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RECYCLED CEOS AND MANAGERIAL ABILITY: DO VENTURE BACKED COMPANIES
HAVE A COMPARATIVE ADVANTAGE?

A Dissertation
presented in partial fulfillment of requirements
for the degree of Doctor of Philosophy
in the Department of Accountancy
The University of Mississippi

by

SYDNEE C. MANLEY

December 2018

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ABSTRACT

This dissertation examines the relationship between experienced chief executive officers (CEOs), venture capital support, and company performance. Much of the success of venture backed companies is attributed to the reputation, monitoring, and networking of venture capitalists (Hochberg, Ljungqvist, and Lu 2007; Katz 2009). One crucial task of venture capitalists, or any stakeholder, is to find talented executives to lead their companies. However, finding quality CEOs for young growth companies with a relatively short financial history can be a difficult endeavor. Venture capitalists may have a comparative advantage in this area because they network within the venture capital industry to “*recycle*” CEOs (De Carvalho, Calomiris, and de Matos 2008). In other words, venture capitalists network to hire CEOs who already have CEO experience at a different venture backed company. This provides venture capitalists with a unique opportunity to hire serial CEOs with venture capital industry specific experience. Therefore, this study considers the following research questions:

RQ1: Are *recycled* CEOs of higher ability than other CEOs?

RQ2: Do *recycled* CEOs have a positive relationship to future firm performance?

To address this question, I use a hand collected sample of serial CEOs (CEOs with prior CEO experience), and recycled CEOs (serial CEOs of venture backed companies) to examine their relationship with managerial ability and future firm performance. Although there is literature to support the positive association between CEOs and firm performance (Demerjian et al. 2012; Demerjian, Lev, Lewis, and McVay 2013), little analysis of recycled CEOs is available. Using various univariate and multivariable tests, I find evidence that *recycled* CEOs have a positive

association to future managerial ability and provide incremental explanatory power over venture backing with respect to future management quality and firm profitability. These findings provide evidence that venture capital success may be due in part to the ability of the CEOs set in place to lead the company and not just to venture capitalist oversight.

DEDICATION

I dedicate my dissertation to the memory my mother Arletha Manley. Thank you for giving me my sense of adventure. To the memory of my father Dr. Joseph N. Manley. Thank you for always believing in me. And to my two beautiful sisters Merike Manley and Ritche M. Bowden. Thank you for the laughter, the love, and the support.

LIST OF ABBREVIATIONS

BHAR	Buy-and-hold Abnormal Returns
BM	Book-to-market
CAPEX	Capital Expenditures
CEO	Chief Executive Officer
CFF	Cash Flows from Financing Activities
CFI	Cash Flows from Investing Activities
COGS	Cost of Goods Sold
FIN	Net Financial Assets
IPO	Initial Public Offering
NVB	Non-venture backed
OLS	Ordinary Least Squares
RQ	Research question
VB	Venture backed
VC	Venture capital

ACKNOWLEDGMENTS

I want to express my appreciation to my dissertation chair, Dr. Victoria Dickinson, and my committee members, Drs. John Bentley, Brett Cantrell, and Mark Wilder. Your time, talent, and support were invaluable.

I also want to acknowledge the collegial support from my fellow doctoral students and PhD Project members. Thank you for helping me realize this goal was attainable.

Lastly, I want to express my deepest appreciation to friend and fellow doctoral student Chevonne H. Alston. Thank you for all the support and positivity throughout this process. You helped to make this process a little easier to bear.

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I. INTRODUCTION

“... the Kleiner partners’ role in Silicon Valley may in some ways be close to that of the Hollywood moguls of the ‘30s and ‘40s, whose success was built on their ability to lock up stars, directors and writers. Kleiner Perkins has similarly amassed a pool of talent. ‘If you’re well regarded as a manager in their stable, you’re going to be used over the years” - Frank Ingari¹

Finding the right management for companies, especially young companies, is crucial to the future success of a company. Talented managers are better at predicting trends, negotiating contracts, are more adept at conveying information to interested parties, and more able to turn resources into revenues. Venture capitalists are in a unique position to secure talented managers for leadership roles in the companies they finance. By networking within the venture capital industry, venture capitalists “*recycle*” talented CEOs with specific skills to lead young growth companies. De Carvalho, Calomiris, and de Matos (2008) find that venture capitalists rely on the recommendations of other venture capitalists when hiring key managers, then “*recycle*” or reuse them for other startup companies. In other words, venture capitalists network to hire serial CEOs with venture experience. Prior literature provides evidence that Serial CEOs – CEOs with prior CEO experience – add value to the companies they are chosen to run (Gudell 2011). A *recycled* CEO is a special type of serial CEO, special in that this particular CEO has CEO experience with at least one other venture backed company. Simply, *recycled* CEOs are the serial CEOs of venture backed companies (see Figure 1 for an illustration).

¹ Per Frank Ingari in *Institutional Investor* (June 1996), pp. 95-96. Frank Ingari was the CEO of software company, Shiva Corp. from 1993 to 1998. Kleiner Perkins (now Kleiner Perkins Caufield and Byers) is a successful venture capital firm based in Menlo Park, CA. Kleiner Perkins has invested in companies such as Uber, MyFitnessPal, and Shazam.

FIGURE 1
Illustration of Recycled CEO

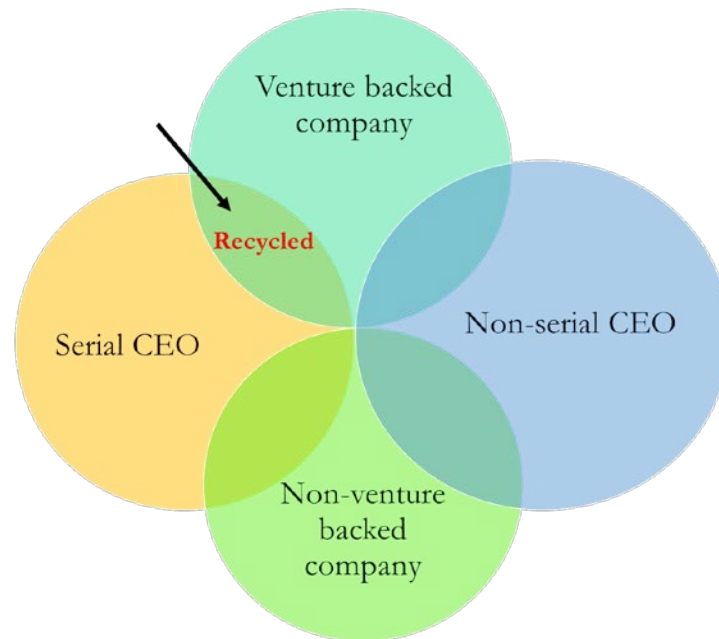


Figure 1- Illustration of Recycled CEO

It is possible that the practice of *recycling* CEOs plays a significant role in the success of young growth companies. With new measures of managerial ability, researchers as well as investors may now be able to ascertain the differences between venture capital influence and the influence of other types of firm leadership, such as CEOs.

In summary, researchers, investors, as well as venture capitalists are constantly looking for information that may give them an advantage and further analysis of the types of CEOs selected is an underdeveloped area. Therefore, this dissertation empirically examines if *recycled* CEOs provide benefit to the companies they manage.

Prior Research

The venture capital industry is responsible for many successful endeavors that have led to job creation, investment opportunities, and innovative technology (Kortum and Lerner 2000). A

large portion of accounting and finance literature attributes the success of venture backed companies to the activities and characteristics of the venture capitalists who invest in young private companies (Sahlman 1988, 1990; Gorman and Sahlman 1989; Bygrave and Timmons 1992; Gompers 1995; Lerner 1995; Gompers and Lerner 1997; Hellmann and Puri 2002; Bottazzi, Da Rin, and Hellmann 2008; Cao and Lerner 2009; Lindsey 2008).

In addition to providing financial support, Venture capitalists provide advice and oversight to entrepreneurs (Bygrave and Timmons 1992; Gompers 1995), screen projects (Sahlman 1990), and assist entrepreneurs with recruiting key technical and managerial talent (Gorman and Sahlman 1989; Hellmann and Puri 2002). Although executive recruitment is an important function of venture capital firms (Prowse 1998; Casamatta 2003; Bottazzi et al. 2008), empirical analysis of the CEOs of venture backed companies is limited. Lerner (1995) examines venture capital (VC) board representation surrounding CEO turnover, Wasserman (2006) examines the differences of founder CEOs versus non-founder CEOs of venture backed companies, Hellmann and Puri (2002) find evidence that Venture capitalists are more likely to replace founders with outside CEOs, De Carvalho, Calomiris, and de Matos (2008) examine the networking activities of Venture capitalists when recruiting CEOs, and Chemmanur, Simonyan, and Tehranian (2014) examine the relative management quality of venture backed versus non-venture backed management teams. None of these articles, however, examine the relationship between the CEOs hired and rehired by venture backed companies (*recycled*) and managerial ability, or their relationship to future firm performance.

There is evidence that venture backed companies do have higher ability managers when compared to non-venture backed companies and they tend to outperform their non-venture backed counterparts in terms of earnings quality and future returns (Katz 2009; Chemmanur et

al. 2014). Venture capitalists with superior networking resources (such as management recruiting contacts) are more likely to succeed when bidding for promising portfolio companies (Hsu 2004), which in turn can make it easier to attract managerial talent.

When seeking key employees venture capitalists may have a competitive advantage because, 1) they have experience in the professionalization of start-up companies (Hellman and Puri 2002; Cao and Lerner 2009), and 2) they network within the venture capital industry to find talented CEOs (De Carvalho et al. 2008). The authors also find evidence to support the view that “venture capitalists add value by bringing to their portfolio companies the capacity to attract superior management (De Carvalho et al. 2008, p. 245).”

Research Questions

This topic is important because the success of young growth companies largely depends on their capacity to secure talented key employees and managers. Emerging literature on management quality and its effect on firm performance provides researchers with powerful statistical tools, thereby increasing the external validity of managerial quality attributes. By utilizing a hand collected sample of newly public companies with background information of their CEOs, then matching this information to the Demerjian et al. (2012, 2013) managerial ability score, this dissertation seeks to answer the following questions:

RQ1: Are *recycled* CEOs of higher ability than other CEOs?

RQ2: Do recycled CEOs have a positive relationship to future firm performance?

Methodology

This study examines the associations between managerial ability, ownership structure, and CEO experience by using univariate tests, ordinary least square regressions, and propensity score matching (to address the issue of endogeneity). As a measure of CEO quality, the

managerial ability score created by Demerjian et al. (2012, 2013) is used. There are three main objectives of this study. The first objective is to determine if there is any difference in managerial ability between venture backed CEOs, serial CEOs, recycled CEOs and their counterparts. Next this study examines the effect of each CEO type on future managerial ability. Finally, this study examines the effect of recycled CEOs on future profitability and future buy-and-hold adjusted returns.

Findings

In my analysis, in addition to confirming the significant difference between the management quality of venture backed CEOs and the CEOs of non-venture backed companies, I also find that venture backed CEOs have significantly higher managerial ability scores than non-venture backed CEOs. As a proxy of managerial ability, I use the Demerjian et al. (2012, 2013) managerial ability score. I perform a similar test on serial versus non-serial CEOs and find a significant difference in managerial ability between these two groups. Next, I examine the association between managerial ability, venture backing, serial CEOs and the interaction of the latter two variables – *recycled* CEOs. Using regression analysis, I find a positive and significant relationship between *recycled* CEOs and the MA-Score for managerial ability. I also find that *recycled* CEOs provide incremental explanatory power to that of venture backing with respect to managerial ability. I perform similar analysis between *recycled* CEOs and return on assets (ROA) and buy-and-hold abnormal returns (BHAR). However, I do not find a significant relationship between *recycled* CEOs and future ROA or BHAR. This may be due to the introductory or growth stages of the companies in my sample, where trends may be difficult to measure in such a short time frame.

Limitations

One limitation of this dissertation is the assumption that venture capitalists find CEOs from other venture backed companies solely by networking with other venture capitalists. It is possible that CEOs were recruited by head hunters or recommended by people other than venture capitalists and that the origin of their CEO experience is unknown.

Importance and Contributions

This paper contributes to the literature in two ways. First, this study examines the interaction of venture backed companies and serial CEOs (*recycled* CEOs) and its effect on future management quality and profitability. Second, I add to the limited literature on venture backing and post IPO operating performance. Currently, there are three papers that address this topic, the first of which is Jain and Kini (1995) who find that venture backed companies have smaller declines in post-IPO operating performance when compared to non-venture backed companies. Chemmanur et al. (2014) find that venture backed companies experience significant improvements in post IPO performance when compared to non-venture backed companies. And Brav and Gompers (1997) find that venture backed IPOs outperform non-venture backed IPOs in long run performance. None of these papers, however, address the use of serial or *recycled* CEOs.

In addition to contributing to the literature on post IPO operating performance, venture capital support and serial CEOs, I find evidence that *recycled* CEOs' provide incremental explanatory power over venture backing and serial CEOs with respect to future managerial ability. Krishnan and Wang define Demerjian et al.'s (2012, 2013) managerial ability measure as measuring the "ability in transforming corporate resources to revenues (p.139)." This study

provides evidence that in addition to VC monitoring and oversight, the strategic placement of *recycled* CEOs by venture capitalists is also a significant factor in firm success.

Evidence on how recycled CEOs relative ability to turn resources into revenue is important to investors and analysts because this is an important factor in determining future income. Venture capitalists now have empirical evidence that the habit of recycling CEOs is beneficial to improving future revenues. Entrepreneurs and other small business owners will find this information valuable when considering CEOs recruitment or succession. And academics can speak to the benefits of recycling CEOs as well as use real world examples of recycled CEOs for case studies. Finally, accounting and finance researchers can investigate the associations between the managerial ability score in relation to earnings quality and audit quality and recycled CEOs.

