The Liquidity Drought in Venture Capital

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December 9, 2008

Senior Honors Thesis

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Abstract

Nearly eighteen percent of United States GDP came from revenue generated by venture capital investments in 2006. Venture capital has become a vital part of our economy but the industry is currently facing a financial crisis which needs to be resolved. VC investments are realized when an ownership stake in a company can be converted into cash, either through the public markets or via a merger or acquisition. However, such liquidity routes for venture capital portfolio companies have been drying up. Through regression models, this paper will examine the extent of the crisis and show how the Sarbanes-Oxley Act of 2002 may be responsible.

*I am tremendously thankful for the help of my advisor, Professor Kenneth Kasa, whose brilliant guidance gave me much-needed direction. I am also very appreciative of Sandy Anglin's assistance during the data collection process. Special thanks to Hilary Schiraldi and her colleagues at the Thomas J. Long Business & Economics Library as well as Professor Jerry Engel and Itxaso del Palacio for pointing me in the right direction during my data search. Much appreciation to Jenny Cornet and the UC Berkeley Economics Department. Other acknowledgements: Kristina Anderson, Michael Ewens, Jose Gonzalez, and my encouraging friends. Last but not least, thank you to my family for their love and support. I dedicate this to you. All errors are my own. Contact: kmendes@berkeley.edu

1 Introduction

Starbucks, Home Depot, Microsoft, Apple, and Google−these big players in today's industry once did not exist. Each of those companies started with an idea and grew into billion-dollar superpowers. The founders, entrepreneurs such as Bill Gates and Steve Jobs, had visions that their ideas could make powerful impacts on society. Taking their ideas and transforming them into massive enterprises, however, took more than hard work and ingenuity.

Enter venture capital. As defined by the National Venture Capital Association, venture capitalists (VCs) are institutional managers of capital who invest in innovative ideas and promising companies. Venture capital firms and angel investors, individuals who make smaller and earlier investments, provide capital[1] as well as industry knowledge to help ideas scale and grow into profitable businesses. By investing these large sums of money, venture capitalists take on the burden of high-risk assets with hopes of seizing astronomical gains over the long run. It is typically five to eight years before gains from these investments can be realized, if ever, but when a VC makes the right bet, the payoff can be huge.

Take Google for example. Sun Microsystems co-founder Andy Bechtolsheim took a $100,000 bet after hearing a short presentation from Sergey Brin and Larry Page(Long, 2007), and approximately a year later, Sequoia Capital and Kleiner Perkins added $25 million in funding (CrunchBase, 2008). In less than a decade, that $25.1 million helped create a $150 billion company with over twenty thousand employees (Reuters, 2008). Sequoia Capital and

[1] Venture capitalists provide equity capital as opposed to traditional loans due to the nature of their investments

Kleiner Perkins are now the two biggest venture capital firms in the Silicon Valley and Andy Bechtolsheim is regarded as one of the most successful angel investors of all time.

Though venture capital has been used to grow businesses in a variety of sectors and industries, its biggest impact has been felt in the technology field. The personal computer industry grew from zero to $100 billion between 1980 and 1990 in what is known as the largest legal accumulation of wealth in history, and more than 70% of these firms were venture backed (Nuechterlein, 2000). Across industries, the impact of venture capital is profound. According to the National Venture Capital Association, venture-backed companies were directly responsible for 10.4 million American jobs and over $2.3 trillion in sales in 2006, the equivalent of 9.1% of total private sector employment and 17.6% of US gross domestic product (NVCA, 2008b).

There have been periods of both jubilation and turmoil in the venture capital industry. For example, the world experienced the big Internet bubble from 1995-2001 which was accompanied by an abundance of venture capital funding. The NASDAQ peaked at 5132.52 in 2000, soon followed by the infamous crash where $5 trillion in market value of technology companies was wiped out from March 2000 to October 2002 (Chmielewski, 2006). Web 2.0[2], a loose term which describes the advent of the intelligent, social and interactive web, emerged from that turbulent period. Associated victors included Facebook, YouTube, Flickr, and MySpace, but the real list of Web

[2]The term "Web 2.0" was coined by Tim O'Reilly of O'Reilly Media. According to O'Reilly, "web 2.0 is the business revolution in computer industry caused by the move to the Internet as platform, and an attempt to understand the rules for success on that new platform."

2.0 companies is endless. Venture capitalists pounced on the opportunity to invest in the next YouTube, which was acquired by Google in 2006 for $1.65 billion (Arrington, 2006). In 2007, a whopping total of more than $5.4 billion was poured into software companies alone, the largest total of any industry (PricewaterhouseCoopers, 2008b).

Chart 2 of the Appendix summarizes the volume of quarterly venture capital funding since 1995 and provides a birds-eye view of the industry. The overall value of investments has risen since 1995 but most noticeable in the chart is the sharp increase and decline between 1998 and 2002 during the infamous dot-com boom and bust. Venture capital investments reached astronomical totals which have never been seen since. Following the tech bust, investment totals have steadily risen, and they would continue to increase contingent to the fact that returns would follow.

Venture Capital Returns When an entrepreneur pitches a business idea to a venture capital firm, he or she will need to show the firm that the business plan includes a clear and feasible exit strategy. Exit strategies refer to liquidity events for the stock of a private company, and because venture capitalists provide equity capital, the only way they can translate their investments into real returns is through the sale of stock[3]. A private company's stock becomes liquid through two major means: an initial public offering (IPO) or a merger/acquisition (M&A).

[3] Many successful businesses have been created without a company's stock becoming liquid. However, companies that aim to remain private often do not offer high enough returns to investors that make it worthwhile for a venture capital firm to take the initial risk of investing in the company, even if dividends are involved. Startups that do not have an exit strategy laid out generally have to seek alternate sources of initial capital such as traditional loans.

Initial Public Offerings Many successful startups have grown enough to complete public offerings during which shares of the company are made available to the public. The first time a company does this is known as an initial public offering. The company's investors can realize the gains of their investments by selling their stake in the company to buyers in public markets. An entrepreneur has to factor many points if planning to take a company public. These include economic conditions and state of the industry, but "most companies decide to go public when (1) the company has reached the point at which initial investors have invested the total amount of capital that they are willing to provide and are focused on liquidity and (2) the company has made sufficient progress to make a public offering viable" (Bagley, 1998). According to the National Venture Capital Association, the IPO is the most glamorous type of exit, and over the last twenty-five years, nearly 3,000 venture-backed companies have gone public (NVCA, 2008d).

Mergers and Acquisitions The most common type of exit for a startup is a merger or acquisition. According to Bill D'Alessandro, "large companies such as Google and Yahoo are recognizing that growth through acquisitions is often easier and cheaper than organic growth. This means that it's easier for a large company to purchase a small company to gain entrance to a new market, rather than trying to break into that market themselves" (D'Alessandro, 2006). When a startup is acquired by another firm, the acquired company will either receive cash, or its stock will be converted into stock of the acquiring firm, at which point, investors can distribute the earnings to limited partners.

Sarbanes-Oxley Act of 2002 The Sarbanes-Oxley Act of 2002 (SOX), also known as the Public Company Accounting Reform and Investor Protection Act, was created following a flurry of corporate accounting scandals in big business. The bill passed unanimously on July 15 despite various concerns. The priority was to quickly increase investor confidence and SOX was seen as the first step (Bumiller, 2002). Though the initial intent was good, the adverse effects were quickly felt by businesses due to steep costs of complying with new accounting regulations. Ultimately, Sarbanes-Oxley acted like a hidden tax for businesses with an estimated $4.36 million in yearly compliance costs (Gingrich and Kralik, 2008).

