDC, is matched with the ranking score in Jay Ritter's database[10]. Consistent with Loughran and Ritter (2004), underwriters with a reputational ranking of eight and higher are classified as "top-tier underwriters". We obtain the first day price and trading volume from CRSP. We calculate volume as the number of shares traded scaled by the total shares outstanding after IPO. We obtain the Google search volume from Google Trends and Google AdWords websites.[11]

Table 1 shows the descriptive statistics of our sample. In Panel A we show the full sample. On average the IPOs are issued on weeks where there are about 15.8% more IPOs. The mean first day return is 23.4%. On average, 24.5% of the shares outstanding are traded in the first day of issuance. In Panel B, we sorted the sample into two groups. The High IPO sample are the issuances where the Scaled Number of IPO is greater than one. The Low IPO sample are the issues where the issue week number of IPOs is less than the historical average, or where the Scaled Number of

[9] http://bear.warrington.ufl.edu/ritter/FoundingDates.htm

[10] http://bear.warrington.ufl.edu/ritter/ipodata.htm

[11] https://www.google.com/trends/ and https://www.google.com/adwords/

IPOs is less than one. In the high relative issuance weeks, the average first day return is 17.8%. And in low relative issuances, the first day return is, on average, 31.1%. The difference is both economically and statistically significant. This suggests that in the weeks with more issuances, the issues had 13.4% lower first day returns. This finding is consistent with our expectation from Hypothesis H1. With greater choice of IPOs, investors do not bid up issuances. The trading volume also shows that issuances in the high IPO issuance periods have 5.2% lower trading volume. This is also consistent with our expectations from Hypothesis 2. Investors decrease their trading when there are more investment choices. The IPO firms issued during weeks with higher number of IPOs tend to be smaller, but the other firm characteristics are not significantly different.

[Insert Table 1 here]

IV. Empirical Results

IV. A. First Day Return and Average Turnover

Table 2 examines the relationship between the weekly Scaled Number of IPOs and the First Day Return in a multivariate setting. We include GDP growth and Change in Financial Industry Employees, and other variables that have been shown to affect an IPO's first day return. Consistent with Hypothesis H1, the Scaled Number of IPOs significantly decreases the first day return of the IPOs. This strongly suggests that increases in IPO choice has a material impact on the first day return of the IPO. Table 2 shows that when the number of IPO is double its historical average, this correlates with a decrease of 5.5% in the first day return of the IPOs. The finding is in stark contrast to the relationship found with the Hot IPO markets. In the Hot market literature, the first day return increases with the increased Hotness of the market. Thus, the decrease in first day return due to the number of IPOs is not related to the Hot IPO phenomenon. The coefficients for GDP growth

and Bubble period dummy are positive and significant, consistent with the prior Hot market findings such as those in Ritter (1984) and Derrien (2005). This evidence is consistent with the concept of choice overload, where the sheer number of IPOs incapacitates retail investors, who otherwise would participate in bidding up the stock price of the IPOs. Examining the other factors, GDP growth is positive and significant. A percentage point increase in GDP increases the first day return by 3.4%. This relationship is consistent with the expectation from the Hot IPO phenomenon. The Change in Financial Industry Employees is also positive and significant. A percentage point increase in the number of employees increases the first day return by 1.5 basis points. This relationship may mitigate some of the effects of choice overload. With increased number of employees, the financial industry may have more cognitive capability to research newly issued firms. This relationship cannot be directly measured because these employees are not specific to employees that analyze IPOs.

[Insert Table 2 here]

In Table 3 we examine the relationship between turnover percentage and the Scaled Number of IPOs and the other control variables. Turnover percentage is defined as the number of shares traded on the first day of offering scaled by the total shares outstanding. The Scaled number of IPO issuance is negatively and significantly correlated with the percentage of shares traded. This finding is consistent with the expectation from Hypothesis H2. It seems that investors decrease the trading of individual firms' IPO shares when there is an increase in the number of IPOs. When the number of IPOs is twice its historical average, the percentage of shares traded decrease by 2.4%. When presented with increased choice, investors decreases their participation in the market. The results are consistent when scaling the shares traded with the number of shares offered instead of post-IPO number of shares. These results are available upon request.

[Insert Table 3 here]

The sample was sorted into quartiles based on the Scaled Number of IPO. The IPOs which were issued with the lowest Scaled IPOs were placed in the first quartile and the highest in the fourth quartile. Table 4 examines the effects of the individual quartiles in the first day return and average turnover. The effects of the spike on the first day return is decreasing monotonously. The same monotonous effect is evident in for average turnover on the first day of IPO. These findings are consistent with our hypothesis that increased number of issuances may overwhelm the investors' choice and attention.