Organization

This study proceeds as follows. Chapter II is a review of prior literature including descriptions of this dissertation's contributions to the extant literature. Chapter III contains the hypothesis development and methodology used in this study. Chapter IV contains a description of the results. Concluding remarks are provided in the last section – Chapter V.

II. LITERATURE REVIEW

Managerial Ability

Prior research provides evidence that managerial characteristics affect economic outcomes and therefore are important to financial accounting research. However, managerial ability, or quality² is a difficult concept to measure. Education, compensation, and media mentions have been used as proxies for CEO quality (Kaplan et al. 2012; Rajgopal et al. 2006; Milbourn 2003; Gudell 2011). Many of these measures tend to be noisy and are difficult to attribute to the manager. For instance, some measures require a specific event to occur, such as a CEO change. Emerging literature on management quality uses quantitative tools such as common factor analysis and data envelopment analysis (DEA) to develop more quantitative measures of ability. Using common factor analysis, Chemmanur et al. (2014) construct a factored management quality measure based on various proxies of management quality.³ They use their measurement to compare the management quality of venture backed and non-venture backed companies in their sample. They find that managers of venture backed firms are of higher ability than non-venture backed firms. However, they fail to consider the effects of serial or *recycled* CEOs.

Demerjian et al. (2012, 2013) create a measure of managerial quality by first implementing a DEA methodology used to measure firm efficiency (Barr and Siems 1997; Berk

² Although Chemmanur et al. (2014) use the term, managerial “quality,” this measure is synonymous with Demerjian, et al.’s managerial “ability” measure (2012, 2013). Both measures analyze the characteristics and performance of managers and their effect on firm performance. I will use the terms “quality” and “ability” synonymously throughout this paper.

³ Some proxies that Chemmanur et al. (2014) focus on are, the number of CPAs on the management team, management team size, the number of managers who have their MBA and the percent of managers who were partners at law firms or accounting firms.

and Green 2004; Berk and Stanton 2007; Leverty and Grace 2012). Their analysis dates back to 1980 and a managerial ability score is created for over 200,000⁴ firm year observations.

Demerjian et al. (2012, 2013) then examine the association between stock price reactions and CEO turnover. They find there is a positive (negative) stock price reaction to the departure of low (high) quality CEOs. They find improved future firm performance when a CEO is replaced with a “more able” CEO and find a positive association between managerial ability and earnings quality.

Rather than create a managerial ability measure such as Chemmanur et al. (2014) I use the Demerjian et al. (2012, 2013) managerial ability score by firm year, and match this to my hand collected sample of CEOs⁵. Since this score helps to separate the ability of the manager from the firm, I can analyze the contributions of the CEO separate from the venture backed company. This measure will provide a metric for the added value of the serial and *recycled* CEOs I examine in this study.

Serial CEOs

When firm owners look for leadership and guidance, many turn to serial CEOs (CEOs with prior CEO experience). CEOs are responsible for implementing strategic plans, making critical decisions, and interfacing with directors and managers, so experience is a valuable attribute.

Direct work experience provides skills that are not easily learned by other means (Becker 1964; Carroll and Mosakowski 1987; Dobrev and Barnett 1999), making experienced CEOs attractive

⁴ Demerjian et al. (2012, 2013) update their dataset periodically with the last update occurring in 2017. “Our newest update includes data through 2016; as above, please continue to reference the original article if you use this updated dataset.” <http://faculty.washington.edu/pdemerj/data.html>

⁵ Although the Demerjian et al. (2012, 2013) managerial ability score is based on the management team, when the authors test their measure, the focus is on the CEO. This is because the CEO is deemed the most powerful manager and therefore most likely to affect outcomes (Fee and Hadlock 2003). For example, when examining subsequent firm performance, Demerjian et al. (2012, 2013) find that “replacing CEOs with more (less) able CEOs is associated with improvements (declines)” in performance (p. 1229).

for young companies. More and more, the CEO is no longer a “company man” who works his way up through the various departments of a single company (Gudell 2011). Many companies are turning to CEOs outside their companies, who are often hired to change the direction of the firm (Hellmann and Puri 2002; Favaro, Karlsson, and Neilson 2010).

The number of serial CEOs has increased threefold since the 1970s (Murphy and Zabochnik 2007). This growth in serial CEOs is an indication that executives with specific CEO experience are highly sought after and companies no longer just seek CEOs with internal experience. Gudell (2011) identifies 165 serial CEOs at S&P 1500 firms from the year 1992 to 2007 and Favaro et al. (2010) find that the number of outgoing CEOs with prior CEO experience has more than doubled since the early 2000s. There is evidence that company boards actively try to match CEOs to their firms’ life cycle: “Some people are better at starting things up, some are better at squeezing the most out of them once they are running, and some are better at fixing them when they are wrong.”⁶

Gudell (2011) finds that serial CEOs are more likely to be hired by underperforming firms and she notes that serial CEOs are in higher demand because they tend to have a positive effect on future ROA. Parrino (1997) finds that poorly performing firms are more likely to replace their CEO with an experienced CEO outside the firm. Their findings imply that serial CEOs are of high ability.⁷ I add to this literature by providing evidence that serial CEOs are positively associated with post-IPO future managerial ability, post-IPO.

⁶ Quote from a senior manager included in the article: *Strategic selection: Matching executives to business conditions*. (Gerstein and Reisman 1983).

⁷ These arguments tend to hold true for a sample of public- to public-company *recycled* CEOs. See Appendix B for a list of *recycled* CEOs of venture backed public companies and their respective ROAs. Most of the *recycled* CEOs in this smaller sample (public to public company) have a higher ROA at their previous company, compared to the ROA of their next public company. This information provides empirical evidence that *recycled* CEOs are being recruited from companies with relatively higher ROAs into distressed companies (companies with lower ROAs).

Venture capital and oversight

I also examine a specific type of serial CEO – *recycled*. De Carvalho, et al. (2008) define recycling as venture capitalists “assisting managers with job placement in the future” (p. 226). Using a survey, the authors find that venture capitalists network to find and reuse talented executives. Further data provided by the survey shows that a substantial proportion of venture capitalists “adopt the strategy of recycling managers” within their portfolios (De Carvalho et al 2008, p. 226). In other words, venture capitalists *recycle* managers for their portfolio companies by utilizing private equity networks and contacts.

In addition to assisting entrepreneurs with recruiting key technical and managerial talent (Gorman and Sahlman 1989; Hellmann and Puri 2002), venture capitalists provide advice and oversight to entrepreneurs (Bygrave and Timmons 1992; Gompers 1995), screen projects and structure deals (Sahlman 1990), and closely monitor and stage investments (Gompers, 1995; Lerner, 1995; Sahlman, 1990). These activities are designed to protect the interests of the venture capitalists and increase the likelihood of a successful venture (Sahlman 1990).

One important aspect of venture success is having a strong executive team. Wasserman (2003) finds that sometimes venture capitalists expect the founder-CEO “to start the company and get it going” (p. 152), but before further investment, these venture capitalists may require the placement of an outside CEO. If venture capitalists believe that CEO replacement is necessary, looking for a CEO who already has CEO experience at a venture backed company may be a good strategy. De Carvalho et al. (2008) confirm that many venture capitalists participate in this practice. There is also evidence that this practice works. Chemmanur et al. (2014) examine the management quality of venture backed versus non-venture backed CEOs and find that CEOs of venture backed companies are of higher quality than CEOs of non-venture backed companies.

However, unlike this study, Chemmanur et al. (2014) make no distinction between serial or *recycled* CEOs.

The empirical evidence that serial CEOs and venture backed CEOs are of high ability suggests that a *recycled* CEO adds explanatory power beyond VC influence. This also implies that it is not necessarily the venture capitalists making their CEOs “look good,” but the venture capitalists are bringing in talented CEOs via recycling to improve firm performance. Prior literature however, focuses mainly on VC involvement and oversight as the main driver of venture performance (Sahlman 1990; Katz 2009). I however take a different approach: it is possible that the main driver of venture company success is the CEO and not just VC oversight. I provide evidence to support this.

III. HYPOTHESIS DEVELOPMENT AND METHODOLOGY

This dissertation seeks to determine the effects of ownership structure and CEO ability on future firm performance. Owners and investors understand the importance of CEO leadership for the success of a company but for newly public companies, where information is sparse, knowledge of CEO experience or ability can help to reduce information asymmetry for young companies. Therefore, this dissertation first tests whether there is a positive association between CEO experience and managerial ability. Specifically, are serial CEOs of higher ability than non-serial CEOs and does venture backing play a role in any differences? The dissertation ultimately seeks to see if there is a relationship between the serial CEOs of venture backed companies (*recycled* CEOs), managerial ability, and future firm performance.

The Relationship between CEO Experience and Managerial Ability

Human capital theory posits that skills learned from direct work experience are not easily learned from other means (Becker 1964), and executives build expertise through experience at multiple organizations and roles; expertise that can be applied to entrepreneurial settings (Dobrev and Barnett 1999). Experienced executives tend to be better at conveying confidence (Wasserman 2003) which can make it easier to attract resource providers (Nohria 1988). Because of these attributes, CEOs with experience (serial CEOs) are valued. Gudell (2011) finds that serial CEOs earn a higher level of compensation than non-serial CEOs and are hired to help with underperforming firms. She argues that these activities are an indication that serial CEO skills are valued and are therefore of high ability. However, there is evidence that first year CEO overstate expenses and losses then attribute this poor performance to the prior CEO, thereby

setting the stage to take credit for better performance in the future (Strong and Meyer 1987; Elliott and Shaw 1988; DeAngelo, 1988; Pourciau, 1993). This first-year effect may be exacerbated by the fact that serial CEOs tend to be hired to improve underperforming firms (Gudell 2011; Parrino 1997)⁸. But there is also evidence that CEOs are often able to emulate good results in the short-term (Kedia and Philippon 2009). Due to the conflicting evidence of serial CEOs and their association to management ability, I state the following hypotheses in null form:

H1: There will be no difference between the CEO ability (MA-Score) of serial CEOs and non-serial CEOs.

De Carvalho et al. (2008) survey venture capitalists and find that they network to find and place talented managers (*recycle*) within venture capital networks. Based on the results of the authors' survey, I use hand collected information to create a variable to represent the *recycling* of CEOs. A *recycled* CEO has CEO experience with at least two venture backed companies. For instance, if a CEO of a venture backed company also has prior CEO experience at another venture backed company, I consider this CEO to be *recycled*.⁹ An illustration of the *Recycle* variable is shown in Figure 1.

Apart from the De Carvalho et al. (2008) study, there is very little research on *recycled* CEOs. However, since recycled CEOs are the serial CEOs of venture backed firms, this study relies on venture capital and serial CEO theory. Venture capitalists can manage many companies

⁸ To determine if serial CEOs are brought in to assist with distressed companies, a spreadsheet is created to specifically look at the ROAs of CEOs leaving one public company then joining another company. Of the 12 CEOs who left one company for another, 9 had higher ROAs at their prior company. In other words, most of the CEOs were brought in to companies with lower (comparatively distressed) ROAs. See Appendix B. The same type of analysis was done for the CEO's MA-Score. The opposite was true for the MA-Score. See Appendix C.

⁹ I use Crunchbase.com to determine if a CEO's company is backed by a venture capital firm. Each company has a list of investors by name and by round and date of investment. If venture capital support is received prior to IPO, this firm is considered venture backed. If this information was not available, I did not include the company in the sample. Crunchbase.com has been used in published journal articles for Hellmann and Thiele (2015), as well as other periodicals (Ingham 2014; Columbus 2016).

at different life cycle stages. The various companies in these portfolios most likely have different needs depending on their stage of development. Therefore, venture capitalists may seek CEOs with certain talents or experience. Talented CEOs with specific experiences will most likely be recruited by many companies. Because young growth companies tend to be risky, venture capitalists may be able to offer a “safety net” in the form of future placement at another portfolio company in the event of a merger, acquisition, or bankruptcy. De Carvalho et al. (2008) label this benefit “employment insurance” and argue that this type of insurance may be attractive to talented CEOs. Therefore, it is plausible that recycled CEOs will be of high ability. Because there is very little research on the ability of recycled CEOs, the following hypotheses are stated in the null:

H2: There will be no difference between the CEO ability (MA-Score) of *recycled* CEOs (Recycle) and non-*recycled* CEOs.

The Relationship of Ownership Structure and Managerial ability

Chemmanur et al. (2014) examine over 3,000 IPO firms for the years 1993 to 2004 and find that the management team of venture backed companies tend to be of higher ability than the management team of non-venture backed companies. Although the authors examine entire senior management groups and focus on the characteristics of the entire management team in their sample, this high ability should translate to CEO ability as well.

Venture capitalists screen projects, structure deals (Sahlman 1990), and closely monitor and stage investments (Gompers, 1995; Lerner, 1995; Sahlman, 1990). These activities are designed to protect the interests of the venture capitalists and increase the likelihood of a successful venture (Sahlman 1990). This type of support and guidance may enhance the ability of management. As CEO tenures shorten, venture capital networking can provide a type of recruitment tool to potential managers. This type of networking, within the venture capital

industry, can also provide a type of “employment insurance” (De Carvalho et al. 2008). In other words, a venture backed company may be more attractive to talented CEOs due to the possibility of a seamless transition to another venture backed company in the event of a merger, acquisition, or failure.