Current Crisis in Venture Capital The venture capital industry is presently in the midst of a crisis due to a so-called liquidity drought. When a company is unable to convert its private stock into cash, projected returns on venture capital investments essentially evaporate. The National Venture Capital Association reported that there was just one venture-backed IPO in the third quarter of 2008 and a modest 58 M&A exits. In total, only six IPOs of venture-backed companies have taken place in 2008, which marks the lowest amount through three quarters of a year since 1977 (NVCA, 2008c). Chart 1 of the Appendix shows a graphical representation of venture-backed exits. If there are no foreseeable returns on venture capital investments, logically, this source of capital will freeze up. After noting the far-reaching impacts of venture capital investments on the well-being of a nation's economy, a lock down or even a reduction in venture capital investments can mean disaster for the United States.

The National Venture Capital Association is the go-to source for information about the health of the venture capital industry. Every quarter, this non-profit organization releases research about industry performance, such as the number of IPOs and M&As, as well as chronicles the total number and volume of venture capital investments. The NVCA has pointed out that a liquidity problem currently exists in the industry. This paper will look to pinpoint what might be causing the reduction in exits among venture-backed companies. Several groups of models will be used to analyze venture capital investments and subsequent liquidity from various perspectives.

2 Related Literature

In 2007, almost $30 billion was invested by the venture capital industry, totaling to 29,880 reported deals (NVCA, 2008). Perhaps nine out of every ten of those deals fail, but Hasan et al. (2008) showed how the ones that succeed will create jobs and fuel innovation. As a result, it is not surprising to see that a substantial amount of researchers focus their work on the field and literature on the subject is abundant, especially when relating to risk (Reid and Smith, 2008). It has been shown how venture capital, by expanding available financial resources and offering strategic guidance, increases innovation efforts across industries (Da Rin and Penas, 2007). Researchers have broken down venture capital into its various investment stages, ex. first, second, and third rounds of financing. Risk has been closely studied in VC investments, and Cochrane proved that second, third and fourth rounds of financing are less risky and volatile but offer lower average returns as opposed to seed and first-round investments (Cochrane, 2001). With this information, one can analyze current investment strategies by venture capitalists and make conclusions regarding confidence in the economy. In addition, a Silicon Valley Venture Capital Confidence Index was created to measure the opinions of VCs and tracks confidence regarding high-growth venture opportunities in the San Francisco Bay Area (Vannice, 2008).

The National Venture Capital Association releases an annual yearbook focused on the venture capital industry as well as quarterly reports of industry activity. The yearbook provides a general overview of the VC space and chronicles yearly changes in the amount of investments, exits, valuations, and overall performance. The NVCA's mission is to provide unbiased analysis of how venture capital is different from traditional investments, and the organization partners with other firms to offer more frequent reports (PricewaterhouseCoopers, 2008b). Popular Internet blogs like TechCrunch and various individual writers use this information to formulate what industry changes might come next, cast blame on certain companies or firms, or provide explanations of the positive and negative effects of regulations (Gingrich and Kralik, 2008) (Schoenfeld, 2008). When the Sarbanes-Oxley Act was enacted on July 30, 2002 following the Enron and WorldCom scandals, it was hoped that added regulation from the bill would instill confidence in the markets. Regrettably, unintended consequences followed including soaring accounting costs which made it impossible for many smaller companies to take on the new financial burden of going public. Gingrich and Kralik point out three main adverse effects from the legislation: it failed to truly prevent accounting shortfalls as seen by the collapse of Bear Sterns, Lehman

Bros., and AIG; smaller public companies were pressured to return to private status or merge; and lastly, it created a trend where companies elect to go public on foreign exchanges instead of American.

Recently, there has been a great deal of attention given to the decline in exits among venture capital portfolio companies. In these reports, it is speculated that jittery investors, unstable credit markets, and volatility in equity markets combine to be responsible for the poor condition of venture capital. Many VCs polled agreed that Sarbanes-Oxley was also partially responsible for the reduction in IPOs (PricewaterhouseCoopers, 2008a). It has been stated that the current recession in the United States was long overdue. Mary Meeker (2008) of Morgan Stanley made this claim during the 2008 Web 2.0 Summit. By using a simple regression of Internet ad spending on GDP growth, she showed how technology and advertising spending are closely related to GDP growth. This might mean trouble for countless venture-backed Internet companies who rely on strong advertising demand as a major portion of revenue[4].

3 Data

Data Collection

Much of the data used in this paper comes from the VentureXpert database found within the SDC Platinum database collection. It contains venture capital investment data such as fund commitments, portfolio company invest-

[4]With commercial Internet businesses, it is difficult to charge consumers for the end product. As a result, the business model switches to getting as many users as possible and charging advertisers for targeted ads. Many Internet companies rely on this model.

ments, round valuations, and fund performance. VentureXpert is a highly-regarded database and is used by the National Venture Capital Association in their research. The database contained a variety of venture-related data including venture-backed IPOs and M&As, sorted based on individual transactions. With VentureXpert, I was able to collect all individual deals and, after sorting by quarter, sum up the information appropriately. Ultimately, the following quarterly data was extracted dating back to 1995 through the third quarter of 2008: *Total investment amount, Number of deals, Number of M&As,* and *Number of IPOs*.

The data recalled from VentureXpert was done so with the same queries as performed by the NVCA and Thomson-Reuters[5]. There may have been a bit of missing data due to incorrect entry of dates within the database. Prior to running the queries using NVCA criteria, I recalled a more general list of mergers. A handful companies had either missing or incorrect dates. Because the NVCA criteria featured specific time constraints, these companies were left out from the results and thus, some M&A activity may be missing from the pool used in this paper. Discrepancies did not seem frequent and likely were caused by human input error. One other problem with the data may be the overall quarterly investment amount, which likely is not entirely accurate as much of this data is collected in surveys.

I also looked for data that could reflect the overall state of the economy. To do this, I logged the S&P 500 level on the first day of each respective quarter. In addition, the same information was collected for the NASDAQ index to measure the health of technology industry. This method may be

[5]Special thanks to Sandy Anglin of Thomson-Reuters for her help.

problematic as the level of an index on the first day of the quarter my not be an appropriate representation of overall economic health during the entire quarter. One final variable was included in my data set: a binary variable to indicate whether Sarbanes-Oxley was in effect (1) or not (0).

In any econometric study, it is extremely important to look at sample size, which was a concern with this paper. The raw exit strategy data came in the form of individual transactions but it was ultimately grouped and sorted based on quarters. Focusing on 1995 through present day, this created only 55 unique data points for analysis. The main issue with having a small sample size is poor statistical significance but this was not a prevalent problem in the paper.

Explanation of Variables

An interesting issue that came up during this study is the categorization of variables as either dependent or independent. Certain variables could be easily categorized but others were used in both classifications. This section will list the variables and explain their relevance.