[Insert Table 4 here]

IV. B. Skewness

Green and Hwang (2012) highlighted the preference for skewness of IPO investors. These preference are based on the expectation that the IPOs have lottery-like characteristics. Many of the firms underperform, and thus the negative mean long run returns. However a portion of the sample will perform very well and yield a high return for the investors. However, when there are large number IPO issuances, the ability to invest in these lottery stocks may be inhibited due to the sheer number of choices. Thus, we would expect that in weeks with larger amounts of IPOs, the effects of the preference for skewness will be tempered.

In Table 5 we examine the relationship of the industry skewness, Scaled Number of IPO and first day returns. The first regression is similar to the base regression we find from Table 2, except scaled industry P/E is omitted because of its strong correlation with industry skewness. The second regression includes the industry skewness as defined by Green and Hwang (2012). We

find, consistent with the previous findings that increased industry skewness is related to increased first day return. In the third model, we include the interaction between the skewness variable. We can see that the interaction term is significant and negative. Thus, with increases in the number of IPO issuances in a week, the effect of the industry skewness, or the investors' preference for lottery stocks, is dampened. This is relationship is consistent with our expectation from Hypothesis H3. Investors' attention due to large IPO choice decreases their ability to invest in lottery characteristics of IPO stocks.

[Insert Table 5 here]

IV.C. Information Search

Table 6 examines the total Google searches for IPOs issued during the different time periods. The sample from 2004-2010 are sorted based on the Scaled Number of IPOs and grouped into terciles. The issuances are then matched with the Google searches based on the ticker symbol, yielding 315 matches to IPOs with their issue week searches. Our findings indicate that firms that issue during the highest number of relative issuances had, on average, fewer Google searches. This is consistent with the expectation from Hypothesis H4 and further supports our hypothesis that investors limit their attention when there are too many investment choices.

[Insert Table 6 here]

IV. C. Short-run Post-IPO Return

Table 7 examines the five day post-IPO return. In Table 7 shows that the five day post-IPO mean return is approximately 7 basis points. We then group the sample into issues where there are

fewer relative IPO issuances and greater relative IPO issuances. We find in the five days after IPO, the IPOs which are issued during the relatively high issuances week have a 77 basis point greater five day post-IPO return relative to the issuances in the weeks with relatively low IPO issuances. This finding is starkly different from the finding on the first day return. Table 2 shows that greater IPO issuances is related to the lower first day return. However, with greater number of IPO issuance the 5 day post-IPO increases. Thus, it seems that the demand for the stock may still be there, but because of the limited ability of investors to examine the IPOs, there is a lag on their ability to examine and purchase these stocks. This finding is consistent with Hypothesis H5.

[Insert Table 7 here]

In Table 8 we include the multivariate regression of the return which includes the spike in the number of IPOs and other control variables. The findings are consistent. Increases in the number of IPOs is significantly correlated with larger five day post-IPO return.

[Insert Table 8 here]

IV. D. Long Run Post-IPO Returns

In Table 9 we examine the relationship between the Scaled Number of IPO and the long run returns of the issuance. We find, in contrast to the results from the short run returns of Table 8, the Scaled Number of IPO leads to lower long run returns. Thus it seems that the finding from Table 8 is not primarily driven by the quality of the IPO firm being issued in the relatively high issuance weeks.

IV. E. Robustness

We highlight the fact that the investors' choice overload significantly affects the first day return and the number of IPO share traded in the first day. However, a rational alternative explanation may be due to the constraints of the cash available to investors as they invest in these new firms. During the weeks with greater number of IPOs, may coincide with greater cash requirements to purchase the stocks and impact the first day return. Thus, we examine the role of total dollar proceeds issued by all IPOs. Consistent with the calculation of the Spike Number of IPO, we compute the total dollar proceeds and scaled it by the 26 week moving average lagged by 26 weeks. We calculate the Scaled Dollar Proceeds as:

$$Scaled\ Dollar\ Proceeds_T = \frac{\sum_{i=1}^{n} Total\ Proceeds_{T,i}}{\frac{\sum_{t=27}^{52}\sum_{i=1}^{n} Total\ Proceeds_{T-t,i}}{26}}. \quad (1)$$

In Table 10 we examine the relationship between the Scaled Dollar Proceeds in IPO proceeds and the first day return. Model 1 shows the relationship between the Scaled Number of IPOs. This is the same regression from Table 2. Model 2 shows the relationship between the Scaled Dollar Proceeds and first day return. Consistent with the expectation from capital limitations, increases in the total dollar proceeds is correlated with a decrease in first day return. In Model 3 we include both the Scaled Number of IPO and Scaled Dollar Proceeds. The Model 3 regression shows that the Scaled Number of IPO is still negatively and significantly correlated with the first day return. However, the Scaled Dollar Proceeds is no longer significantly correlated with the first day return. Thus, it seems that though there may be some first day return effects from the increase in the capital requirements to affect the first day returns, these effects are subsumed by the choice overload effect of the increased in the number of IPOs.