In summary, because talented managers are in high demand, venture capitalists can use their networks and the possibility of seamless future employment as an advantage when recruiting talented managers for young growth companies. Therefore, since venture capitalists use venture capital networks to gather information about top managers, and venture capital firms may be better equipped to provide future employment in the event of a successful or unsuccessful exit, the next hypothesis is as follows:

H3: Venture backing will have a positive relationship with future CEO ability (MA-Score).

Many serial CEOs are sought after to assist with distressed companies (Gudell 2011) or they are brought in for their expertise in certain stages of a company’s life (Wasserman 2003). Because CEOs can be brought in for specific tasks or different stages in a company’s life, many talented CEOs lose employment through no fault of their own. CEOs of venture backed companies sometimes become available because a significant number of venture capital investments are acquired by other corporations (Black and Gilson 1998) and the acquiring corporations generally do not need a senior management team (De Carvalho et al. 2008). Therefore, it is not uncommon for CEO tenure to be short-lived. Le Breton-Miller and Miller (2006) find that CEO tenure has decreased from about 8 years to less than four years since the 1980s and this tenure may be even shorter for young growth companies.

H4: Serial CEOs will have a positive relationship with future CEO ability (MA-Score).

De Carvalho et al.'s (2008) survey also provides evidence that venture capitalists value CEOs. When venture capitalists were asked if they agreed with the statement: "The success of the type of firms I fund depends mostly on their top managers (p. 236), more than 95 percent of the responding venture capitalists *Agreed* or *Strongly Agreed* with the statement.¹⁰ Therefore, it is reasonable to assume that venture capitalists will use networked industry information to find talented CEOs with specific skills, and talented CEOs will want to work for owners within strong industry networks.

H5: *Recycled* CEOs (Recycle) will have a positive relationship with future CEO ability (MA-Score).

Recycled CEOs are an interaction of venture backing and serial CEOs. Venture capitalists provide a valuable service to companies they invest in, and serial CEOs are hired for their talents and abilities. Because a recycled CEO, in general, should have the benefit venture support and experience, their involvement should add value above and beyond the effects of venture backing and serial CEOs. Therefore, the next hypothesis is

H6: *Recycled* CEOs (Recycle) will have a positive incremental relationship with CEO ability (MA-Score).

The Relationship between CEO experience and Future Firm Performance

Prior literature on post IPO performance tends to focus on ownership structure (venture backed versus non-venture backed) with little focus on executive leadership. Chemmanur et al. (2014) do look at management team quality but do not focus on CEOs or make a distinction between serial or *recycled* CEOs. They find that venture backed companies experience significant improvements in their post-IPO performance (relative to the year prior to their IPO), while non-venture backed companies experience a deterioration. They also find that high quality managers

¹⁰ 71.1 percent "Strongly Agreed," and 24.4 percent "Agreed."

of venture backed companies experience significantly larger improvements in post-IPO operating performance. Jain and Kini (1995) analyze a sample of IPOs and find that venture backed companies have smaller declines in post-IPO operating performance when compared to non-venture backed companies, and Brav and Gompers (1997) find that venture backed IPOs outperform non-venture backed IPOs in long run performance. Gudell (2011) finds that serial CEOs are more likely to be hired by underperforming firms but tend to have a positive effect on future ROA. Parrino (1997) also finds that poorly performing firms are more likely to replace their CEO with an experienced CEO from outside the firm. *Recycled* CEOs are a specific type of serial CEO and because *recycled* CEOs also have the benefit of venture support, these CEOs should have a positive effect on future performance. I state the following hypothesis as follows:

H7: *Recycled* CEOs (Recycle) will have a positive incremental relationship with the change in future firm profitability ($\text{ChgROA}_{t+1, t+3}$).

Katz (2009) finds that private equity backed firms exhibit superior long-term stock price performance after they go public. Chemmanur et al. (2014) argue that managers of high ability may be able to select better long-term projects and implement these projects better than a manager of lower quality. And this ability, the authors argue, will most likely affect post-IPO performance in a positive way. Chemmanur and Fulghieri (1994) reason that companies with higher quality managers have a better chance of being associated with more reputable underwriters, which can translate into lower costs and ultimately lead to better post IPO performance. Venture backing can also convey value to the market which can translate into higher post IPO returns.

H8: *Recycled* CEOs (Recycle) will be positively associated with future returns ($\text{BHAR}_{t+1, t+3}$).

Methodology

This dissertation seeks to ascertain whether or not *recycled* CEOs (serial CEOs of venture backed companies) play a significant role in the future performance of post IPO companies. Although there have been studies that provide evidence of the high ability of venture backed managers, no study has examined the role of *recycled* CEOs in future firm performance and their association with managerial ability.

This study first examines venture backed companies and serial CEOs separately since each plays a factor in the characteristic of a recycled CEO. Before examining the advantages or disadvantages of *recycled* CEOs, this dissertation first examines the relationships between venture backing, serial CEOs and managerial ability.

Test of Hypothesis 1

The first hypothesis 1 (H1) states that there will be no difference between the management quality of serial CEOs and non-serial CEOs. To examine this hypothesis I perform a t-test to determine if there is a significant difference between the means of the managerial ability score of serial CEOs versus non-serial CEOs. I also examine other characteristics of serial CEOs versus non-serial CEOs, by testing the mean difference of ROA, CEO age, firm age and firm size. A Wilcoxon Rank Sum test is also performed on the differences in the medians of the variables examined in the t-test.

Test of Hypothesis 2

The second hypothesis (H2) states that there will be no difference between the CEO ability of recycled CEOs and non-recycled CEOs. To examine this hypothesis I perform a t-test to determine if there is a significant difference between the means of the managerial ability score of recycled CEOs versus non-recycled CEOs. To examine other characteristics of recycled CEOs

versus non-recycled CEOs, I also test the mean difference of ROA, CEO Age, Firm Age and Firm Size. A Wilcoxon Rank Sum test is also performed on the differences in the medians

Test of Hypothesis 3

Hypothesis 3 (H3) states that venture backing will have a positive relationship with future CEO ability. To examine hypothesis H3, I use regression analysis. As a proxy for CEO ability I use the *MA-Score* created by Demerjian et al. (2012). The *MA-Score* is measured at year end and is an indication of the ability of the manager during the year. Venture backing is associated with the recruitment of qualified managers (Gorman and Sahlman 1989; Hellmann and Puri 2002), therefore, I examine managerial quality one-year, and then three-years post IPO. I examine both industry-adjusted and non-industry-adjusted variables.¹¹ I industry adjust all continuous variables by grouping the dataset by industry code, calculating the mean by industry, then subtracting the respective mean from the variable amount. The model below examines the association between venture backing and managerial ability.

$$MA-Score_{t+1,t+3} = \beta_0 + \beta_1 VB + \beta_2 CEO_Age_t + \beta_3 LOG_AGE_t + \beta_4 LOG_SIZE_t + \varepsilon^{12} \quad (1)$$

The dependent variable, *MA-Score*, is a measure of the managerial ability in public companies dating back to 1980. Developed and calculated by Demerjian et al. (2012, 2013), the dataset is available on Peter Demerjian's website. The authors' latest file is for the period 1980 to 2015 and has over 200,000 firm year observations. I merge their dataset with the hand collected sample in this study by firm year to create the final dataset.

¹¹ All continuous variables in all regressions are winsorized at the 1 and 99 percentiles.

¹² In addition to using firm size and firm age as control variables, Chemmanur et al. (2014) used the proportion of outside directors on the board of directors (ODIR), the proportion of voting power owned by firm officers and directors prior to the IPO (INSIDERB), as well as an indicator variable for CEO duality (BOSS). Due to data constraints (hand collection), I have omitted these variables at this time.

My variable of interest for H3, *VB*, is a dummy variable coded 1 if the CEO is employed by a venture backed company and 0 otherwise. Because there is evidence that venture backed firms tend to have higher managerial quality (Chemmanur et al. 2014), a positive association to managerial ability is expected. The first control variable is CEO age (*CEO_Age*) which serves as a proxy for experience and financial statement quality (Huang et al. 2012). Therefore, more experienced CEOs have higher financial quality and therefore should have a higher managerial ability score. A positive relationship to managerial ability is expected.

Prior research uses firm age (*LOG_AGE*) and firm size (*LOG_SIZE*), as proxies of firm quality (Ritter 1984; Michaely and Shaw 1994; Chemmanur et al. 2014). *LOG_AGE* is defined as the natural logarithm of one plus the firm's age.¹³ Here firm age is measured from the founding year rather than the year of the IPO. Firm age is calculated from the start date of the company and not the IPO date, management quality may not be high. Chemmanur et al. (2014) find a negative relationship between firm age and management quality. The authors reason that firms with better managers are able to shorten the time between the founding year and the initial public offering. Because of these findings, a negative association between firm age and CEO quality (MA-Score) is expected. *Log_Size* is defined as the natural logarithm of market value of equity (MVE). Due to the findings of Ritter (1984) and Michaely and Shaw (1994), the relationship between size and managerial ability is expected to be positive. These authors argue that managers of larger firms have more resources, and better managers tend to be hired at larger firms. The intercept captures the effect of non-venture backed CEOs. If H1 is supported, the beta (β_1) of my variable of interest (*VB*) will be positive and significant.

For a complete list of variables and their definitions, please see Appendix A.

¹³ Firm age is measured from the founding year rather than the year of the IPO.

Test of Hypothesis 4

Hypothesis 4 states that Serial CEOs will have a positive relationship with future CEO quality. As in H3, my dependent variable is managerial ability (MA-Score) measured at one- and three-years post IPO. To determine if there is a positive relationship between serial CEOs and future managerial ability, I use the regression model shown here:

$$MA-Score_{t+1,t+3} = \beta_0 + \beta_1 SERIAL + \beta_2 CEO_Age_t + \beta_3 LOG_AGE + \beta_4 LOG_SIZE + \varepsilon \quad (2)$$

This model examines the association between serial CEOs and future managerial ability. Serial CEOs tend to be hired for their abilities to improve the performance of their new company. However, there is evidence that first year CEOs may overstate expenses to make their future performance seem better. Therefore, it is difficult to predict the direction of the coefficient of the indicator variable *SERIAL*. My variable of interest, *SERIAL*, is a dummy variable coded 1 if the CEO has prior CEO experience and 0 otherwise. *CEO_Age* serves as a proxy for experience and financial statement quality. Also described above, I use firm age (*LOG_AGE*) and firm size (*LOG_SIZE*) as control variables. Here the intercept captures the effect of non-serial CEOs.

Test of Hypothesis 5

Hypothesis 5 (H5) states that recycled CEOs will have a positive relationship with future CEO ability. Again, the dependent variable is managerial ability (MA-Score) one-year and three-years post IPO. Non-industry adjusted variables are examined since the MA-Score is already industry adjusted. To examine if *recycled* CEOs have an effect on managerial ability the regression model shown below is used:

$$MA-Score_{t+1,t+3} = \beta_0 + \beta_1 RECYCLE + \beta_2 CEO_Age_t + \beta_3 LOG_AGE + \beta_4 LOG_SIZE + \varepsilon \quad (3)$$

The variable of interest, *RECYCLE*, is a dummy variable coded 1 if the CEO is a recycled and 0 otherwise. As with hypothesis H1 and H2, the control variables are for firm age (*LOG_AGE*) and firm size (*LOG_SIZE*). *CEO_Age* is also included as a proxy for CEO experience and financial statement quality. The intercept captures the effect of non-*recycled* CEOs, or rather, CEOs that are not or were not CEOs at a different venture backed company. Recycled CEOs have the benefit of venture backing, but because they are also serial CEOs, their effect could be positive or negative. Therefore, the association between recycled CEOs (β_1) and managerial ability (MA-Score) could be positive or negative.

In addition to univariable tests, and ordinary least squares (OLS) regressions, a propensity score matching analysis is performed to compare the management quality of recycled and non-recycled CEOs. It is possible that the ability to hire a talented CEO with industry specific skills is not entirely exogenous and may depend on the characteristics of the recruiting company. Thus, similar companies will be able to hire equally skilled CEOs. Comparing firms that hire recycled CEOs to similar firms that hire non-recycled CEOs may temper the effects of endogeneity. In other words, matching on the propensity of a company's ability (Rosenbaum and Rubin 1983), in this case the ability to hire a talented CEO, could help to reduce any comparison bias.

CEO selection is not completely exogenous and may be affected by other factors such as the age of the company and size of the company. Therefore, a propensity score analysis is performed to address possible endogeneity concerns. Firms are matched on their propensity of receiving the treatment. For purposes of this study it is the propensity to hire a serial CEO. Matching uses the one-to-one "nearest neighbors" propensity score matching technique. In the first stage, logit regressions are run with the dependent variable equal to 1 for firms with

recycled CEOs and 0 otherwise. For the model, the set of independent (matching) variables are firm size, firm age, and ROA. Next the mean differences between management quality and performance variables are calculated for the propensity score matched firms.

Test of Hypothesis 6

Hypothesis 6 (H6) states recycled CEOs will have an incremental effect on future CEO ability. To capture the incremental effect of recycled CEOs, venture backing (VB) and serial CEOs are included as control variables. This incremental effect should be over and above venture backing and serial CEOs. To examine if *recycled* CEOs have an incremental effect on future managerial ability the regression model shown here is used:

$$MA-Score_{t+1,t+3} = \beta_0 + \beta_1VB + \beta_2SERIAL + \beta_3RECYCLE + \beta_4CEO_Age + \beta_5LOG_AGE + \beta_6LOG_SIZE + \varepsilon \quad (4)$$

As described above, the indicator variables *VB*, and *SERIAL* are included with *RECYCLE*. The *RECYCLE* variable represents a serial CEO (*SERIAL*) with CEO experience for at least two venture backed (VB) companies. As earlier, the model controls for CEO age (*CEO_Age*), firm age (*LOG_AGE*), and firm size (*LOG_SIZE*). The intercept captures the effect of CEOs that are not at venture backed companies nor have had a prior CEO position at a different venture backed company. If H6 is supported, the beta (β_3) of my variable of interest (*RECYCLE*) will be positive and significant.