S&P 500 Level *(S&P500 at Q-open)* To fulfill a need to capture the essence of stock market health, I used data from the S&P 500 index. This is a value-weighted index of the prices of 500 large cap US common stocks. Many consider the index to be a good indicator of the condition of the US economy. The S&P 500 total was chosen over the Dow Jones Industrial Average because it contained 500 companies as opposed to only 30 found in the Dow Jones Average. Ultimately, I felt this would create a better, more broad representation of the economy[6]. In this paper, the S&P500 variable was treated as completely independent.

NASDAQ Composite Level *(NASDAQ at Q-open)* The NASDAQ Composite features over 3,000 components with a focus on the technology sector. Though this variable is correlated with the overall S&P level, the technical focus of the index seemed appropriate for this paper. American venture capital spans across many industries but much of its success has been technology-related. During the tech boom and bust, the NASDAQ experienced a far-greater roller coaster effect than the S&P 500, and because the venture capital industry was hit hard during the tech crash, I felt it was logical to include this variable. It was treated as an independent variable.

Total Investment Amount *(Investment Amount)* This variable is the sum of all disclosed venture capital deals in a quarter. It seemed logical that it would be best described as a dependent variable which fluctuated based on the state of the economy. However, the direction of the correlation is interesting to analyze. First, one could rationalize that when the economy was doing well, venture capital firms would likely have confidence in the direction of the economy and invest a greater amount of money in startups. It might be easier to raise new funds from individual and institutional investors during these times and one would ultimately see a strong, positive correlation with good economic health and total investment amount. On the other hand,

[6]One issue to note when using this variable in regression models is the "spurious trends" problem which arises because the variable trends upward over time. However, the sample period used in this study is relatively small and we do see fluctuations in the S&P 500 data.

if investors do not trust general markets, during poor economic times, they may be more likely to look for alternate long term investments like venture capital, which creates a negative relationship between the two variables.

Number of Mergers & Acquisitions *(# of M/A)* The quarterly total of M&A activity among venture-backed companies is a crucial point of focus in this paper. It seemed logical to view this total as a dependent variable to see how this number changes with factors such as economic health. However, in many senses, it may also be an independent variable. It could be possible that the overall level of M&A activity could impact a given company's decision on how to grow. Perhaps poor M&A activity would make a company more likely to consider public markets for capital. Because of such possibilities, I treat the M&A activity variable as both dependent and independent in this paper, depending on the regression.

Number of Initial Public Offerings *(# of IPO)* This variable also switched between dependent or independent classification based on the model. The importance of this number in a healthy venture capital ecosystem can never be discounted. After all, many mergers or acquisitions are not truly victories for investors. Companies in dire straits[7] sometimes sell to merely liquidate their property and cut losses. A healthy IPO total, however, is a strong sign of a thriving venture capital community and the economy at

[7] Take Revolution Health for example. TechCrunch dubbed its merger with Waterfront Media a "mercy sale" (2008). The transaction valued both companies in the $300 million range with Revolution Health being supposedly valued at $100 million. Sadly for investors, over $200 million in venture funding was spent by Revolution Health, and their last valuation was rumored to be over half a billion dollars (Arrington, 2008).

large.

Sarbanes-Oxley *(Sarbanes-Oxley)* A binary variable was created to identify data points as either pre-SOX or post-SOX. The bill has attracted a great deal of negative press following its passing and some claim the harm it has caused far exceeds any intended benefit. Alan Greenspan, the former chairman of the U.S. Federal Reserve, stated that Section 404 of the bill was a "nightmare" and caused too many extreme cost increases (Martens, 2009). Ultimately, such regulation hindered young entrepreneurial companies the most[8] due to increased costs, drained resources and a shortage of certified accountants (Kessler, 2004).

4 Models

The United States economy, like a natural ecosystem, is said to be extremely sensitive. Little changes can leave major lasting effects, and because of this, I felt that a single model could not effectively capture the many factors that may be causing the liquidity drought in venture capital. Three groups of models were created to attempt to understand what is occurring. First, I regressed venture capital investment activity on stock market health (Section 4.1). Then, I focused on finding determinants of the number of mergers and acquisitions per quarter (Section 4.2). Finally, I modeled the number of IPOs per quarter (Section 4.3).

[8] TransAct Technologies had to cancel innovative projects due to strains from Sarbanes-Oxley regulation. CEO Bart Shuldman stated that SOX was as resource-intensive as launching a new product and the company could not manage both. As a result, development of a new enterprise resource planning system was postponed (Kessler, 2004).

The models were linear regressions with multiple regressors. The coefficients were drawn from ordinary least squares (OLS) estimators and the models assumed heteroskedasticity-robust standard errors.

4.1 Investment Amount

$$\begin{aligned} Investment\,Amount_i &= \beta_0 + \beta_1(NASDAQ\,at\,Qopen)_i \\ &\quad + \beta_2(S\&P500\,at\,Qopen)_i + u_i \end{aligned} \tag{1}$$

$$Investment\,Amount_i = \beta_0 + \beta_1(NASDAQ\,at\,Qopen)_i + u_i \tag{2}$$

$$Investment\,Amount_i = \beta_0 + \beta_1(S\&P500\,at\,Qopen)_i + u_i \tag{3}$$

Prior to beginning any econometric analysis, I was somewhat shocked to see similarities between two particular graphs: (1) investment amount over time (Appendix, Chart 2) and (2) NASDAQ level (Appendix, Chart 3). In fact, if labels were removed from the charts, it would almost be a coin flip to properly identify them. Though it is logical that market conditions surrounding technology companies affect the venture capital industry's willingness to invest, I was impressed with the ability of VCs to robustly adapt to economic changes.

Thus, I regressed investment amount on variables which highlighted market conditions. First, both NASDAQ and S&P500 levels were included as variables. Secondly, two separate equations were created–one which featured just the NASDAQ level and one which featured only the S&P500 level. I was expecting to see a relatively large correlation coefficient (R^2) in the regression results. These results would confirm at an extremely basic level the importance of a healthy stock market for venture capitalists.

4.2 Number of Mergers & Acquisitions

$$\begin{aligned}(\#\,of\,M/A)_i &= \beta_0 + \beta_1(S\&P500\,at\,Qopen)_i \\ &+\beta_2(NASDAQ\,at\,Qopen)_i + \beta_3(Sarbanes - Oxley)_i \\ &+\beta_4(\#\,of\,IPO)_i + \beta_5(\#\,of\,Deals)_i + u_i \qquad (4)\end{aligned}$$

This model aimed identify determinants of the number of mergers and acquisitions per quarter. Prior to running the regression, I expected positive coefficients on both stock market variables ($\beta_1$and β_2) as a healthy economy would logically be accompanied by relatively good venture returns from IPOs and M&As. I believed I would see $\beta_3 > 0$ because restrictions on IPOs would likely pressure companies away from public markets and encourage them to merge with other firms. However, the coefficient on IPO totals, β_4, seemed more complicated. In one sense, an increasing number of IPOs might be accompanied by a proportional increase in M&As, perhaps due to vibrant public markets leading to overall increased activity. This would indicate a positive β_4, but on the other hand, if non-favorable IPO conditions exist or valuations are low in general, companies may elect to merge with other firms. This would lead to a negative β_4 as a decrease in $\#\,of\,IPO$ would mean an increase in $\# \, of \, M/A$. Lastly, I expected $\beta_5 > 0$ because if there is money is being poured into investments, there should be a good flow of dollars coming out.