Table 11 shows the relationship between the Scaled Dollar Proceeds and turnover ratio in the first day of IPO. Similar to Table 10, the first model shows the relationship between the Scaled Number of IPO and the first day turnover. Model 2 examines the Scaled Dollar Proceeds' effect on turnover. We find that the Scaled Dollar Proceeds significantly and negatively affect the first day turnover. Consistent with cash limitations, the increased dollar issued decreases the investors' ability to purchase a greater percentage of the new issues. In Model 3, we include both the Scaled Number of IPO and Scaled Dollar Proceeds. We find that Scaled Number of IPO and Scaled Dollar Proceeds are both still negatively and significantly correlated with first day turnover. Thus, the evidence suggests that both choice overload and capital limitations affect investors' ability to trade IPO stocks.

V. Conclusion

Individuals having to apportion limited cognitive resources to too much information or choices can result in a delayed reaction, which may lead to not investing at all. This phenomenon is characterized as choice overload, which highlights the tendency of individuals to be put off from making a choice as alternatives proliferate. In this paper, we provide evidence consistent with retail investors experiencing choice overload when presented with an overabundance initial public offerings (IPOs) to choose from.

We find a strong negative relation between the number of IPOs per week and both first day IPO underpricing and trading volume. The relations are robust to controlling for firm characteristics and various other effects including hot and cold IPO periods and investor sentiment. Although individual IPO investors have preference for lottery type IPOs and bid up the price of IPOs that exhibit skewness in returns, we find that abundance of choice also reduce the price run up in IPOs that belong to industry with return skewness. Next, using Google searches as a proxy

for investor information gathering, we find that there is an order of magnitude reduction in information gathering related to IPO firms when the number of IPOs per week is high versus when it is low. Given time, investors can devote more attention and take up the postponed investment decision. So, we examine the one-week return after the first-day of trading and find that returns are higher during the high issuance week. Taken all together, the evidence is consistent with choice overload and suggests that investors reduce participation in the secondary market IPO trading during high choice periods.

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Table 1
Descriptive Statistics

Table 1 shows the descriptive statistics of the sample. Scaled Number of IPOs is the Number of IPOs at the week of IPO scaled by the 26 week mean number of IPOs lagged by 26 weeks. First Day Return is first day closing price scaled by the initial offer price. Total Asset, is the pre-IPO total asset in $M. Age is the difference between the IPO issue year and the founding date, per Professor Ritter's website. Net Income is the pre-IPO net income. Sales is the pre-IPO level of sales. Low IPO Week is defined as issuances where the Scaled Number of IPOs is less than or equal to 1. High IPO Week is when the Scaled Number of IPO is greater than 1. The t-test tests for the difference in means and the Kruskal-Wallis tests for the difference in medians. The p-values are in parentheses.

Panel A: Full Sample			
Variable	N	Mean	Median
Scaled Number of IPOs	3890	1.1577	1.1207
First Day Returns	3905	0.2337	0.0938
Volume	3905	0.2452	0.2015
Total Assets ($M)	3542	230.0240	29.2505
Age	3846	16.0322	8.0000
Net Income ($M)	3490	0.0764	0.4065
Sales ($M)	3490	229.1430	33.8905

Panel B: Sorted by High IPO								
	Low IPO Week			High IPO Week				
Variable	N	Mean	Median	N	Mean	Median	t-test	K-W
First Day Returns	1638	0.3113	0.1208	2267	0.1776	0.0778	(0.000)	(0.000)
Volume	1638	0.2754	0.2185	2267	0.2234	0.1891	(0.000)	(0.000)
Total Assets ($M)	1508	272.4284	29.7330	2034	198.5849	28.8170	(0.039)	(0.030)
Age	1609	16.2119	8.0000	2237	15.9030	8.0000	(0.664)	(0.835)
Net Income ($M)	1481	-0.3971	-0.0830	2009	0.4255	0.7550	(0.724)	(0.000)
Sales ($M)	1481	266.0331	32.1030	2009	201.9478	35.0610	(0.080)	(0.566)