Test of Hypothesis 7

Hypothesis 7 (H7) states that *recycled* CEOs will have a positive incremental relationship with the change in future firm profitability one- and three-years post IPO. To examine the relationship between recycled CEOs and the change in future profitability (ROA) the model regresses the future change in ROA ($ChgROA_{t+1, t+3}$) on my variables of interest and other

independent variables. The first control variable is current ROA (net income before extraordinary items scaled by total assets) and I expect a positive association to the change in future ROA. Next, I control for the change in ROA, defined as current ROA less prior year ROA and expect a negative relationship to future ROA. The managerial ability score is also controlled for and should have a positive effect on future profitability (Demerjian et al. 2012, 2013; Chemmanur et al. 2014). I include the indicator variable *RECYCLE* to examine the effect of venture backed serial CEOs on the change in future profitability. Because *RECYCLE* has components of both venture backing and serial CEOs, I include these two variables as well (*VB* and *SERIAL*). Finally, the intercept captures the profitability effect of CEOs that are not serial nor employed by venture backed companies. I estimate the model below for the change in ROA one-year and three-years ahead.

$$ChgROA_{t+1,t+3} = \beta_0 + \beta_1VB + \beta_2SERIAL + \beta_3RECYCLE_t + \beta_4CEO_Age_t + \beta_5MA-Score_t + \beta_6ROA_t + \beta_7ChgROA_t + \varepsilon \quad (5)$$

This model examines whether there is an effect of *recycled* CEOs on the change in future firm performance (*ChgROA*). Standard errors are clustered by firm and year to control for cross-sectional correlation and intertemporal correlation. The change is measured as *ROA* one-year-ahead (and three-years-ahead). To control for managerial ability, I also include the *MA-Score* examined earlier. *VB*, *SERIAL*, and *RECYCLE* are defined above. If H7 is supported, the beta (β_3) of my variable of interest (*RECYCLE*) will be positive and significant.

Test of Hypothesis 8

Hypothesis 8 (H8) states that *recycled* CEOs will have a positive effect on future abnormal returns (*BHAR*). *BHAR* is the value-weighted (3-digit SIC mean) adjusted returns cumulated from the beginning of the fourth month of year t+1 through the end of the third month

of year t+2. This length of time is used to ensure that published financial statement data is available to investors. I control for common risk factors associated with abnormal returns such as beta, book-to-market (BM), size (market value of equity), and momentum (cumulative stock return over the prior six months; Fama and French 1993; Carhart 1997). I estimate the following regression on annual returns:

$$\begin{aligned} \text{BHAR}_{t+1, t+3} = & \beta_0 + \beta_1 \text{VB} + \beta_2 \text{SERIAL} + \beta_3 \text{RECYCLE} + \beta_4 \text{MA-Score}_t + \beta_5 \text{BETA}_t + \beta_6 \text{BM}_t \\ & + \beta_7 \text{SIZE}_t + \beta_8 \text{MOMENTUM}_t + \varepsilon_t \end{aligned} \quad (6)$$

The next model (model 7) is similar to model 6, except this expanded model controls for performance anomalies from prior literature. The fully controlled model is shown here:

$$\begin{aligned} \text{BHAR}_{t+1, t+3} = & \beta_0 + \beta_1 \text{VB} + \beta_2 \text{SERIAL} + \beta_3 \text{RECYCLE} + \beta_4 \text{BETA}_t + \beta_5 \Delta \text{BM}_t + \beta_6 \text{SIZE}_t + \\ & \beta_7 \text{MOMENTUM}_t + \beta_8 \Delta \text{WC}_t + \beta_9 \Delta \text{NCO}_t + \beta_{10} \Delta \text{FIN}_t + \beta_{11} \text{CapEx}_t + \beta_{12} \text{CFO}_t + \beta_{13} \text{CFI}_t \\ & + \beta_{14} \text{CFF}_t + \varepsilon_t \end{aligned} \quad (7)$$

These anomalies are addressed as so: because accruals affect future earnings (hence performance) and some accruals are less reliable (persistent) than others, I use the decomposition of total accruals proposed by Richardson, Sloan, Soliman, and Tuna (2005): the change in non-cash working capital (ChgWC), the change in net non-current operating assets (ChgNCO) and the change in net financial assets (ChgFin). The change in net financial assets is considered the most reliable accrual when compared to ChgWC and ChgNCO, however, I include all three as control variables to capture maximum effects.

Capital expenditures (CapEx) are positively related to performance (McConnell and Muscaraella 1985, Lev and Thiagarajan 1993) so I control for the level of CapEx. Finally, since operating, investing and financing activities differentially affect stock returns (Livnat and

Zarowin 1990) I control for cash flows from operations (CFO), cash flows from investing activities (CFI), and cash flows from financing activities (CFF).¹⁴

¹⁴ Detailed definitions of all variables are presented in Appendix A.

IV. RESULTS

This dissertation evaluates the impact of the serial CEOs of venture backed companies (*recycled* CEOs). While the academic literature has explored the differences in the managerial ability of venture backed versus non-venture backed managers (Chemmanur et al. 2014), there is very little literature that delves into the venture capital practice of *recycling* CEOs and its relationship to managerial quality and future firm performance. First, to explore this relationship, a hand collected sample of newly public companies, ownership structure, and future firm performance was examined.

Sample Data, Descriptive Statistics, and Correlations

The sample for this study consists of all IPO firms for the years 2008 to 2015. This sample period was selected because firms seeking public status in 2008 were most likely not affected by the 2008 financial crisis. The sample period ends in 2015 because the Demerjian et al. (2012, 2013) managerial ability score measure used in this study is available through 2015. The Crunchbase¹⁵ database is used to identify IPOs listed on the AMEX, NASDAQ, and NYSE stock exchanges. Using the stock symbols collected from Crunchbase, firm-years that changed fiscal year ends and firms without corresponding Compustat and CRSP data are removed. Using the managerial ability (*MA-Score*) dataset available on Peter Demerjian's website,¹⁶ the Crunchbase

¹⁵ Crunchbase lists funding rounds, as well as investors of each company. For example, for the public firm Zynga, Crunchbase reports when the stock went public (December 16, 2011) the founders (Mark Pincus), if venture backed, the investors (Andreessen Horowitz), and the current executive team (CEO, CFO, VPs, etc.). <https://www.crunchbase.com/>

¹⁶ Demerjian et al. (2012, 2013) calculate the MA-Score for thousands of public firms and makes this information available on his website: (<http://faculty.washington.edu/pdemerj/data.html>). This score is updated periodically. The latest file is through 2016.

information is merged with the corresponding Compustat/CRSP dataset. Leveraged buyouts, mergers, acquisitions, subsidiaries, and observations missing necessary information are removed as well as observations with negative book-to-market (BM) values. The final sample of 1,169 firm year observations is shown in Table 1.

Table 1 - Sample Selection

TABLE 1		
Sample Selection		
Label	Firm-year observations	
All Compustat data for the sample period 2008-2015 (not missing gvkey)	72,479	Cumulative 72,479
LESS:		
Firm-years in which a firm changed FYE	158	72,321
Firm-years without corresponding Compustat or CRSP data	15,048	57,273
Firm-years without corresponding MA-scores or missing score	29,181	28,092
Companies with data listed prior to 2018	25,531	2,561
LBOs, mergers, acquisitions, subsidiaries	1,335	1,226
Observations with negative book-to-market	47	1,179
Observations missing regression variables	10	
Final sample	1,169 *	1,169
<i>Notes:</i> Table 2 presents the details of the sample obtained from merging the Compustat and CRSP databases with the Demerjian et al. (2012) managerial ability database and my hand collected sample of CEOs. The final sample number includes Crunchbase information with corresponding Compustat, CRSP and MA-score data.		

CEO prior place of employment, job title, and tenure are hand collected from the IPO company's prospectus¹⁷. If the required information is not available on the company's prospectus then the Crunchbase website, company biography websites, Bloomberg.com and/or LinkedIn are used for the hand collected information. If a CEO has prior CEO experience at a previous company, this CEO is considered a serial CEO and coded as 1 (0 otherwise). Crunchbase is then used to

¹⁷ <https://www.sec.gov/edgar.shtml> by company name or tic.

determine if the CEO's company is venture backed or non-venture backed. Venture backed companies are coded 1 (0 otherwise). If a CEO of a venture backed company has prior CEO experience at another venture backed company, this CEO is considered Recycled and coded 1 (0 otherwise). The final sample consists of 379 distinct CEOs and 300 distinct companies as shown in Table 2.

Table 2 - Descriptive Statistics

TABLE 2								
Descriptive Statistics								
Pooled Sample								
Variable	N	Mean	Std Dev	25th Pctl	Median	75th Pctl	Min	Max
MA-Score	300	0.012	0.152	-0.078	-0.020	0.056	-0.233	0.634
CEO Age	300	56	8	51	56	61	31	79
Firm Age	300	2.7	0.6	2.3	2.7	3.0	1.1	4.6
MVE	300	6.4	1.5	5.5	6.5	7.5	1.9	10.5
ROA	300	-0.072	0.222	-0.139	0.000	0.056	-2.072	0.375
BM	300	0.466	0.673	0.151	0.289	0.540	0.004	9.154
BHAR	300	0.107	0.713	-0.298	0.004	0.338	-0.936	7.818
Price	300	22.94	22.82	7.58	17.02	29.22	0.49	185.83
CFI	300	-0.109	0.237	-0.127	-0.051	-0.015	-2.501	0.747
CFF	300	0.089	0.247	-0.007	0.017	0.138	-1.271	2.326
Momen	300	0.018	0.067	-0.020	0.017	0.052	-0.251	0.390
Tenure	300	8.9	5.4	5.0	8.0	12.0	1.0	38.0
VB		0.565	0.496					
Serial		0.443	0.497					
Recycled		0.126	0.332					
Total CEOs	379							
Firm Year	1,169							

This table presents descriptive statistics for 300 companies and 1,169 firm-year observations from the years 2008 through 2015. The final sample also includes 379 distinct CEOs. The market value of equity (MVE) and Firm Age are reported in natural log form. See Appendix A for all other variable definitions. All continuous variables are winsorized at the 1st and 9th percentiles.

Summary statistics are presented in Table 2 and appear consistent with prior literature. Approximately half of the sample consists of firm years that are venture backed (0.565) and approximately half have serial CEO activity (0.443), and more than twelve percent of the sample firm years represent *recycled* CEOs (0.126). The reported statistics for the MA-Score are: standard deviation (0.152), 25th percentile (-0.070), median (-0.020), and 75th percentile (0.056) are all comparable to the reported Demerjian et al.'s (2012, 2013) MA-Score statistics (0.149, -0.094, -0.013, and 0.075, respectively). One distinct difference is the mean of the MA-Score. The mean MA-Score used in this study is (0.012) whereas the mean MA-Score for Demerjian et al. (2012, 2013) is (-0.004). This difference can be explained by the different make-up of each sample used in both studies. The sample used in this study gathers information from young growth companies, whereas Demerjian et al. (2012, 2013) do not make this distinction and use companies at different stages in their life. For instance, if a company is declining or heading into decline, the corresponding MA-Score will most likely be negative.

Also see Figure 2 for the different MA-Score distributions for venture backed versus non-venture backed CEOs. The venture backed histogram is more skewed to the right showing a more positive distribution. Figure 3 represents the change in MA-Score. The distributions for venture backed and non-venture backed are very similar and both are somewhat normal.