After running the regression, certain variables were not statistically significant. I created several additional regression models, listed below, to identify critical explanatory variables. The S&P 500 level was much more correlated with the number of mergers and acquisitions than the NASDAQ level, so the equations below drop *NASDAQ at Qopen*.

$$\begin{aligned}(\# \, of \, M/A)_i &= \beta_0 + \beta_1(S\&P500 \, at \, Qopen)_i + \beta_2(Sarbanes - Oxley)_i \\ &\quad + \beta_3(\# \, of \, IPO)_i + \beta_4(\# \, of \, Deals)_i + u_i \qquad (5)\end{aligned}$$

$$\begin{aligned}(\# \, of \, M/A)_i &= \beta_0 + \beta_1(S\&P500 \, at \, Qopen)_i \qquad (6) \\ &\quad + \beta_2(\# \, of \, IPO)_i + \beta_3(\# \, of \, Deals)_i + u_i\end{aligned}$$

$$(\# \, of \, M/A)_i = \beta_0 + \beta_1(S\&P500 \, at \, Qopen)_i + \beta_2(\# \, of \, IPO)_i + u_i \qquad (7)$$

4.3 Number of IPOs

$$
\begin{aligned}
(\#\,of\,IPO)_i &= \beta_0 + \beta_1(S\&P500\,at\,Qopen)_i \\
&\quad +\beta_2(NASDAQ\,at\,Qopen)_i + \beta_3(Sarbanes - Oxley)_i \\
&\quad +\beta_4(\#\,of\,M/A)_i + \beta_5(\#\,of\,Deals)_i + u_i \qquad (8)
\end{aligned}
$$

This regression model could indicate what variables encourage or discourage healthy IPO activity. Factors considered included overall stock market activity, technology index performance, Sarbanes-Oxley regulation, merger and acquisition activity, and finally, the number of investment deals. I expected coefficients on β_1 and β_2 to be positive as it seemed rational to believe that companies would look to public markets for capital during periods of strong economic activity. Still, illogical results could potentially be expected. Simply stated, the S&P500 has increased over time and the number of IPOs, over time, has decreased. Could this mean that as more time passes and the stock market rises further, we will see even fewer IPOs? Likely not. There are other factors in play here that are causing this reduction in IPOs, and they would need to be controlled for in the regression model to explain the relationship.

With all the speculation surrounding Sarbanes-Oxley and its problems, a statistically significant and negative β_3 coefficient seemed highly likely. I was unsure of whether any statistical significance would be present with β_4. It seemed likely that the model would reveal $\beta_5 > 0$ since a healthy IPO total and vibrant venture capital investment activity would go hand in hand, as previously eluded to in Vannice's writings on the venture capital confidence index. In addition, the following other regression models were created to better identify correlated variables and filter out erroneous ones.

$$\begin{aligned}(\#\, of\, IPO)_i &= \beta_0 + \beta_1(\#\, of\, M/A)_i + \beta_2(NASDAQ\, at\, Qopen)_i \\ &+ \beta_3(Sarbanes - Oxley)_i + u_i \end{aligned} \tag{9}$$

$$\begin{aligned}(\#\, of\, IPO)_i &= \beta_0 + \beta_1(S\&P500\, at\, Qopen)_i + \beta_2(NASDAQ\, at\, Qopen)_i \\ &+ \beta_3(Sarbanes - Oxley)_i + u_i \end{aligned} \tag{10}$$

$$(\#\, of\, IPO)_i = \beta_0 + \beta_1(Sarbanes - Oxley)_i + \beta_2(NASDAQ\, at\, Qopen)_i + u_i \tag{11}$$

$$(\#\, of\, IPO)_i = \beta_0 + \beta_1(S\&P500\, at\, Qopen)_i + u_i \tag{12}$$

$$(\#\, of\, IPO)_i = \beta_0 + \beta_1(Sarbanes - Oxley)_i + u_i \tag{13}$$

5 Results

5.1 Investment Amount

To model investment amount, the following equations were presented: equations (1), (2), and (3). Equation (1) featured both the S&P500 and NASDAQ as variables, and the R^2 was relatively high (0.87). The two variables seemed to explain investment amount, but the results seemed unusual at first. Though the coefficient on $NASDAQ\,at\,Qopen$ was positive, the coefficient on the S&P500 variable was negative. Both were statistically significant. Why would a higher S&P 500 level translate to less investment by venture capital firms? One would think that higher investor confidence, as demonstrated by higher stock market levels, would lead to more investments by VC firms. The reason for this deals with the *ceteris paribus*[9] estimate of the effect of each index. Holding the NASDAQ level constant, how does the S&P 500 level affect venture capital investment? In this case, if the S&P 500 increases, venture capitalists decrease startup investments and invest money in the general markets.

However, the NASDAQ level had the most direct positive effect on investment totals. The composition of most venture capital funds explains what is happening. In 2007, 74% of venture capital investments were in the following industries: computers & peripherals; semiconductors; telecommunications; biotechnology; software; and medical devices and equipment (NVCA, 2008). The differences between companies listed in the respective

[9] Latin phrase literally translated as "when other things the same." For this purpose, it translates as "all else equal."

indices are extremely relevant. Though the NASDAQ stock exchange lists companies across industries, it has a reputation of featuring technology-oriented companies (NASDAQ, 2008) while the S&P 500 features a more diverse range of companies. Proof of these differences can be seen during the first Internet bubble. The NASDAQ grew the most during this time but also fell the hardest when the crash occurred [see Appendix, Chart 3].

Because of the strong relationship between the NASDAQ and technology companies, it is not surprising to see that the NASDAQ is, in fact, much more correlated with venture capital investment amount than the S&P 500. Regressing $Investment\,Amount$ on $NASDAQ\,at\,Qopen$, Equation (2), we can see a significant positive correlation and an R-squared of 0.79, which was much higher than when $Investment\,Amount$ was regressed on $S\&P500\,at\,Qopen$, Equation (3). In this regression, the R-squared was only 0.40. These results show us that the NASDAQ level seems to be a much bigger factor in venture capitalist behavior than the S&P 500.

5.2 Number of Mergers & Acquisitions

Equation (4), which regressed *# of M/A* on the following variables: *S&P500 at Qopen, NASDAQ at Qopen, Sarbanes-Oxley, # of IPO, and # of Deals*, could be called the "kitchen-sink" approach[10]. Several variables ended up not being statistically significant in the model: *NASDAQ at Qopen, Sarbanes-Oxley, # of Deals.* The coefficients on the S&P 500 variable and number of IPOs were both positive and statistically significant.

[10]The kitchen sink approach is when as many variables as possible are included in a regression to try to optimize the fit.

When only those aforementioned variables were included, as in Equation (7), the results were consistent, though the R-squared dropped from 0.39 to 0.29. The F-statistic used to test joint hypothesis increased from 8.63 in Equation (4) to 14.92 in Equation (7). Equation (6) may have been the most telling model though conveyed similar results. Its R-squared was 0.37 and F-stat equaled 11.65, which made it one of the best models in terms of fit for mergers and acquisitions. All three variables were statistically significant, though the coefficient of *# of Deals* was only -0.02, which was not considerably different from zero.

The model indicated that M&A activity was most favored during vibrant economic times as the coefficient on *S&P500 at Qopen* was 0.077 with a t-stat of 5.11. This goes away from theories which favor bargain hunting, or times where larger companies buy up assets when valuations are low. Furthermore, M&A activity was slightly higher when IPO activity was more frequent, though the coefficient indicated an average of five additional IPOs corresponding to only one additional merger or acquisition.