Table 2
First Day Return

Table 2 shows the multivariate regression of the First Day Return. First Day Return is first day closing price scaled by the initial offer price. Scaled Number of IPOs is the Number of IPOs at the week of IPO scaled by the 26 week mean number of IPOs lagged by 26 weeks. GDP Growth is the issue month GDP scaled by the 6 month lagged GDP. Change in Financial Industry Employees is the change in the mean number of employees of all firms where the SIC code begins with 61. Hi Rep underwriters are underwriters with scores of 8 or greater per Professor Ritter's website. Age is the difference between the IPO issue year and the founding date, per Professor Ritter's website. High Tech Dummy is 1 if the firm is high tech, 0 otherwise. Venture backed is 1 if the firm is backed by a venture capitalist, 0 otherwise. Inverse Proceeds is the inverse of the total proceeds from IPO. Pure Primary Dummy is 1 if the issuances does not include secondary share offerings. Total Asset, is the pre-IPO total asset in $M. Sales is the pre-IPO level of sales. Revise Up Dummy is 1 if the final offer price is greater than the initial filing range. Scaled P/E is the issue month industry level P/E scaled by the five year historical average. Robust standard errors are in parenthesis. *, ** and *** are 5%, 1% and .1% significance respectively.

	Full Sample
Scaled Num IPOs	-0.05467***
	(0.013)
GDP Growth	3.3681**
	(1.231)
Change in Financial Industry Employees	0.01463**
	(0.005)
High Rep Underwriter	0.05345*
	(0.026)
Log of Age	-0.02767***
	(0.007)
High Tech Dummy	0.0235
	(0.013)
Venture Backed Dummy	0.0329
	(0.018)
Inverse Proceeds	-0.6677***
	(0.112)
Sentiment	-0.08100**
	(0.027)
Pure Primary Dummy	0.0335
	(0.018)
Log of Total Assets	-0.03057*
	(0.012)
Log of Sales	0.0006
	(0.014)
Revise Up Dummy	0.2396***
	(0.018)
Bubble Period Dummy	0.3225***
	(0.058)
Nineties Dummy	-0.06303*
	(0.024)
Scaled Industry P/E	0.1434**
	(0.041)
Constant	0.0516
	(0.066)
Observations	3301
Adjusted R2	0.2990

Table 3
Turnover Ratio

Table 3 shows the multivariate regression of the Turnover Ratio. Turnover Ratio is the volume traded on the first day of trading scaled by the total shares outstanding. Scaled Number of IPOs is the Number of IPOs at the week of IPO scaled by the 26 week mean number of IPOs lagged by 26 weeks. GDP Growth is the issue month GDP scaled by the 6 month lagged GDP. Change in Financial Industry Employees is the change in the mean number of employees of all firms where the SIC code begins with 61. Hi Rep underwriters are underwriters with scores of 8 or greater per Professor Ritter's website. Age is the difference between the IPO issue year and the founding date, per Professor Ritter's website. High Tech Dummy is 1 if the firm is high tech, 0 otherwise. Venture backed is 1 if the firm is backed by a venture capitalist, 0 otherwise. Inverse Proceeds is the inverse of the total proceeds from IPO. Pure Primary Dummy is 1 if the issuances does not include secondary share offerings. Total Asset, is the pre-IPO total asset in $M. Sales is the pre-IPO level of sales. Revise Up Dummy is 1 if the final offer price is greater than the initial filing range. Scaled P/E is the issue month industry level P/E scaled by the five year historical average. Robust standard errors are in parenthesis. *, ** and *** are 5%, 1% and .1% significance respectively.

	Full Sample
Scaled Num IPOs	-0.02393***
	(0.006)
GDP Growth	1.2108*
	(0.590)
Change in Industry Employees	0.0017
	(0.002)
High Rep Underwriter	0.02378**
	(0.008)
Log of Age	0.0015
	(0.004)
High Tech Dummy	-0.0069
	(0.012)
Venture Backed Dummy	-0.02629**
	(0.009)
Inverse Proceeds	-0.7918***
	(0.054)
Sentiment	-0.0263
	(0.013)
Pure Primary Dummy	-0.03590***
	(0.008)
Log of Total Assets	-0.03354***
	(0.008)
Log of Sales	0.01257**
	(0.004)
Revise Up Dummy	0.07594***
	(0.009)
Bubble Period Dummy	0.1236**
	(0.039)
Nineties Dummy	(0.003)
	(0.018)
Scaled Industry P/E	(0.004)
	(0.019)
Constant	0.3449***
	(0.027)
Observations	3301
Adjusted R2	0.1760