FIGURE 2
Comparative Analysis of the Change In MA-Score by Backing

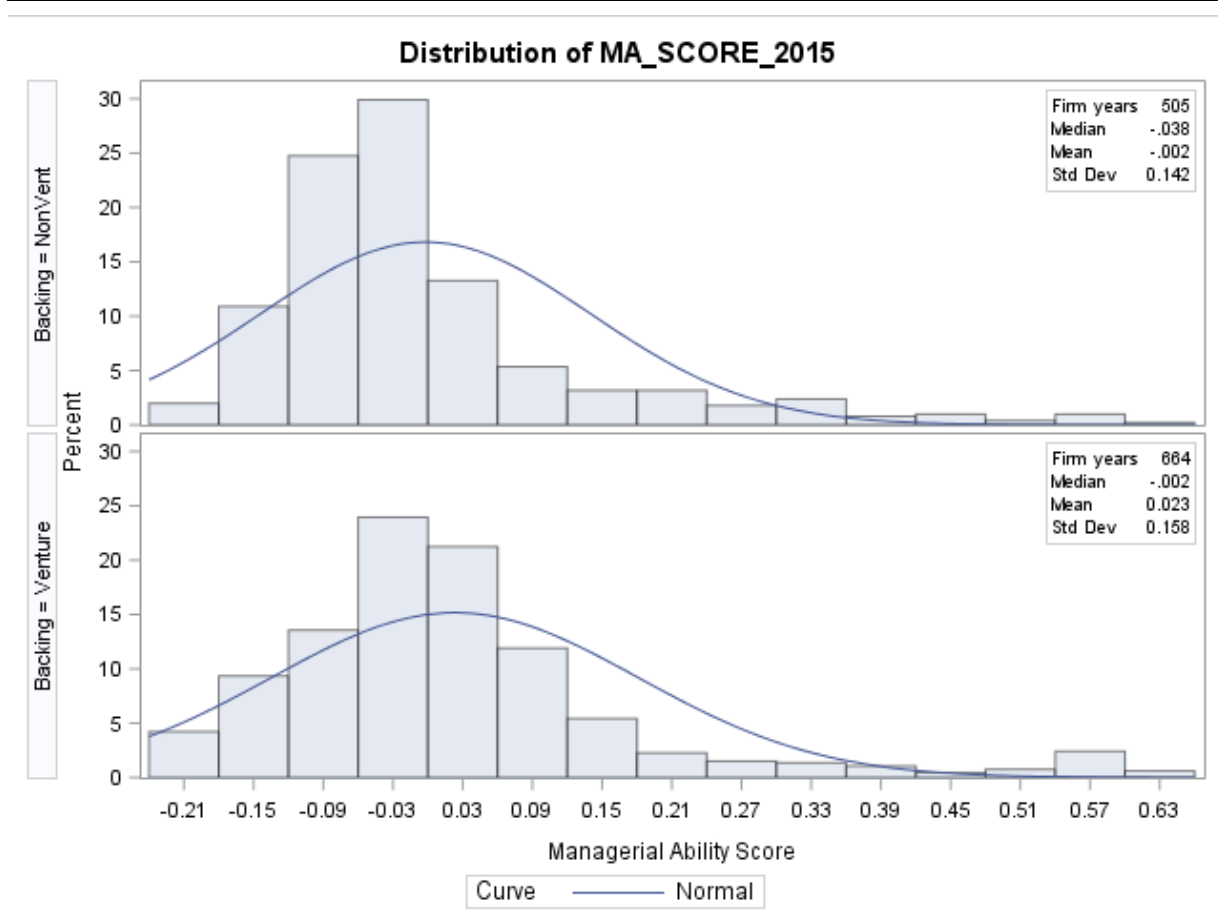


Figure 2 - Comparative Analysis of the Change in MA-Score by Backing

FIGURE 3
Comparative Analysis of the Change In MA-Score by Backing

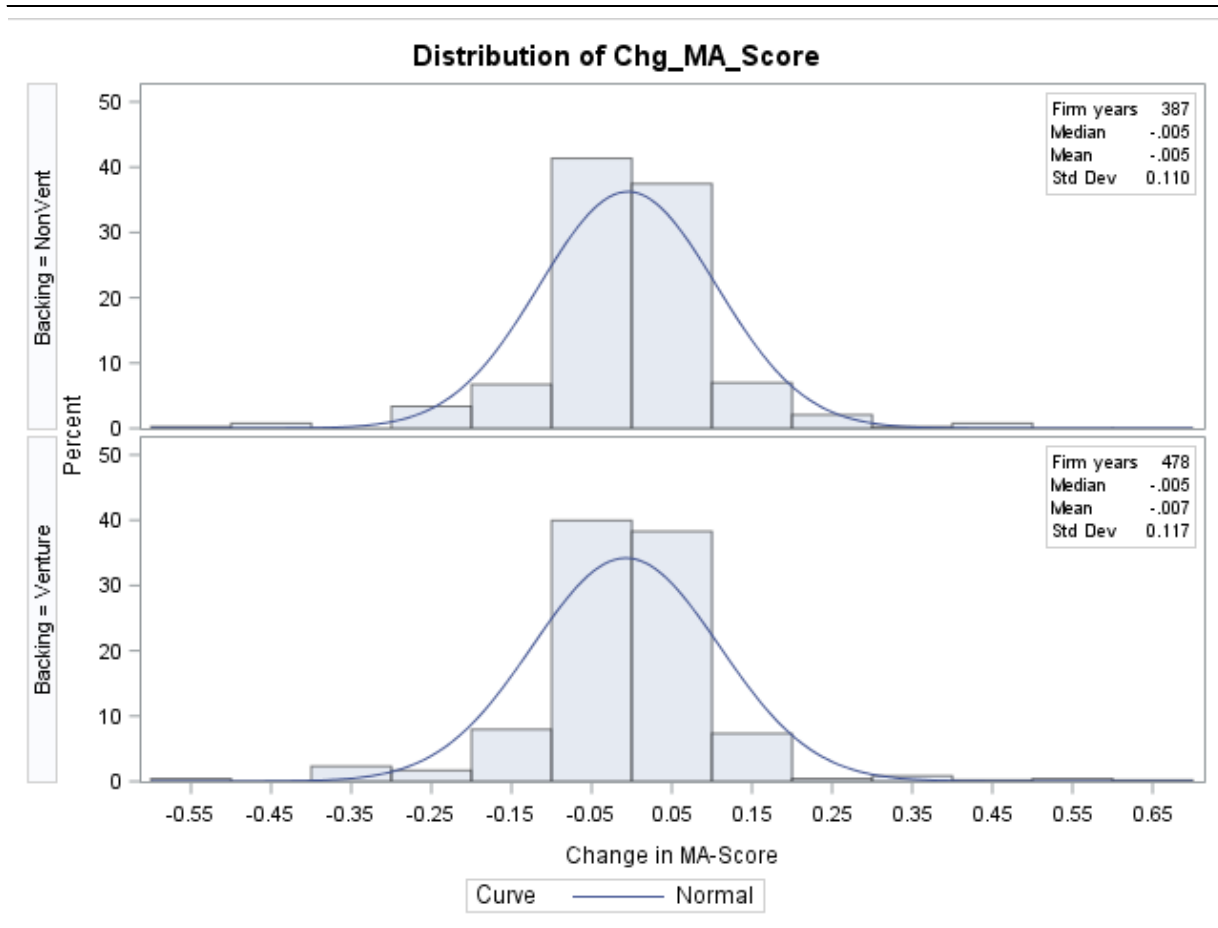


Figure 3 - Comparative Analysis of the Change in MA-Score by Backing

Figure 4 presents a histogram for the MA-Score for serial CEOs versus non-serial CEOs. Both histograms are right skewed with the serial CEOs having more negative numbers.

FIGURE 4
Comparative Analysis of MA-Score by Serial Non-Serial

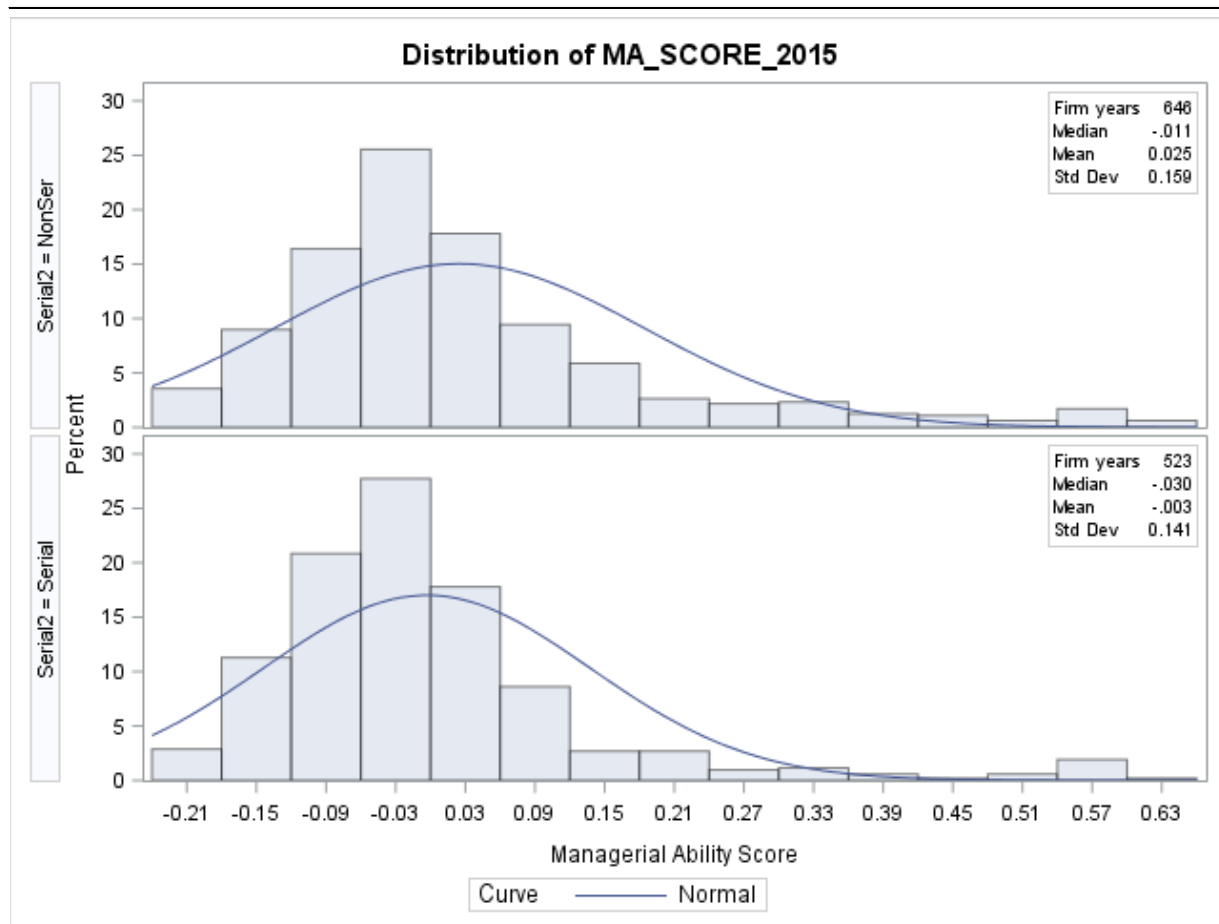


Figure 4 - Comparative Analysis of MA-Score by Serial Non-Serial

Figure 5 presents a histogram for the MA-Score for recycle CEOs versus non-recycle CEOs. Both histograms are right skewed with the recycle CEOs having fewer negative numbers.

FIGURE 5
Comparative Analysis of MA-Score by Recycle Non-Recycle

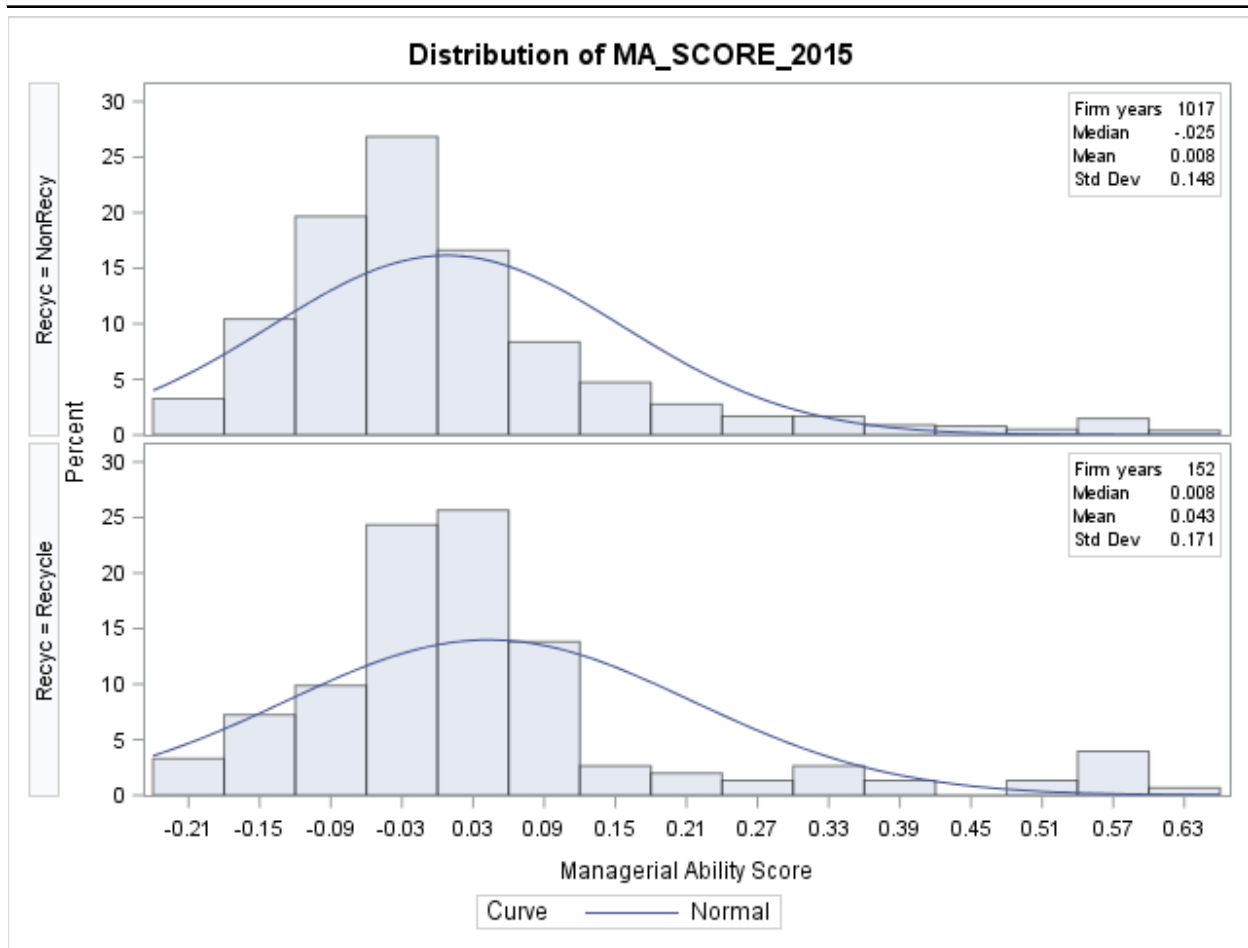


Figure 5 - Comparative Analysis of MA-Score by Recycle Non-Recycle

For univariate correlations (Table 3), the main variable of interest, *Recycle*, is significant and positively correlated to the managerial ability (MA-Score) (Spearman, 0.093). This indicates that *recycled* CEOs have a positive association to managerial ability. Venture backing (VB) also has a significant and positive correlation to managerial ability (Spearman, 0.121). This finding is supported by Chemmanur et al. (2014) as they find that higher quality CEOs are associated with venture backed companies. Serial CEOs, however, have a significant and negative correlation to

managerial ability (-0.095) which may seem counter to their perceived ability. Gudell (2011) argues that serial CEOs are valued by their employers because the serial CEOs, on average, receive higher compensation packages than non-serial CEOs. The author also provides evidence that serial CEOs are hired into distressed companies, which could account for an unfavorable contemporaneous MA-Score. Another possible explanation could be that new CEOs take advantage of their new position. Researchers provide evidence that some first year CEOs overstate expenses and losses then attribute this poor performance to the prior CEO. Researchers surmise that this act may occur because CEOs want their future performance to be perceived as a major improvement during their tenure (Strong and Meyer 1987; Elliott and Shaw 1988; DeAngelo, 1988; Pourciau, 1993). The negative correlation between serial CEOs and ROA (Spearman -0.169) is also supported in the literature. Prior research finds that serial CEOs tend to be brought in to help distressed companies or to improve company performance (Gudell 2011; Parrino 1997).