5.3 Number of Initial Public Offerings

Just like with the first M&A model, I used the kitchen sink approach with the initial IPO model, Equation (8). *# of IPO* was regressed on the following variables: *# of Deals, # of M/A, Sarbanes-Oxley, NASDAQ at Qopen, S&P500 at Qopen*. All but one, *# of Deals*, were statistically significant. The R-squared was 0.390.

The result which seemed most important the coefficient of Sarbanes-Oxley. When SOX was in effect, holding all else equal, the model predicted that the markets could expect twenty-three fewer IPOs per quarter, or nearly 100 fewer IPOs per year. This effect was frightening since there was only an average of 28.64 venture-backed IPOs per quarter since 1995.

Furthermore, the coefficient on *S&P500 at Qopen* was negative even though the model controlled for the Sarbanes-Oxley Act. These results seemed puzzling but not totally unexpected, as Section 5.1 discussed why the S&P 500 might not be an ideal representation of market health for venture-backed companies. Small sample size could also be responsible for an unstable coefficient.

To better understand what was occurring, I dropped the S&P 500 variable and allowed the model to focus solely on the NASDAQ level to represent economic health[11]. *# of Deals* was also dropped from the model because of its poor statistical significance. The results of this model, Equation (9), were even more startling, as it indicated that the SOX bill reduced IPOs by an average of 31 per quarter. A higher NASDAQ level still led to more IPO activity. The coefficient on *# of M/A* was positive, though not statistically significant in this model.

Ultimately, the model which seemed to offer the best balance of fit and significance was Equation (10). R-squared equaled 0.32 and the F-statistic was 10.15. This compared favorably with Equation (11) which featured just *NASDAQ at Qopen* and *Sarbanes-Oxley* as independent variables. Equation (11) resulted in a lower R-squared, 0.24, as well as a lower F-stat, 9.57.

The results of these models seem relatively clear. Sarbanes-Oxley sig-

[11] Regressing IPO levels on S&P 500 totals and the Sarbanes-Oxley variable led to a lower R-squared (0.225) than when the NASDAQ was used instead to model economic health, which had R-squared equal to (0.237).

nificantly lowers the number of venture-backed IPO companies. Though it seemed logical to expect IPOs to occur during expanding stock markets, the data shows mixed effects. Some market indicators, like the S&P 500, indicate a negative relationship with IPO totals, while others, namely the NASDAQ index, indicate a positive relationship. It is rational to expect that companies will pay a bit of attention to market conditions when choosing to issue public stock for the first time. However, SOX regulation may be causing many companies to steer clear of US public markets[12] (Chichester, 2006), hereby further softening the impact of US market conditions on private company IPO decisions.

6 Conclusion

The results of the models reveal a great deal about liquidity in venture capital. Decreasing M&A activity is just another unfortunate side effect of a troubled economy. Venture capitalists tighten their spending, and so do firms who may have otherwise been considering the acquisition of new assets. Time may be the only solution here.

On the other hand, certain aspects of the liquidity drought may be in our control. There is clear evidence that the Sarbanes-Oxley Act nearly shut down venture-backed IPO activity. If viable exit strategies do not exist for startups, investors will be less willing to fund the ideas that help grow our economy. Furthermore, human talent may be reluctant to even join

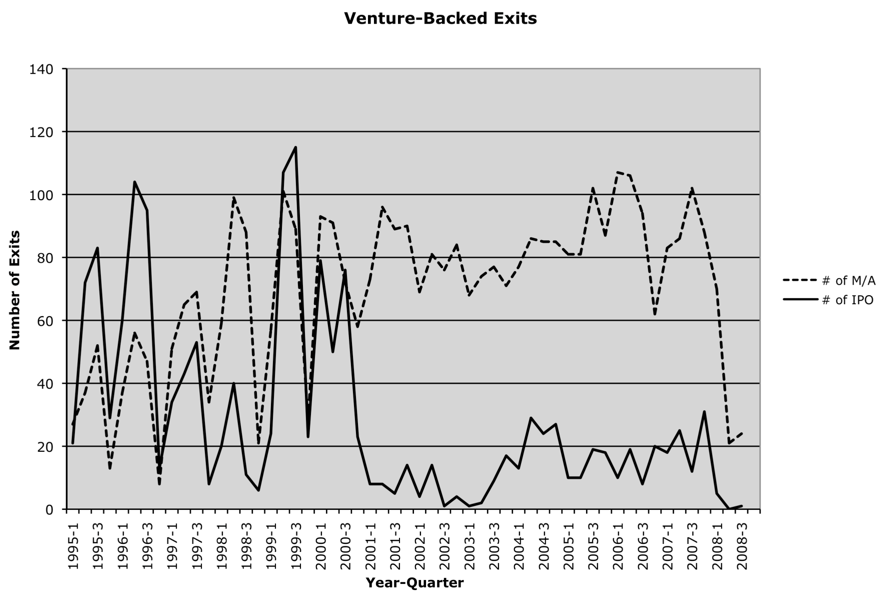
[12]U.S. Senator Olympia J. Snowe wrote a letter to SEC Chairman Christopher Cox arguing that SOX regulation was pushing companies into trading outside US markets, usually in London. He showed how Europe raised more new money from IPOs than the U.S. and Greater China combined in 2005.

startups due to a much less-probable equity victory. The Sarbanes-Oxley Act is choking small companies that used to be able to look to public markets to grow. Moreover, the poor atmosphere is discouraging the entrepreneurs whose visions and drive are the heartbeat of the venture capital industry. In economic times like these, a Sarbanes-Oxley overhaul may be an attractive means of jump-starting the U.S. economy.