Table 4
Quartile Grouping

Table 4 shows the multivariate regression of the First Day Return and Turnover Ratio based on Quartile Dummies. Turnover Ratio is the volume traded on the first day of trading scaled by the total shares outstanding. The sample was sorted into quartiles based on the Scaled Number of IPOs. GDP Growth is the issue month GDP scaled by the 6 month lagged GDP. Change in Financial Industry Employees is the change in the mean number of employees of all firms where the SIC code begins with 61. Hi Rep underwriters are underwriters with scores of 8 or greater per Professor Ritter's website. Age is the difference between the IPO issue year and the founding date, per Professor Ritter's website. High Tech Dummy is 1 if the firm is high tech, 0 otherwise. Venture backed is 1 if the firm is backed by a venture capitalist, 0 otherwise. Inverse Proceeds is the inverse of the total proceeds from IPO. Pure Primary Dummy is 1 if the issuances does not include secondary share offerings. Total Asset, is the pre-IPO total asset in $M. Sales is the pre-IPO level of sales. Revise Up Dummy is 1 if the final offer price is greater than the initial filing range. Scaled P/E is the issue month industry level P/E scaled by the five year historical average. Robust standard errors are in parenthesis. *, ** and *** are 5%, 1% and .1% significance respectively.

	First Day Return	Average Turnover
Spike Quartile 2	-0.06363*	-0.02287*
	(0.025)	(0.011)
Spike Quartile 3	-0.07672***	-0.03754***
	(0.021)	(0.011)
Spike Quartile 4	-0.08898***	-0.03954***
	(0.017)	(0.010)
GDP Growth	2.8314*	0.9957
	(1.121)	(0.571)
Change in Financial Industry Employees	0.01475***	0.0015
	(0.004)	(0.002)
High Rep Underwriter	0.05397**	0.02377**
	(0.016)	(0.009)
Log of Age	-0.02770***	0.0015
	(0.007)	(0.004)
High Tech Dummy	0.02527*	-0.0064
	(0.012)	(0.008)
Venture Backed Dummy	0.0317	-0.02661**
	(0.017)	(0.009)
Inverse Proceeds	-0.6700***	-0.7915***
	(0.116)	(0.079)
Sentiment	-0.08039***	-0.02602*
	(0.020)	(0.010)
Pure Primary Dummy	0.03255**	-0.03640***
	(0.011)	(0.007)
Log of Total Assets	-0.03080**	-0.03359***
	(0.010)	(0.005)
Log of Sales	0.0003	0.01245***
	(0.009)	(0.003)
Revise Up Dummy	0.2411***	0.07671***
	(0.020)	(0.009)
Bubble Period Dummy	0.3326***	0.1281***
	(0.038)	(0.019)
Nineties Dummy	-0.05749***	(0.000)
	(0.016)	(0.010)
Scaled Industry P/E	0.1415***	(0.003)
	(0.025)	(0.009)
Constant	0.0585	0.3479***
	(0.054)	(0.029)
Observations	3301	3301
Adjusted R2	0.3000	0.1760

Table 5
First Day Return and Skewness

Table 5 shows the multivariate regression of the First Day Return. First Day Return is first day closing price scaled by the initial offer price. Scaled Number of IPOs is the Number of IPOs at the week of IPO scaled by the 26 week mean number of IPOs lagged by 26 weeks. GDP Growth is the issue month GDP scaled by the 6 month lagged GDP. Change in Financial Industry Employees is the change in the mean number of employees of all firms where the SIC code begins with 61. Hi Rep underwriters are underwriters with scores of 8 or greater per Professor Ritter's website. Age is the difference between the IPO issue year and the founding date, per Professor Ritter's website. High Tech Dummy is 1 if the firm is high tech, 0 otherwise. Venture backed is 1 if the firm is backed by a venture capitalist, 0 otherwise. Inverse Proceeds is the inverse of the total proceeds from IPO. Pure Primary Dummy is 1 if the issuances does not include secondary share offerings. Total Asset, is the pre-IPO total asset in $M. Sales is the pre-IPO level of sales. Revise Up Dummy is 1 if the final offer price is greater than the initial filing range. Scaled P/E is the issue month industry level P/E scaled by the five year historical average. Robust standard errors are in parenthesis. *, ** and *** are 5%, 1% and .1% significance respectively.