Recycled CEOs (*RECYCLE*) also have a significant and negative correlation to ROA (Pearson -0.148). Although there is no prior literature on this particular type of relationship, it would seem reasonable that *recycled* CEOs are also brought in to help distressed companies or help to improve performance. Another correlation similar to prior research is the significant and positive correlation of 0.327 (Spearman) for MA-Score and ROA. The correlation for MA-Score and ROA for Demerjian et al. (2012, 2013) is 0.336. Overall, the variables of interest in this study (venture backing, serial CEOs and Recycled CEOs) bear a significant relationship to managerial ability and ROA.

Table 3 - Spearman and Pearson Correlation Coefficients

TABLE 3
Spearman and Pearson Correlation Coefficients
N = 1,169

	MA-Score	VB	Serial	Recycle	ROA	BHAR	CEO Age	Firm Age	Size	BM	Price	CFI	CFF	Momen	Tenure
MA-Score	1.000	0.121	-0.095	0.093	0.327	0.044	-0.129	-0.015	0.242	-0.222	0.194	0.092	-0.064	0.009	0.039
		<.0001	0.001	0.001	<.0001	0.132	<.0001	0.615	<.0001	<.0001	<.0001	0.002	0.029	0.771	0.187
VB	0.082	1.000	0.087	0.337	-0.307	0.021	-0.238	-0.004	0.054	-0.325	0.087	0.197	0.138	0.047	0.164
			0.003	<.0001	<.0001	0.473	<.0001	0.892	0.067	<.0001	0.003	<.0001	<.0001	0.109	<.0001
Serial	-0.092	0.087	1.000	0.430	-0.169	-0.013	0.212	-0.140	-0.024	0.021	-0.071	-0.025	0.050	0.005	-0.146
				<.0001	<.0001	0.668	<.0001	<.0001	0.417	0.463	0.015	0.398	0.085	0.859	<.0001
Recycle	0.080	0.337	0.430	1.000	-0.202	0.014	-0.048	-0.112	-0.008	-0.121	-0.048	0.071	0.064	0.025	-0.035
					<.0001	0.633	0.102	0.000	0.780	<.0001	0.102	0.015	0.028	0.400	0.233
ROA	0.266	-0.230	-0.131	-0.148	1.000	0.178	0.098	0.172	0.344	-0.001	0.358	-0.104	-0.302	0.063	0.033
						<.0001	0.001	<.0001	<.0001	0.981	<.0001	0.000	<.0001	0.030	0.265
BHAR	0.006	0.021	0.000	0.012	0.086	1.000	0.018	0.034	0.287	-0.314	0.385	0.118	-0.027	0.648	0.008
					0.003		0.529	0.247	<.0001	<.0001	<.0001	<.0001	0.364	<.0001	0.787
CEO Age	-0.103	-0.250	0.219	-0.046	0.089	-0.005	1.000	0.133	-0.025	0.127	-0.009	-0.088	-0.071	0.025	0.099
					0.002	0.866		<.0001	0.390	<.0001	0.751	0.003	0.016	0.402	0.001
Firm Age	-0.076	-0.033	-0.090	-0.096	0.118	0.015	0.154	1.000	-0.042	0.031	0.002	0.003	-0.119	-0.010	0.260
					<.0001	0.620	<.0001		0.156	0.291	0.952	0.925	<.0001	0.738	<.0001
Size	0.278	0.107	-0.019	0.027	0.336	0.186	-0.039	-0.025	1.000	-0.468	0.830	-0.014	-0.135	0.124	-0.078
					<.0001	<.0001	0.178	0.398		<.0001	<.0001	0.640	<.0001	<.0001	0.008
BM	-0.135	-0.260	-0.023	-0.080	-0.022	-0.179	0.057	0.019	-0.452	1.000	-0.523	-0.329	0.027	-0.157	-0.043
					0.446	<.0001	0.050	0.519	<.0001		<.0001	<.0001	0.363	<.0001	0.144
Price	0.166	0.106	-0.061	0.009	0.220	0.234	-0.069	-0.031	0.685	-0.292	1.000	0.013	-0.068	0.155	-0.001
					<.0001	<.0001	0.018	0.296	<.0001	<.0001		0.661	0.020	<.0001	0.982
CFI	-0.009	0.217	0.012	0.074	-0.077	0.092	-0.041	0.039	0.110	-0.361	0.093	1.000	-0.292	0.029	0.029
					0.009	0.002	0.159	0.187	0.000	<.0001	0.001		<.0001	0.325	0.326
CFF	-0.060	-0.020	-0.006	-0.006	-0.201	-0.085	-0.055	-0.101	-0.249	0.248	-0.127	-0.619	1.000	0.026	0.052
					<.0001	0.004	0.061	0.001	<.0001	<.0001	<.0001	<.0001		0.370	0.077
Momen	0.031	0.063	0.003	0.038	0.025	0.586	0.026	0.001	0.093	-0.131	0.089	0.063	-0.028	1.000	0.000
					0.388	<.0001	0.384	0.968	0.002	<.0001	0.002	0.031	0.334		0.997
Tenure	-0.006	0.127	-0.179	-0.060	0.029	-0.007	0.141	0.219	-0.113	0.058	-0.034	-0.053	0.077	-0.006	1.000
					0.324	0.824	<.0001	<.0001	0.000	0.049	0.249	0.068	0.009	0.835	

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Spearman correlation coefficients are presented above the diagonal and Pearson below. A total of 1,169 firm year observations are presented representing 300 companies and 379 CEOs. All correlations significant at 0.10 or less are shown in bold.

Hypothesis 1 Results

Serial versus non-serial CEO analysis

Hypothesis 1 states that there will be no difference between the CEO ability (MA-Score) of serial CEOs and non-serial CEOs. Table 5 presents two-sample t-tests for management quality and firm performance for serial versus non-serial CEOs. Of the 379 CEOs in my final sample, 179 are serial CEOs and 200 are not. Of the 300 distinct companies, 157 had serial CEOs during the sample period and 143 did not.

Serial CEO quality has been associated with higher compensation (Gudell 2011) but there has been no comparison of serial CEOs to non-serial CEOs in terms of a managerial ability score. This dissertation finds that the mean difference of -0.028 is statistically significant with a t-statistic of -3.19 ($p < 0.01$) (see Table 5) and a median difference of -0.019 is statistically significant with a z-statistic of -3.26 ($p < 0.01$). This negative relationship may be driven by the performance of the previous CEO or by first-year CEOs overstating current expenses to inflate performance in the future (Strong and Meyer 1987; Elliott and Shaw 1988; DeAngelo, 1988; Pourciau, 1993).

ROA (Table 5) for serial CEOs does not fare as well as the non-serial CEOs. The mean difference of -0.059 for ROA is significant with a t-statistic of -4.45 ($p < 0.01$). The median difference is -0.049 with a z-statistic of -5.76 ($p < 0.01$). This evidence is supported by prior literature. Many serial CEOs are brought in to help distressed companies or improve firm performance (Gudell 2011). There is also evidence that ROA improves over time with serial CEO tenure. This will be discussed in more detail later in the study.

Table 4 – Non-Venture Backed vs. Venture Backed Univariate Tests

TABLE 4 Non-Venture Backed versus Venture Backed Univariate Tests														
	Venture Backed firms						Non-Venture Backed firms						Diff in Means (t-stat)	Diff in Medians (z-stat)
	N	Mean	Std Dev	25th	Median	75th	N	Mean	Std Dev	25th	Median	75th		
MA-Score	664	0.023	0.158	-0.069	-0.002	0.068	505	-0.002	0.142	-0.085	-0.038	0.031	0.025 (2.86) ***	0.036 (4.14) ***
ROA	664	-0.116	0.224	-0.206	-0.057	0.031	505	-0.013	0.204	-0.032	0.029	0.075	-0.103 (-8.16) ***	-0.087 (-10.49) ***
CEO Age	664	54	7	49	54	59	505	58	8	53	58	63	-3.944 (-8.75) ***	-4.000 (-8.13) ***
Firm Age	664	2.7	0.4	2.4	2.6	2.8	505	2.7	0.8	2.2	2.7	3.4	-0.042 (-1.05)	-0.069 (-0.14)
Size (MVE)	664	6.6	1.4	5.6	6.5	7.4	505	6.2	1.7	5.1	6.5	7.5	0.331 (3.54) ***	0.042 (1.83) *
ΔMA_Score	478	-0.007	0.117	-0.059	-0.005	0.050	387	-0.005	0.110	-0.057	-0.005	0.048	-0.002 (-0.31)	0.000 (0.15)
ΔROA	477	-0.014	0.165	-0.062	-0.007	0.041	383	-0.009	0.205	-0.038	-0.002	0.025	-0.005 (-0.42)	-0.005 (-0.86)
GRAS	472	0.241	0.450	-0.026	0.136	0.331	378	0.159	0.407	-0.043	0.047	0.228	0.082 (2.78) ***	0.089 (3.71) ***
Total CEOs	227						152							
Total companies	180						120							

This table (Panel A) represents the mean comparison of venture backed companies versus non-venture backed companies. Firm Age and market value of equity (MVE) are reported in natural log form. Significance at *10%, **5%, and *** are presented in bold italics (two-tailed tests).

Hypothesis 1 states that there will be no difference between the management quality (MA-Score) of serial CEOs and non-serial CEOs. These findings provide evidence to reject the null hypothesis (H2A). In other words, there *is* a significant difference between the managerial ability of serial CEOs versus non-serial CEOs.

Although I did not hypothesize about the differences of venture backed CEOs versus non-venture backed CEOs, I do find similar results to the Chemmanur et al. (2014) study. I find a significant difference between the managerial ability (*MA-Score*) of venture-backed companies and non-venture backed companies. Venture backed companies have a mean MA-Score of 0.023 while non-venture backed companies have a mean MA-Score of -0.002. The mean difference of 0.025 is statistically significant with a t-statistic of 2.86 ($p < 0.01$). The difference in medians of 0.036 is also positive and significant with a z-statistic of 4.41 ($p < 0.01$). These findings provide support for the Chemmanur et al. (2014) study.

An interesting finding is that ROA for venture backed companies is, on average, lower than for non-venture backed companies. The mean difference of -0.103 is statistically significant with a t-statistic of -8.16 ($p < 0.01$). The difference in medians of -0.087 is also negative and significant with a z-statistic of -10.49 ($p < 0.01$). These findings for the MA-Score and ROA variables are an indication that venture capitalists do hire talented CEOs, although their focus may not be profitability.

Table 5 - Serial versus. Non-Serial CEOs Univariate Tests

TABLE 5 Serial versus Non-Serial CEOs Univariate Tests														
	Serial CEOs						Non-Serial CEOs						Diff in Means (t-stat)	Diff in Medians (z-stat)
	N	Mean	Std Dev	25th	Median	75th	N	Mean	Std Dev	25th	Median	75th		
MA-Score	523	-0.003	0.141	-0.087	-0.030	0.034	646	0.025	0.159	-0.071	-0.011	0.073	-0.028 <i>(-3.19) ***</i>	-0.019 <i>(-3.26) ***</i>
ROA	523	-0.104	0.239	-0.171	-0.034	0.036	646	-0.045	0.203	-0.102	0.016	0.065	-0.059 <i>(-4.45) ***</i>	-0.049 <i>(-5.76) ***</i>
CEO Age	523	58	8	52	58	63	646	54	7	50	55	59	3.440 <i>(7.57) ***</i>	3.000 <i>(7.24) ***</i>
Firm Age	523	2.6	0.6	2.3	2.6	2.8	646	2.8	0.6	2.4	2.8	3.1	-0.114 <i>(-3.11) ***</i>	-0.208 <i>(-4.77) ***</i>
Size (MVE)	523	6.4	1.5	5.4	6.5	7.5	646	6.5	1.6	5.6	6.6	7.5	-0.058 (-0.64)	-0.120 (-0.81)
ΔMA_Score	382	-0.008	0.107	-0.057	-0.006	0.050	483	-0.005	0.119	-0.059	-0.005	0.048	-0.003 (-0.39)	0.000 0.00
ΔROA	379	-0.011	0.224	-0.049	-0.001	0.033	481	-0.013	0.144	-0.056	-0.007	0.030	0.003 (0.2)	0.007 (0.89)
GRAS	374	0.194	0.428	-0.040	0.090	0.266	476	0.213	0.438	-0.032	0.094	0.309	-0.019 (-0.63)	-0.005 (-0.54)
Total CEOs	179						200							
Total companies	157						143							

This table (Panel B) represents the mean comparison of serial CEOs versus non-serial CEOs. Firm Age and market value of equity (MVE) are reported in natural log form. Significance at *10%, **5%, and *** are presented in bold italics (two-tailed tests).