7 Appendix

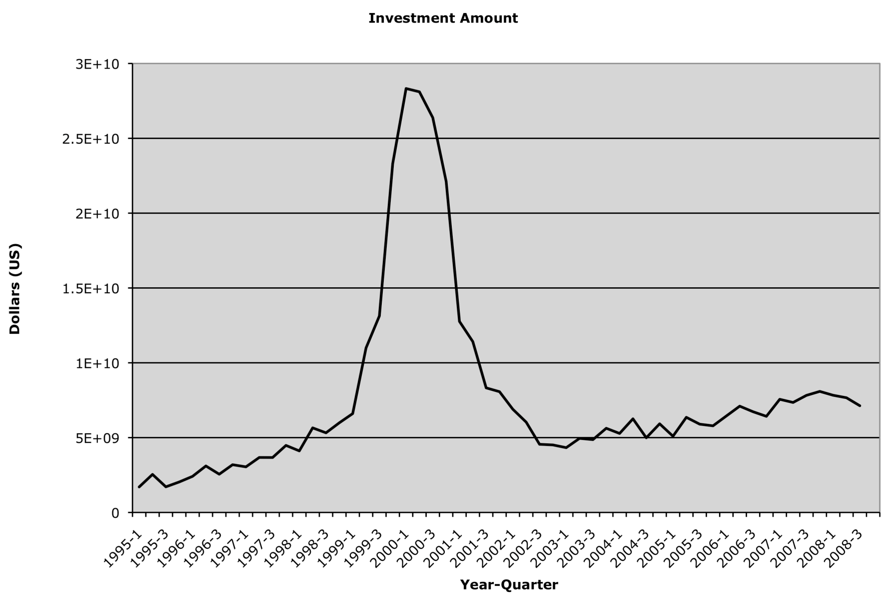
7.1 Charts

Chart 1



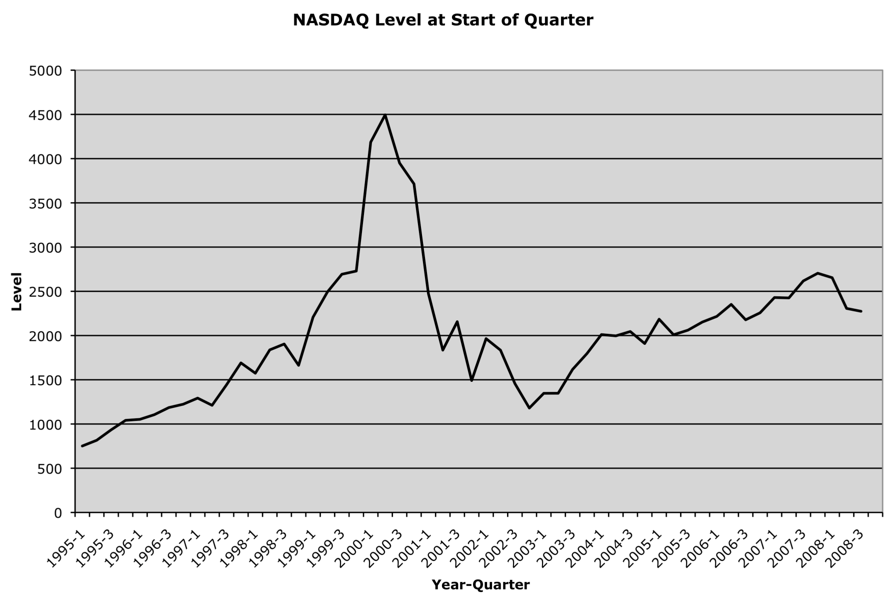
Quarter-to-quarter volatility is extremely evident in this chart but notice the drastic and extended change in number of IPOs after the 2000-2001 crash. Aside from the recent decline, M&A activity seemed to be rising over time.

Chart 2



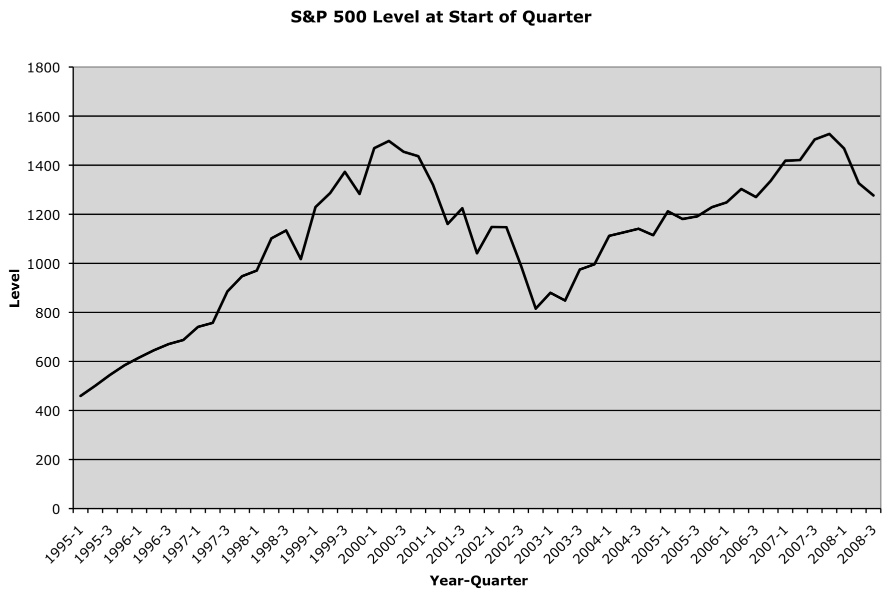
Note the spike in investment amount during the first tech boom which peaked during 1999-2000. Venture capital amounts have not come close to approaching the totals from the first tech bubble.

Chart 3



Note the similar behavior between Chart 2 and Chart 3. This is an indicator of the heavy technology focus in venture capital.

Chart 4



Note the less severe fluctuations during the first Internet boom in the S&P 500 totals as opposed to the NASDAQ.

7.2 Regression Results

Model 1

Robust Regression Output: Dependent Variable = Investment Amount

Regression Statistics					
R-Squared	0.874783			F statistic =	209.3673
Adjusted R-Squared	0.869967			Prob > F =	0.000000
Standard Error	2267282771				
Number of Obs	55			Mean (Investment Amount) =	7678262416
				Std Dev (Investment Amount) =	6287514539

	Coefficients	Standard Error	t stat	p > |t|	Lower 95%	Upper 95%
Intercept	-638688018	688283537	-0.92794	0.353437	-1987698961	710322925
NASDAQ at Q-open	11165779	749914	14.88941	0.000000	9695974	12635584
S&P500 at Q-open	-12885108	1681476	-7.66297	0.000000	-16180740	-9589475

Model 2

Robust Regression Output: Dependent Variable = Investment Amount

Regression Statistics					
R-Squared	0.791300			F statistic =	127.0179
Adjusted R-Squared	0.787363			Prob > F =	0.000000
Standard Error	2899337109				
Number of Obs	55			Mean (Investment Amount) =	7678262416
				Std Dev (Investment Amount) =	6287514539

	Coefficients	Standard Error	t stat	p > |t|	Lower 95%	Upper 95%
Intercept	-6559064055	1121076757	-5.85068	0.000000	-8756334123	-4361793988
NASDAQ at Q-open	7087391	628860	11.27022	0.000000	5854848	8319934

Model 3

Robust Regression Output: Dependent Variable = Investment Amount

Regression Statistics			
R-Squared	0.400232	F statistic =	25.42109
Adjusted R-Squared	0.388916	Prob > F =	0.000000
Standard Error	4915068851		
Number of Obs	55	Mean (Investment Amount) =	7678262416
		Std Dev (Investment Amount) =	6287514539

	Coefficients	Standard Error	t stat	p > |t|	Lower 95%	Upper 95%
Intercept	-7511453640	2469848742	-3.041261	0.002356	-12352268222	-2670639058
S&P500 at Q-open	13868004	2750533	5.041933	0.000000	8477058	19258951

Model 4

Robust Regression Output: Dependent Variable = # of M/A

Regression Statistics			
R-Squared	0.388300	F statistic =	8.629767
Adjusted R-Squared	0.325882	Prob > F =	0.000000
Standard Error	21.10414		
Number of Obs	55	Mean (# of M/A) =	69.58182
		Std Dev (# of M/A) =	25.70393

	Coefficients	Standard Error	t stat	p > |t|	Lower 95%	Upper 95%
Intercept	-1.45318	13.40495	-0.108406	0.913674	-27.726394	24.82004
# of Deals	-0.00380	0.03016	-0.125889	0.899820	-0.062901	0.05531
# of IPO	0.26325	0.08498	3.097913	0.001949	0.096698	0.42980
Sarbanes-Oxley	10.58288	8.39315	1.260895	0.207347	-5.867396	27.03316
NASDAQ at Q-open	-0.01231	0.01700	-0.724586	0.468706	-0.045626	0.02100
S&P500 at Q-open	0.07944	0.02362	3.363816	0.000769	0.033152	0.12572