	1	2	3
Scaled Num IPO * Industry Skewness			-0.2276**
			(0.078)
Scaled Num IPOs	-0.06346***	-0.06308***	-0.06207***
	(0.013)	(0.013)	(0.013)
Industry Skewness		0.1270*	0.3947***
		(0.056)	(0.107)
GDP Growth	3.8811**	3.8721**	3.5081**
	(1.195)	(1.199)	(1.204)
Change in Financial Industry Employees	0.01468***	0.01432***	0.01385***
	(0.004)	(0.004)	(0.004)
High Rep Underwriter	0.05435**	0.05517**	0.05408**
	(0.020)	(0.020)	(0.020)
Log of Age	-0.02759**	-0.02901**	-0.02848**
	(0.009)	(0.009)	(0.009)
High Tech Dummy	0.0277	0.0255	0.0240
	(0.018)	(0.018)	(0.018)
Venture Backed Dummy	0.0279	0.0290	0.0299
	(0.017)	(0.017)	(0.017)
Inverse Proceeds	-0.6896***	-0.6711***	-0.6926***
	(0.156)	(0.157)	(0.157)
Sentiment	-0.06937***	-0.05787**	-0.05589**
	(0.019)	(0.020)	(0.020)
Pure Primary Dummy	0.03632*	0.03552*	0.03666*
	(0.016)	(0.016)	(0.016)
Log of Total Assets	-0.03831***	-0.03915***	-0.03931***
	(0.009)	(0.009)	(0.009)
Log of Sales	0.0054	0.0069	0.0064
	(0.007)	(0.007)	(0.007)
Revise Up Dummy	0.2516***	0.2501***	0.2483***
	(0.018)	(0.018)	(0.018)
Bubble Period Dummy	0.4542***	0.4441***	0.4392***
	(0.028)	(0.028)	(0.028)
Nineties Dummy	(0.006)	(0.007)	(0.000)
	(0.021)	(0.021)	(0.021)
Constant	0.1919***	0.1948***	0.2035***
	(0.057)	(0.057)	(0.057)
Observations	3301	3284	3284
Adjusted R2	0.2830	0.2840	0.2860

Table 6
Google Search

Table 5 shows the number of Google Searches of the IPO firms' ticker symbol on the week of the IPO. The sample was sorted into terciles based the Scaled Number of IPOs. Google Searches are the raw number of searches. The p-values are in parentheses.

Tercile of Num of IPOs	N	Scaled Num IPOs	Natural Log of Google Searches
1 (Low)	106	0.535	7.467
2 (Medium)	105	1.155	6.734
3 (High)	104	2.238	6.142
High-Low		1.703***	-1.325**
t-stat		(28.32)	(-2.00)

Table 7
Short Run Returns

Table 6 shows the raw one week post-IPO returns not including the first day return. The t-test tests for the difference in means and the Kruskal-Wallis tests for the difference in medians. The p-values are in parentheses.

Panel A: Full Sample			
Variable	N	Mean	Median
One Week Post-IPO Return	3905	0.0007	-0.0052

Panel B: Sorted by High IPO								
	Low IPO Week			High IPO Week				
Variable	N	Mean	Median	N	Mean	Median	t-test	K-W
First Day Returns	1638	-0.0037	-0.0088	2267	0.0039	0.0000	(0.066)	(0.003)

Table 8
Short Run Returns

Table 8 regresses one week post-IPO return on some industry control variables. Scaled Number of IPOs is the Number of IPOs at the week of IPO scaled by the 26 week mean number of IPOs lagged by 26 weeks. GDP Growth is the issue month GDP scaled by the 6 month lagged GDP. Change in Financial Industry Employees is the change in the mean number of employees of all firms where the SIC code begins with 61. Robust standard errors are in parenthesis. +, * and ** are 10%, 5% and 1% significance respectively.

	Five Day Returns
Scaled Num IPOs	0.0050+
	(0.003)
GDP Growth	0.2506
	(0.325)
Change in Industry Employees	0.0003
	(0.001)
Constant	-0.0123
	(0.009)
Observations	3890
Adjusted R2	0.0010