Hypothesis 2 Results

Recycle versus non-recycle CEOs analysis

Hypothesis 2 states that there will be no difference between the CEO ability (MA-Score) of *recycled* CEOs (Recycle) and *non-recycled* CEOs. *Recycled* CEOs are the serial CEOs of venture backed companies. Table 6 presents two-sample t-tests for management quality and firm performance for recycle CEOs versus non-recycle CEOs. To have a better comparison of recycle CEOs to non-recycle CEOs, the dataset was reduced to include only serial CEOs. This reduction leaves a dataset of 183 total CEOs and 160 companies. Of the 179 CEOs, 59 are recycle CEOs and 120 are not. Of the 157 companies, 52 have recycle CEOs and 105 do not. For a list of the recycled CEOs in this study, see Appendices D and E.

This analysis finds that the MA-Score mean difference between recycled CEOs and non-recycled CEOs (0.066) is statistically significant with a t-statistic of 4.32 ($p < 0.01$) and a median difference of 0.051 which is statistically significant with a z-statistic of 5.19 ($p < 0.01$). See Table 6 for results.

The ROA for recycled CEOs does not fare as well as for non-recycle CEOs (Table 6). The mean difference of -0.074 for ROA is significant with a t-statistic of -3.30 ($p < 0.01$). The median difference is -0.096 with a z-statistic of -5.11 ($p < 0.01$). Recycle CEOs are a special type of serial CEO and the findings are similar to the ROA findings for serial CEOs (shown in Panel B). Both relationships are negative and significant for ROA. However, the findings for MA-Score are different. Serial CEOs have a significant and negative relationship to managerial ability but Recycle CEOs have a positive relationship. This positive relationship may be driven by the influence of venture capitalists.

Although there is very little prior literature on *recycled* CEOs, De Carvalho et al.'s (2008) survey of venture capitalists surmise that CEOs are an integral part of company success. This result provides support for their assertions. Also, the positive associations (as predicted) provide empirical evidence that this unique type of CEO (*recycled*) is of high ability and most likely a significant part of venture capital success.

Table 6 - Recycled versus Non-Recycled CEOs Univariate Tests

TABLE 6 Recycled versus Non-Recycled CEOs Univariate Tests														
	Recycled CEOs						Non-Recycled CEOs						Diff in Means (t-stat)	Diff in Medians (z-stat)
	N	Mean	Std Dev	25th	Median	75th	N	Mean	Std Dev	25th	Median	75th		
MA-Score	152	0.043	0.171	-0.048	0.008	0.075	371	-0.022	0.121	-0.098	-0.043	0.014	0.066 (4.32) ***	0.051 (5.19) ***
ROA	152	-0.157	0.231	-0.229	-0.097	-0.013	371	-0.082	0.239	-0.151	-0.001	0.044	-0.074 (-3.30) ***	-0.096 (-5.11) ***
CEO Age	152	55	7	50	54	60	371	59	8	54	59	64	-3.992 (-5.72) ***	-5.000 (-5.32) ***
Firm Age	152	2.6	0.4	2.3	2.5	2.8	371	2.7	0.7	2.3	2.6	2.9	-0.132 (-2.81) ***	-0.154 (-1.43)
Size (MVE)	152	6.5	1.5	5.5	6.3	7.6	371	6.3	1.5	5.4	6.5	7.5	0.195 (1.35)	-0.249 (0.16)
ΔMA_Score	106	-0.020	0.128	-0.057	-0.002	0.051	276	-0.003	0.098	-0.057	-0.008	0.050	-0.016 (-1.17)	0.006 (-0.10)
ΔROA	106	-0.005	0.226	-0.054	-0.003	0.050	273	-0.013	0.224	-0.046	0.000	0.027	0.008 (0.32)	-0.003 (0.39)
GRAS	105	0.297	0.537	0.001	0.121	0.347	269	0.154	0.370	-0.046	0.072	0.246	0.143 (2.50) **	0.048 (2.41) **
Total CEOs	59						120							
Total companies	52						105							

This table (Panel C) represents the mean comparison of recycled CEOs versus non-recycled CEOs. Firm Age and market value of equity (MVE) are reported in natural log form. Significance at *10%, **5%, and *** are presented in bold italics (two-tailed tests).

Propensity Score Match Results

In addition to univariate tests, and ordinary least squares regressions, a propensity score matching analysis is performed to compare the management quality of recycled and non-recycled CEOs. It is possible that the ability to hire a talented CEO with industry specific skills is not entirely exogenous and may depend on the characteristics of the recruiting company. Thus, similar companies will be able to hire equally skilled CEOs whether or not they are recycled. Comparing firms that hire recycled CEO to similar firms that hire non-recycled CEOs may temper the effects of endogeneity. In other words, matching on the propensity of a company's ability (Rosenbaum and Rubin 1983), in this case the ability to hire a talented CEO could help to reduce any comparison bias. For this sample I run a logistic regression to match on ROA, firm size and firm age. See table 7 for the preliminary logistic procedure used for the propensity score match.

Table 7 - Propensity Score Estimation

TABLE 7				
Propensity Score Estimation				
Logistic Procedure				
Parameter	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	-2.006	0.618	10.531	0.001
ROA	-1.896	0.374	25.698	<.0001
Firm Size	0.157	0.063	6.222	0.013
Firm Age	-0.418	0.153	7.479	0.006
Total CEOs	91			
Total companies	90			
This table represents the propensity-score matched variables to analyze recycled versus non-recycled CEOs.				

The results of the propensity score match are shown in Table 8. There are a total of 52 CEOs matched to 39 non-recycled CEOs for a total of 91. This propensity score match also represents 52 companies with recycled CEOs and 38 companies without recycled CEOs for a total of 90 companies. The results for the propensity score match are not significant (Table 8). The t-statistic for the MA-Score difference is only 0.56, and the z-statistic is -0.83. For this propensity -score matched analysis, the findings indicate that the CEOs of similar sized and aged companies with similar ROAs are not very different from each other, at least in terms of managerial ability. However, these results may be inclusive due to the lack of matching variables.

A more detailed analysis can focus on IPO characteristics such as IPO firm headquarter dummies and measures of underwriter reputation. Also, pre-IPO characteristics such as total assets, and the use of an indicator variable for positive/negative earnings can provide information regarding the type of manager these matched companies can hire.

Table 8 - Propensity Score Matched Univariate Analysis, Recycled vs. Non-Recycled

TABLE 8 Propensity Score Matched Univariate Analysis, Recycled vs. Non-Recycled								
	Recycled CEOs			Non-recycled CEOs			Diff in Means stat)	Diff in Medians (z-stat)
	N	Mean	Median	N	Mean	Median		
MA-Score	52	0.061	-0.003	51	0.037	-0.005	0.02 (0.56)	0.00 (-0.83)
ΔMA_Score	7	0.007	0.029	33	0.017	0.002	-0.01 (-0.31)	0.03 (0.61)
GRAS	6	0.114	-0.037	33	0.254	0.086	-0.14 (-0.69)	-0.12 (-0.56)
Total CEOs	52			39				
Total companies	52			38				

This table represents the outcome of the propensity score matched sample. A two sample t-test and Wilcoxon Rank Sum test is performed on the medians. Results are shown at *10%, **5%, and ***1% statistical significance (two-tailed tests).

Hypothesis 3 Results

Multivariable Results

Hypothesis 3 states that venture backing will have a positive relationship with future CEO ability (MA-Score). Table 9 presents multivariable tests for management quality and the variable of interest venture backing (VB).

Table 9 - The Relationship of Venture Backing, Serial CEOs, and Recycle CEOs to Future Managerial Ability

TABLE 9											
The Relationship of of Venture Backing, Serial CEOs, and Recycle CEOs on Future Managerial Ability											
Future MA-Score by IPO-Year					Future MA-Score by IPO-Year						
One-Year Ahead					Three-Years Ahead						
		Coeff. (<i>t-stat.</i>)	Coeff. (<i>t-stat.</i>)	Coeff. (<i>t-stat.</i>)	Coeff. (<i>t-stat.</i>)			Coeff. (<i>t-stat.</i>)	Coeff. (<i>t-stat.</i>)		
Dependent variable:	MA-Score _{t+1}	MA-Score _{t+1}	MA-Score _{t+1}	MA-Score _{t+1}	MA-Score _{t+3}	MA-Score _{t+3}	MA-Score _{t+3}	MA-Score _{t+3}	MA-Score _{t+3}		
Intercept		-0.117 <i>(-1.38) *</i>	-0.142 <i>(-1.76) **</i>	-0.146 <i>(-1.81) **</i>	-0.128 <i>(-1.52) *</i>	Intercept		-0.230 <i>(-2.09) **</i>	-0.169 <i>(-1.58) *</i>	-0.191 <i>(-1.79) **</i>	-0.229 <i>(-2.12) **</i>
VB	+	-0.014 <i>(-0.79)</i>			-0.024 <i>(-1.28)</i>	VB		0.044 <i>(1.90) **</i>			0.035 <i>(1.44) *</i>
Serial	+/-		-0.020 <i>(-1.13)</i>		-0.038 <i>(-1.91) **</i>	Serial			-0.031 <i>(-1.31) *</i>		-0.061 <i>(-2.29) **</i>
Recycle	+/-			0.032 <i>(1.33) *</i>	0.067 <i>(2.37) ***</i>	Recycle				0.045 <i>(1.44) *</i>	0.065 <i>(1.75) **</i>
CEO Age	+	-0.001 <i>(-1.07)</i>	-0.001 <i>(-0.54)</i>	-0.001 <i>(-0.92)</i>	-0.001 <i>(-0.62)</i>	CEO Age		0.000 <i>(0.19)</i>	0.000 <i>(0.10)</i>	0.000 <i>(-0.26)</i>	0.001 <i>(0.87)</i>
Firm Age	-	-0.013 <i>(-0.97)</i>	-0.015 <i>(-1.09)</i>	-0.011 <i>(-0.80)</i>	-0.012 <i>(-0.91)</i>	LnAge		-0.018 <i>(-0.98)</i>	-0.025 <i>(-1.32) *</i>	-0.015 <i>(-0.82)</i>	-0.026 <i>(-1.39) *</i>
Size (MVE)	+	0.037 <i>(5.75) ***</i>	0.037 <i>(5.71) ***</i>	0.037 <i>(5.73) ***</i>	0.037 <i>(5.72) ***</i>	LnSize(MVE)		0.038 <i>(4.18) ***</i>	0.039 <i>(4.24) ***</i>	0.039 <i>(4.26) ***</i>	0.036 <i>(4.02) ***</i>
Adj R ²		0.107	0.109	0.111	0.122	Adj R ²		0.119	0.108	0.110	0.142
No. of Observations		280	280	280	280	No. of Observations		151	151	151	151

This table presents results for an IPO-year only sample for one- and three-years ahead information. This table represents 300 distinct companies and 300 firm years. See appendix A for all other variable definitions. The market value of equity (MVE) and Firm Age are reported in natural log form. Significance at *10%, **5%, and ***1% are presented in bold italics (one-tailed tests).

The regression results displayed in Table 9, column 1, indicate that venture backing has no effect on one-year ahead managerial ability (MA-Score_{t+1}). The results for Model 1 shown in Panel A indicate that ownership structure, or rather venture backing, has no effect on one-year ahead managerial ability score. An interesting outcome, however, is that CEO Age (although not significant) has a negative association to one-year ahead MA-Score and not positive as expected. The sign is negative in the full model as well, which includes recycled CEOs. This significance will be discussed later in more detail.

Although there is no support for Hypothesis 3 for the one-year ahead MA-Score, when three-years ahead managerial ability is considered (Table 9), there is support. For the three-years ahead MA-Score, there is a positive and significant relationship between venture backing and future MA-Score (t statistic = 1.90, p<0.05).

Hypothesis 4 Results

Multivariable Results

Hypothesis 4 states that serial CEOs will have a positive relationship with future CEO ability. The regression results displayed in Table 9 (model 2) show no significance for one-year post IPO, but there is significance for 3-years post IPO (-1.31, p<.10). These results indicate that serial CEOs will have a significantly negative relationship with three-years post IPO MA-Score when compared to their non-serial CEO counterparts. These results indicate that serial CEOs are not necessarily focused on turning resources in revenues but more likely in profitability. As stated earlier, serial CEOs are often brought in to help distressed companies (Gudell 2011), or new CEOs may overstate expenses in an effort to make their future performance seem better (Strong and Meyer 1987; Elliott and Shaw 1988; DeAngelo, 1988; Pourciau, 1993). Kroll, Walters, and Le (2007) argue that outside top management may not be as valuable to young

firms that have recently gone public because they do not have tacit knowledge of the firms or entrepreneurial vision. Serial CEOs tend to be outsiders, so this may also explain the negative results.