Model 5

Robust Regression Output: Dependent Variable = # of M/A

Regression Statistics			
R-Squared	0.378957	F statistic =	9.522588
Adjusted R-Squared	0.329273	Prob > F =	0.000000
Standard Error	21.05099		
Number of Obs	55	Mean (# of M/A) =	69.58182
		Std Dev (# of M/A) =	25.70393

	Coefficients	Standard Error	t stat	p > |t|	Lower 95%	Upper 95%
Intercept	6.468886	10.92380	0.592183	0.553728	-14.941360	27.87913
# of Deals	-0.019141	0.01379	-1.388066	0.165117	-0.046168	0.00789
# of IPO	0.231907	0.09449	2.454359	0.014114	0.046714	0.41710
Sarbanes-Oxley	8.487206	8.07170	1.051477	0.293040	-7.333038	24.30745
S&P500 at Q-open	0.064531	0.01762	3.662804	0.000249	0.030000	0.09906

Model 6

Robust Regression Output: Dependent Variable = # of M/A

Regression Statistics			
R-Squared	0.366270	F statistic =	11.65142
Adjusted R-Squared	0.328992	Prob > F =	0.000000
Standard Error	21.05540		
Number of Obs	55	Mean (# of M/A) =	69.58182
		Std Dev (# of M/A) =	25.70393

	Coefficients	Standard Error	t stat	p > |t|	Lower 95%	Upper 95%
Intercept	5.835404	11.67011	0.500030	0.617054	-17.037586	28.70839
# of Deals	-0.027809	0.01146	-2.427292	0.015212	-0.050263	-0.00535
# of IPO	0.205929	0.09326	2.208231	0.027228	0.023152	0.38871
S&P500 at Q-open	0.076780	0.01503	5.108906	0.000000	0.047324	0.10624

Model 7

Robust Regression Output: Dependent Variable = # of M/A

Regression Statistics			
R-Squared	0.294137	F statistic =	14.92938
Adjusted R-Squared	0.266988	Prob > F =	0.000000
Standard Error	22.00671		
Number of Obs	55	Mean (# of M/A) =	69.58182
		Std Dev (# of M/A) =	25.70393

	Coefficients	Standard Error	t stat	p > |t|	Lower 95%	Upper 95%
Intercept	12.89293	11.14970	1.156347	0.247539	-8.960084	34.74594
# of IPO	0.09161	0.07656	1.196530	0.231490	-0.058449	0.24167
S&P500 at Q-open	0.04936	0.00904	5.461816	0.000000	0.031648	0.06707

Model 8

Robust Regression Output: Dependent Variable = # of IPO

Regression Statistics			
R-Squared	0.390048	F statistic =	6.469102
Adjusted R-Squared	0.327808	Prob > F =	0.000005
Standard Error	24.41350		
Number of Obs	55	Mean (# of IPO) =	28.63636
		Std Dev (# of IPO) =	29.77717

	Coefficients	Standard Error	t stat	p > |t|	Lower 95%	Upper 95%
Intercept	60.94369	19.89151	3.063805	0.002185	21.95706	99.93033
# of Deals	-0.01925	0.02075	-0.927770	0.353527	-0.05991	0.02141
# of M/A	0.35228	0.12953	2.719633	0.006535	0.09840	0.60616
Sarbanes-Oxley	-23.70893	9.13429	-2.595595	0.009443	-41.61181	-5.80604
NASDAQ at Q-open	0.03815	0.01545	2.469723	0.013522	0.00787	0.06843
S&P500 at Q-open	-0.09542	0.03160	-3.019530	0.002532	-0.15736	-0.03348

Model 9

Robust Regression Output: Dependent Variable = # of IPO

Regression Statistics			
R-Squared	0.259586	F statistic =	6.743360
Adjusted R-Squared	0.216032	Prob > F =	0.000152
Standard Error	26.36529		
Number of Obs	55	Mean (# of IPO) =	28.63636
		Std Dev (# of IPO) =	29.77717

	Coefficients	Standard Error	t stat	p > |t|	Lower 95%	Upper 95%
Intercept	25.39199	12.48431	2.033912	0.041960	0.923190	49.86079
# of M/A	0.20054	0.14730	1.361429	0.173378	-0.088165	0.48924
Sarbanes-Oxley	-31.75018	7.86913	-4.034776	0.000055	-47.173389	-16.32697
NASDAQ at Q-open	0.00185	0.00472	0.392928	0.694372	-0.007390	0.01110

Model 10

Robust Regression Output: Dependent Variable = # of IPO

Regression Statistics			
R-Squared	0.318407	F statistic =	10.15498
Adjusted R-Squared	0.278313	Prob > F =	0.000001
Standard Error	25.29635		
Number of Obs	55	Mean (# of IPO) =	28.63636
		Std Dev (# of IPO) =	29.77717

	Coefficients	Standard Error	t stat	p > |t|	Lower 95%	Upper 95%
Intercept	62.11129	18.65743	3.329038	0.000871	25.54340	98.67917
Sarbanes-Oxley	-17.24770	8.64758	-1.994512	0.046096	-34.19665	-0.29876
NASDAQ at Q-open	0.02667	0.00909	2.935257	0.003333	0.00886	0.04447
S&P500 at Q-open	-0.07231	0.03175	-2.277622	0.022749	-0.13454	-0.01009

Model 11

Robust Regression Output: Dependent Variable = # of IPO

Regression Statistics			
R-Squared	0.237003	F statistic =	9.567848
Adjusted R-Squared	0.207657	Prob > F =	0.000070
Standard Error	26.50575		
Number of Obs	55	Mean (# of IPO) =	28.63636
		Std Dev (# of IPO) =	29.77717

	Coefficients	Standard Error	t stat	p > |t|	Lower 95%	Upper 95%
Intercept	33.11303	11.58921	2.857230	0.004274	10.39860	55.82746
Sarbanes-Oxley	-28.48534	6.62120	-4.302139	0.000017	-41.46267	-15.50802
NASDAQ at Q-open	0.00422	0.00478	0.882416	0.377552	-0.00515	0.01358

Model 12

Robust Regression Output: Dependent Variable = # of IPO

Regression Statistics			
R-Squared	0.030819	F statistic =	1.226763
Adjusted R-Squared	0.012533	Prob > F =	0.268038
Standard Error	29.59000		
Number of Obs	55	Mean (# of IPO) =	28.63636
		Std Dev (# of IPO) =	29.77717

	Coefficients	Standard Error	t stat	p > |t|	Lower 95%	Upper 95%
Intercept	48.59850	18.47441	2.630585	0.008524	12.38933	84.80768
S&P500 at Q-open	-0.01823	0.01645	-1.107593	0.268038	-0.05048	0.01403

Model 13

Robust Regression Output: Dependent Variable = # of IPO

Regression Statistics				
R-Squared	0.224560		F statistic =	17.95795
Adjusted R-Squared	0.209929		Prob > F =	0.000023
Standard Error	26.46772			
Number of Obs	55		Mean (# of IPO) =	28.63636
			Std Dev (# of IPO) =	29.77717