Table 9
Cross Sectional Return of the Two Year Returns

Table 8 examines the two year post-IPO returns. Scaled Number of IPOs is the Number of IPOs at the week of IPO scaled by the 26 week mean number of IPOs lagged by 26 weeks. GDP Growth is the issue month GDP scaled by the 6 month lagged GDP. Change in Financial Industry Employees is the change in the mean number of employees of all firms where the SIC code begins with 61. Hi Rep underwriters are underwriters with scores of 8 or greater per Professor Ritter's website. Age is the difference between the IPO issue year and the founding date, per Professor Ritter's website. High Tech Dummy is 1 if the firm is high tech, 0 otherwise. Venture backed is 1 if the firm is backed by a venture capitalist, 0 otherwise. Inverse Proceeds is the inverse of the total proceeds from IPO. Pure Primary Dummy is 1 if the issuances does not include secondary share offerings. Total Asset, is the pre-IPO total asset in $M. Sales is the pre-IPO level of sales. Revise Up Dummy is 1 if the final offer price is greater than the initial filing range. Scaled P/E is the issue month industry level P/E scaled by the five year historical average. Robust standard errors are in parenthesis. *, ** and *** are 5%, 1% and .1% significance respectively.

	Full Sample
Scaled Num IPOs	-0.1258*
	(0.056)
GDP Growth	3.6366
	(5.308)
Change in Industry Employees	-0.0026
	(0.018)
High Rep Underwriter	0.1659
	(0.087)
Log of Age	-0.09642*
	(0.039)
High Tech Dummy	0.2908***
	(0.078)
Venture Backed Dummy	0.2380**
	(0.075)
Price Inverse	0.9103
	(0.692)
Sentiment	-0.2426**
	(0.086)
Pure Primary Dummy	-0.0367
	(0.072)
Log of Total Assets	0.0551
	(0.038)
Log of Sales	0.06736*
	(0.030)
Revise Up Dummy	(0.021)
	(0.080)
Bubble Period Dummy	-0.4987***
	(0.140)
Nineties Dummy	0.4474***
	(0.099)
Scaled Industry P/E	(0.020)
	(0.073)
Constant	-0.5338*
	(0.261)
Observations	3301
Adjusted R2	0.0520

Table 10
First Day Return – Scaled Dollar Proceeds

Table 10 shows the multivariate regression of the First Day Return. First Day Return is first day closing price scaled by the initial offer price. Scaled Number of IPOs is the Number of IPOs at the week of IPO scaled by the 26 week mean number of IPOs lagged by 26 weeks. Scaled Dollar Proceeds is the total proceeds of IPO issue scaled by the 26 week moving average, lagged by 26 weeks. GDP Growth is the issue month GDP scaled by the 6 month lagged GDP. Change in Financial Industry Employees is the change in the mean number of employees of all firms where the SIC code begins with 61. Hi Rep underwriters are underwriters with scores of 8 or greater per Professor Ritter's website. Age is the difference between the IPO issue year and the founding date, per Professor Ritter's website. High Tech Dummy is 1 if the firm is high tech, 0 otherwise. Venture backed is 1 if the firm is backed by a venture capitalist, 0 otherwise. Inverse Proceeds is the inverse of the total proceeds from IPO. Pure Primary Dummy is 1 if the issuances does not include secondary share offerings. Total Asset, is the pre-IPO total asset in $M. Sales is the pre-IPO level of sales. Revise Up Dummy is 1 if the final offer price is greater than the initial filing range. Scaled P/E is the issue month industry level P/E scaled by the five year historical average. Robust standard errors are in parenthesis. *, ** and *** are 5%, 1% and .1% significance respectively.

	1	2	3
Scaled Num IPOs	-0.05467***		-0.05116***
	(0.010)		(0.010)
Scaled Dollar Proceeds		-0.01136***	-0.0026
		(0.003)	(0.003)
GDP Growth	3.3681**	2.9439**	3.3608**
	(1.114)	(1.099)	(1.112)
Change in Financial Industry Employees	0.01463***	0.01731***	0.01486***
	(0.004)	(0.004)	(0.004)
High Rep Underwriter	0.05345**	0.05107**	0.05334**
	(0.016)	(0.016)	(0.016)
Log of Age	-0.02767***	-0.02751***	-0.02768***
	(0.007)	(0.007)	(0.007)
High Tech Dummy	0.02351*	0.02667*	0.02333*
	(0.012)	(0.012)	(0.012)
Venture Backed Dummy	0.0329	0.0296	0.0327
	(0.017)	(0.017)	(0.017)
Inverse Proceeds	-0.6677***	-0.7006***	-0.6678***
	(0.115)	(0.116)	(0.115)
Sentiment	-0.08100***	-0.07090***	-0.08047***
	(0.020)	(0.020)	(0.020)
Pure Primary Dummy	0.03351**	0.03300**	0.03316**
	(0.011)	(0.011)	(0.011)
Log of Total Assets	-0.03057**	-0.03084**	-0.03058**
	(0.010)	(0.010)	(0.010)
Log of Sales	0.0006	0.0007	0.0006
	(0.009)	(0.009)	(0.009)
Revise Up Dummy	0.2396***	0.2410***	0.2394***
	(0.020)	(0.020)	(0.020)
Bubble Period Dummy	0.3225***	0.3279***	0.3221***
	(0.038)	(0.038)	(0.038)
Nineties Dummy	-0.06303***	-0.07386***	-0.06481***
	(0.016)	(0.016)	(0.016)
Scaled Industry P/E	0.1434***	0.1479***	0.1434***
	(0.025)	(0.026)	(0.026)
Constant	0.0516	0.0090	0.0515
	(0.051)	(0.051)	(0.051)
Observations	3301	3301	3301
Adjusted R2	0.2990	0.2970	0.2990

Table 11
Turnover Ratio – Scaled Dollar Proceeds

Table 11 shows the multivariate regression of the Turnover Ratio. Turnover Ratio is the volume traded on the first day of trading scaled by the total shares outstanding. Scaled Number of IPOs is the Number of IPOs at the week of IPO scaled by the 26 week mean number of IPOs lagged by 26 weeks. Scaled Dollar Proceeds is the total proceeds of IPO issue scaled by the 26 week moving average, lagged by 26 weeks. GDP Growth is the issue month GDP scaled by the 6 month lagged GDP. Change in Financial Industry Employees is the change in the mean number of employees of all firms where the SIC code begins with 61. Hi Rep underwriters are underwriters with scores of 8 or greater per Professor Ritter's website. Age is the difference between the IPO issue year and the founding date, per Professor Ritter's website. High Tech Dummy is 1 if the firm is high tech, 0 otherwise. Venture backed is 1 if the firm is backed by a venture capitalist, 0 otherwise. Inverse Proceeds is the inverse of the total proceeds from IPO. Pure Primary Dummy is 1 if the issuances does not include secondary share offerings. Total Asset, is the pre-IPO total asset in $M. Sales is the pre-IPO level of sales. Revise Up Dummy is 1 if the final offer price is greater than the initial filing range. Scaled P/E is the issue month industry level P/E scaled by the five year historical average. Robust standard errors are in parenthesis. *, ** and *** are 5%, 1% and .1% significance respectively.

	1	2	3
Scaled Num IPOs	-0.02393***		-0.01636**
	(0.006)		(0.006)
Scaled Dollar Proceeds		-0.008473***	-0.005684***
		(0.002)	(0.002)
GDP Growth	1.2108*	1.0617	1.1950*
	(0.567)	(0.561)	(0.566)
Change in Financial Industry Employees	0.0017	0.0029	0.0022
	(0.002)	(0.002)	(0.002)
High Rep Underwriter	0.02378**	0.02281**	0.02353**
	(0.009)	(0.009)	(0.009)
Log of Age	0.0015	0.0016	0.0015
	(0.004)	(0.004)	(0.004)
High Tech Dummy	-0.0069	-0.0062	-0.0072
	(0.008)	(0.008)	(0.008)
Venture Backed Dummy	-0.02629**	-0.02762**	-0.02664**
	(0.009)	(0.009)	(0.009)
Inverse Proceeds	-0.7918***	-0.8026***	-0.7921***
	(0.078)	(0.078)	(0.078)
Sentiment	-0.02634*	-0.02215*	-0.02521*
	(0.010)	(0.010)	(0.010)
Pure Primary Dummy	-0.03590***	-0.03672***	-0.03667***
	(0.007)	(0.007)	(0.007)
Log of Total Assets	-0.03354***	-0.03365***	-0.03357***
	(0.005)	(0.005)	(0.005)
Log of Sales	0.01257***	0.01265***	0.01259***
	(0.003)	(0.003)	(0.003)
Revise Up Dummy	0.07594***	0.07610***	0.07559***
	(0.009)	(0.009)	(0.009)
Bubble Period Dummy	0.1236***	0.1246***	0.1228***
	(0.019)	(0.019)	(0.019)
Nineties Dummy	(0.003)	(0.009)	(0.006)
	(0.010)	(0.010)	(0.010)
Scaled Industry P/E	(0.004)	(0.006)	(0.004)
	(0.009)	(0.009)	(0.009)
Constant	0.3449***	0.3312***	0.3448***
	(0.028)	(0.027)	(0.028)
Observations	3301	3301	3301
Adjusted R2	0.1760	0.1750	0.1770