	Coefficients	Standard Error	t stat	p > |t|	Lower 95%	Upper 95%
Intercept	41.40000	6.349691	6.520002	0.000000	28.95483	53.84517
Sarbanes-Oxley	-28.08000	6.626264	-4.237682	0.000023	-41.06724	-15.09276

7.3 Data

Year-Qtr	Investment Amt.	# of Deals	# of M/A	# of IPO	SOX	NASDAQ at Q-open	S&P500 at Q-open
1995-1	1704471700	497	27	21	0	751.31	459.21
1995-2	2542530600	454	37	72	0	816.06	500.7
1995-3	1712698300	423	52	83	0	933.99	544.75
1995-4	2036641700	466	13	29	0	1041.39	584.41
1996-1	2412661100	573	37	60	0	1052.83	615.93
1996-2	3106571800	656	56	104	0	1105.77	645.5
1996-3	2556059700	587	47	95	0	1185.64	670.63
1996-4	3190091200	757	8	13	0	1223.73	687.31
1997-1	3047368500	759	51	34	0	1292.65	740.74
1997-2	3674240600	760	65	43	0	1211.28	757.12
1997-3	3671504700	743	69	53	0	1442.65	885.14
1997-4	4479777100	895	34	8	0	1690.79	947.28
1998-1	4113597500	846	59	20	0	1574.1	970.43
1998-2	5652693400	900	99	40	0	1838.15	1101.75
1998-3	5321257600	912	88	11	0	1904.24	1133.84
1998-4	5991717200	989	21	6	0	1663.3	1017.01
1999-1	6605334400	913	57	24	0	2207.54	1229.23
1999-2	10993985200	1305	101	107	0	2493.07	1286.37
1999-3	13130681000	1421	89	115	0	2692.96	1372.71
1999-4	23318742900	1863	28	23	0	2729.04	1282.71
2000-1	28326827800	2128	93	79	0	4186.19	1469.25
2000-2	28107090500	2105	91	50	0	4494.89	1498.58
2000-3	26380850000	1927	72	76	0	3950.59	1454.6
2000-4	22130389100	1743	58	23	0	3714.48	1436.52
2001-1	12765340300	1283	73	8	0	2474.16	1320.28
2001-2	11416422800	1218	96	8	0	1835.22	1160.33
2001-3	8325039400	1004	89	5	0	2156.76	1224.42
2001-4	8070523700	980	90	14	0	1491.45	1040.94
2002-1	6895171000	839	69	4	0	1965.18	1148.08
2002-2	6035274600	853	81	14	0	1834.59	1147.39
2002-3	4555240100	690	76	1	1	1457.04	989.82
2002-4	4512537500	719	84	4	1	1180.26	815.28
2003-1	4329518100	700	68	1	1	1346.93	879.82
2003-2	4951611500	740	74	2	1	1347.54	848.18
2003-3	4866606600	715	77	9	1	1617.3	974.5
2003-4	5624581300	785	71	17	1	1797.07	995.97
2004-1	5279482200	713	77	13	1	2011.08	1111.92
2004-2	6257741000	846	86	29	1	1996.45	1126.21
2004-3	4989842000	691	85	24	1	2045.53	1140.84
2004-4	5924516500	840	85	27	1	1909.59	1114.58
2005-1	5093969500	731	81	10	1	2184.75	1211.92
2005-2	6357318500	825	81	10	1	2009.09	1180.59
2005-3	5900176200	788	102	19	1	2060.97	1191.33
2005-4	5789252500	810	87	18	1	2152.7	1228.81
2006-1	6447030100	873	107	10	1	2216.53	1248.29
2006-2	7102511600	948	106	19	1	2352.24	1302.88
2006-3	6730608400	904	94	8	1	2177.91	1270.06
2006-4	6423345100	936	62	20	1	2257	1335.82
2007-1	7561372200	863	83	18	1	2429.72	1418.03
2007-2	7350510600	1036	86	25	1	2425.36	1420.83
2007-3	7824456000	983	102	12	1	2617.39	1504.66
2007-4	8089050200	1049	88	31	1	2704.25	1527.29
2008-1	7831504800	990	70	5	1	2653.91	1467.97
2008-2	7664792600	1033	21	0	1	2306.51	1326.41
2008-3	7131302400	907	24	1	1	2274.24	1276.69

References

Arrington, M. (2006). Google has acquired youtube. http://www.techcrunch.com/2006/10/09/.

Arrington, M. (2008). Revolution health gets a mercy sale, turns 200*millioninto*100 million. http://www.techcrunch.com/2008/10/03/.

Bagley, C. (1998). *The Entrepreneur's Guide to Business Law.* South-Western College Publishing.

Bumiller, E. (2002). Corporate conduct: The president; bush signs bill aimed at fraud in corporations. New York Times.

Chichester, C. (2006). Snowe concerned sarbanes-oxley act forces more u.s.-based initial public offerings overseas. *Senate Committee on Small Business and Entrepreneurship.*

Chmielewski, D. C. (2006). Fears of dot-com crash, version 2.0. *The Los Angeles Times.*

Cochrane, J. (2001). The risk and return of venture capital. National Bureau of Economic Research.

CrunchBase (2008). Google company profile. www.crunchbase.com.

Da Rin, M. and Penas, M. F. (2007). The effect of venture capital on innovation strategies. National Bureau of Economic Research.

D'Alessandro, B. (2006). Exit strategies. *Entrepreneurship Series*.

Gingrich, N. and Kralik, D. W. (2008). Repeal sarbanes-oxley. *SFGate*.

Hasan, I., Francis, B., and Wang, H. (2008). The role of venture capital on innovation and new business formation. Illinois Institute of Technology, working paper.

Kessler, M. (2004). Tech companies struggle with sarbanes oxley. http://www.usatoday.com.

Long, T. (2007). Sept. 7, 1998: If the check says 'google inc.,' we're 'google inc.'. Wired Magazine.

Martens, C. (2009). Alan greenspan riffs on sarbanes-oxley. http://www.computerworld.com/news/special/pages/0,10911,2025,00.html.

Meeker, M. (2008). Web 2.0 summit - san francisco. In *Technology/Internet Trends*.

NASDAQ (2008). Nasdaq securities. www.nasdaq.com.

Nuechterlein, J. D. (2000). *Economic Strategy and National Security*. Basic Books.

NVCA (2008a). National venture capital association yearbook 2008. www.nvca.org.

NVCA (2008b). Vc investments q3 2008 - moneytree report. *National Venture Capital Association*.

NVCA (2008c). Venture-backed ipo drought continues in the third quarter of 2008. *National Venture Capital Association*.

NVCA (2008d). The venture capital industry: An overview. www.nvca.org.

PricewaterhouseCoopers (2008a). The exit slowdown and the new venture capital landscape* findings from the moneytree[a] report. https://www.pwcmoneytree.com.

PricewaterhouseCoopers (2008b). Moneytree report - q3 2008 us results. www.pwcmoneytree.com.

Reid, G. C. and Smith, J. A. (2008). *Risk Appraisal and Venture Capital in High Technology New Ventures*. Routledge.

Reuters (2008). Reuters finance. *http://www.reuters.com/finance*.

Schoenfeld, E. (2008). No exits. liquidity dries up even more for vc-backed startups in third quarter. TechCrunch.com.

Vannice, M. V. (2008). Silicon valley venture capitalist confidence index - third quarter 2008. http://www.usfca.edu/sobam/nvc/pub/svvcindex.html.