Hypothesis 5 Results

Multivariable Results

Hypothesis 5 states that recycled CEOs will have a positive relationship with future CEO ability. The regression results displayed in Table 9 (model 3) indicate a positive relationship with one- and three-year ahead managerial ability. Therefore, I provide empirical evidence that recycled CEOs have a significantly positive effect on one-year (t-stat = 1.33, $p < 0.10$) and three-years ahead MA-Score (t-stat = 1.44, $p < 0.10$) as compared to their non-recycled CEO counterparts.

For the full model (model 4), the relationship remains positive. As stated earlier, recycled CEOs are a type of serial CEO and serial CEOs are often brought in to help distressed companies (Gudell 2011). However, a recycled CEO may be brought in to assist a company through the growth stages. This positive effect would make sense for a venture backed company, especially one that seeks management from other venture backed companies.

Hypothesis 6 Results

Multivariable Results

Hypothesis 6 states that recycled CEOs will have an incremental effect on future CEO ability. The regression results displayed in Table 9 (model 4) indicate a positive and significant relationship with one-year and three-years ahead managerial ability. Therefore, recycled CEOs provide incremental benefit to managerial ability over and above venture backing and serial CEOs. For the one-year ahead relationship of recycled CEOs with managerial ability the

coefficient is significant and positive (t-statistic = 2.37, $p < 0.01$) and for three years ahead managerial ability the effect of recycled CEOs is still positive and significant (t-statistic = 1.75, $p < 0.05$). The significant, negative relationship between serial CEOs and managerial ability still remains in the full model (model 4). The coefficients for the serial CEOs for one- and three-years ahead are significant with t-statistics = 1.91 ($p < 0.05$) and t-statistic = -2.29 ($p < 0.05$) respectively.

The results of the propensity score-matched dataset is presented in Table 10. Results are similar to those reported in Table 9 (IPO-year database) for the managerial ability score for one-year post-IPO. The relationship between serial and MA-score one-year ahead is negative and significant (t-statistic=-2.57, $p < 0.01$). The relationship between recycle and MA-score one-year ahead is also similar to the results in Table 9. Here, the relationship is positive and significant (t-statistic=2.52, $p < 0.01$). See Table 10 below for details.

Table 10 - The Relationship of Venture Backing, Serial CEOs, and Recycle CEOs to Future Managerial Ability

TABLE 10											
The Relationship of Venture Backing, Serial CEOs, and Recycle CEOs to Future Managerial Ability											
Future MA-Score by Matched CEOs					Future MA-Score by Matched CEOs						
One-Year Ahead					Three-Years Ahead						
		Coeff. (t-stat.)	Coeff. (t-stat.)	Coeff. (t-stat.)	Coeff. (t-stat.)			Coeff. (t-stat.)	Coeff. (t-stat.)		
Dependent variable:		MA-Score _{t+1}	MA-Score _{t+1}	MA-Score _{t+1}	MA-Score _{t+1}	Dependent variable:		MA-Score _{t+3}	MA-Score _{t+3}		
Intercept		-0.454 -1.79 **	-0.469 -1.92 **	-0.465 -1.9 **	-0.524 -2.13 **	Intercept		-0.870 -2.81 ***	-0.870 -3.02 ***	-0.870 -3.02 ***	-0.870 -2.75 ***
VB	+	-0.014 -0.17			-0.008 -0.1	VB		0.001 0.01			0.000 (0.00)
Serial	+/-		-0.028 -0.62		-0.369 -2.57 ***	Serial			0.001 0.02		0.001 0.02
Recycle	+/-			0.006 0.13	0.352 2.51 ***	Recycle				0.001 0.02	0.00 (0.00)
CEO Age	+	0.000 -0.01	0.001 0.2	0.000 -0.07	0.001 0.19	CEO Age		0.006 2.45 **	0.006 2.35 *	0.006 2.35 *	0.006 2.3 *
LnAge	-	0.025 0.47	0.020 0.38	0.029 0.54	0.023 0.44	LnAge		0.002 0.04	0.003 0.05	0.003 0.05	0.003 0.05
LnSize(MVE)	+	0.069 4.51 ***	0.070 4.67 ***	0.069 4.6 ***	0.079 5.18 ***	LnSize(MVE)		0.087 4.27 ***	0.087 4.29 ***	0.087 4.29 ***	0.087 4.19 ***
Adj R ²		0.274	0.279	0.273	0.334	Adj R ²		0.328	0.328	0.328	0.304
No. of Observations		57	57	57	57	No. of Observations		34	34	34	34

This table presents results for the propensity score matched dataset for one- and three-years ahead information. This table represents 300 distinct companies and 300 firm years. See appendix A for all other variable definitions. The market value of equity (MVE) and Firm Age are reported in natural log form. Significance at *10%, **5%, and ***1% are presented in bold italics (one-tailed tests).

Hypothesis 7 Results

Multivariable Results

Next, the association between *recycled* CEOs (*RECYCLE*) and future ROA is examined. Hypothesis 7 states that recycled CEOs will have an incremental effect on the change in future firm profitability ($\text{ChgROA}_{t+1, t+3}$). The regression results displayed in Table 11 and Table 12 are for *non-industry* adjusted one-year ahead and three-years ahead change in ROA. Panel A shows results using the IPO-year dataset and panel B shows results using the propensity score-matched dataset. Standard errors are clustered by firm and year to control for cross-sectional correlation and intertemporal correlation.

For the variable of interest *Recycle*, there is no significance for the IPO-year dataset for both one- and three-year post-IPO results. This could be explained by the fact that many serial CEOs are hired by companies in distress, in other words, low ROA (Gudell 2011; Parrino 1997). This outcome could mean that recycled CEOs are brought in to focus on revenue, (transforming resources into revenue) for the companies they are hired to lead.

Table 11 - The Relationship of Venture Backing, Serial CEOs and Recycle CEOs to the Change in Future ROA

TABLE 11 The Relationship of Venture backing, Serial CEOs, and Recycle CEOs to the Change in Future ROA - Unadjusted, One and Three years ahead IPO Year Dataset											
	Unadjusted, One-year ahead					DV:	Unadjusted, Three-years ahead				
	Coeff. (t-stat.)	Coeff. (t-stat.)	Coeff. (t-stat.)	Coeff. (t-stat.)	Coeff. (t-stat.)		Coeff. (t-stat.)	Coeff. (t-stat.)	Coeff. (t-stat.)	Coeff. (t-stat.)	Coeff. (t-stat.)
DV:	<i>ChgROA_{t+1}</i>	<i>ChgROA_{t+1}</i>	<i>ChgROA_{t+1}</i>	<i>ChgROA_{t+1}</i>	<i>ChgROA_{t+1}</i>	DV:	<i>ChgROA_{t+3}</i>	<i>ChgROA_{t+3}</i>	<i>ChgROA_{t+3}</i>	<i>ChgROA_{t+3}</i>	<i>ChgROA_{t+3}</i>
Intercept	0.021 (0.30)	-0.031 (-0.83)	-0.023 (-0.59)	0.025 (0.365)	0.024 (0.35)	Intercept	-0.162 (-1.18)	-0.148 (-0.83)	-0.164 (-1.13)	-0.13 (-0.77)	-0.137 (-0.79)
VB				-0.034 (-1.12)	-0.034 (-1.12)	VB				0.004 0.10	0.001 0.01
Serial		-0.002 (-0.10)		0.015 (0.66)	0.015 (0.67)	Serial		0.030 (0.51)		0.046 (0.67)	0.050 (0.71)
Recycle			-0.045 (-1.04)	-0.039 (-0.84)	-0.039 (-0.91)	Recycle			-0.012 (-0.29)	-0.044 (-0.86)	-0.051 (-0.95)
MA-Score					0.004 (0.13)	MA-Score					0.047 (1.60)
CEO_Age _t	-0.001 (-0.61)	0.000 (-0.12)	0.000 (-0.18)	-0.001 (-0.80)	-0.001 (-0.79)	CEO_Age _t	0.002 (0.84)	0.002 (0.45)	-0.619 (0.82)	0.001 (0.35)	0.001 (0.37)
ROA _t	-0.116 <i>(-2.94) ***</i>	-0.089 <i>(-2.47) ***</i>	-0.096 <i>(-2.71) ***</i>	-0.109 <i>(-2.70) ***</i>	-0.110 <i>(-2.44) ***</i>	ROA _t	-0.618 <i>(-14.28) ***</i>	-0.596 <i>(-8.87) ***</i>	0.002 <i>(-15.52) ***</i>	-0.595 <i>(-7.06) ***</i>	-0.602 <i>(-7.58) ***</i>
ΔROA	0.838 <i>(30.77) ***</i>	0.861 <i>(20.66) ***</i>	0.859 <i>(22.18) ***</i>	0.845 <i>(27.29) ***</i>	0.845 <i>(26.03) ***</i>	ΔROA	0.259 <i>(4.17) ***</i>	0.277 <i>(3.39) ***</i>	0.258 <i>(4.59) ***</i>	0.277 <i>(3.00) ***</i>	0.273 <i>(3.12) ***</i>
R ²	0.643	0.637	0.641	0.645	0.645	R ²	0.637	0.639	0.637	0.641	0.642
No. of Observations	244	244	244	244	244	No. of Observations	100	100	100	100	100

This table presents results for an IPO-year only dataset for one- and three-years ahead information. This table represents 300 distinct companies and 300 firm years. See appendix A for all other variable definitions. The market value of equity (MVE) and Firm Age are reported in natural log form. Significance at *10%, **5%, and ***1% are presented in bold italics (one-tailed tests).

Table 12 - The Relationship between Venture Backing, Serial CEOs, and Recycle CEOs to the Change in Future ROA – Non-Industry Adjusted

TABLE 12 The Relationship of Venture backing, Serial CEOs, and Recycle CEOs to the Change in Future ROA - Unadjusted, One and Three years ahead Propensity Score Match Dataset											
	Unadjusted, One-year ahead					DV:	Unadjusted, Three-years ahead				
	Coeff. (<i>t-stat.</i>)	Coeff. (<i>t-stat.</i>)	Coeff. (<i>t-stat.</i>)	Coeff. (<i>t-stat.</i>)	Coeff. (<i>t-stat.</i>)		Coeff. (<i>t-stat.</i>)	Coeff. (<i>t-stat.</i>)	Coeff. (<i>t-stat.</i>)	Coeff. (<i>t-stat.</i>)	Coeff. (<i>t-stat.</i>)
DV:	<i>ChgROA_{t+1}</i>	<i>ChgROA_{t+1}</i>	<i>ChgROA_{t+1}</i>	<i>ChgROA_{t+1}</i>	<i>ChgROA_{t+1}</i>	DV:	<i>ChgROA_{t+3}</i>	<i>ChgROA_{t+3}</i>	<i>ChgROA_{t+3}</i>	<i>ChgROA_{t+3}</i>	<i>ChgROA_{t+3}</i>
Intercept	0.096 (0.78)	0.063 (0.90)	0.067 (0.74)	0.090 (0.77)	0.101 (0.53)	Intercept	-0.025 (-0.11)	-0.016 (-0.12)	-0.030 (-0.25)	-0.009 (-0.04)	0.024 (0.06)
VB	-0.023 (-0.74)			0.008 (0.23)	0.010 (0.29)	VB	0.002 (0.03)			-0.008 (-0.15)	-0.021 (-0.17)
Serial		0.001 (0.01)		0.068 (1.53)	0.067 (1.48)	Serial		0.029 (1.06)		0.019 (0.44)	0.005 (0.09)
Recycle			-0.028 (-0.92)	-0.080 (-2.79) **	-0.079 (-3.29) **	Recycle			0.025 (2.22) *	0.012 (0.54)	0.027 (0.30)
MA-Score					-0.022 (-0.14)	MA-Score					-0.029 (-0.15)
CEO Age _t	-0.002 (-1.13)	-0.002 (-1.56) *	-0.002 (-1.13)	-0.003 (-1.28)	-0.003 (-0.85)	CEO Age _t	0.000 (-0.05)	-0.001 (-0.22)	-0.294 (-1.12)	-0.001 (-0.17)	-0.001 (-0.17)
ROA _t	0.086 (0.31)	0.093 (0.33)	0.083 (0.30)	0.067 (0.24)	0.075 (0.24)	ROA _t	-0.304 (-1.15)	-0.299 (-1.13)	0.000 (-0.11)	-0.299 (-1.13)	-0.292 (-0.92)
ΔROA	0.840 (4.22) ***	0.838 (4.16) ***	0.831 (4.27) ***	0.836 (3.94) **	0.840 (3.72) **	ΔROA	0.196 (1.24)	0.207 (1.29)	0.206 (1.34)	0.207 (1.24)	0.210 (1.11)
R ²	0.490	0.488	0.494	0.503	0.503	R ²	0.229	0.236	0.235	0.236	0.237
No. of Observations	70	70	70	70	70	No. of Observations	27	27	27	27	27

This table presents results for the propensity score-matched dataset for one- and three-years ahead information. This table represents 300 distinct companies and 300 firm years. See appendix A for all other variable definitions. The market value of equity (MVE) and Firm Age are reported in natural log form. Significance at *10%, **5%, and ***1% are presented in bold italics (one-tailed tests).

The industry adjusted analysis is shown in Tables 13 and 14. The IPO-year dataset is shown in Table 13 and the propensity score-matched dataset is shown in Table 14. For industry adjusted change in ROA for one-year post IPO (propensity score-matched dataset), *recycled* CEOs have a negative and significant relationship with future change in ROA (t-statistic=-2.40 (p<0.05). Although the relationship is significant, the direction is negative instead of positive. This could be explained by an earlier finding in this dissertation in that recycled CEOs have a positive relationship to future managerial ability or in the ability to turn resources into revenue. This finding provides further evidence that recycled CEOs are more focused on revenue than profitability.

In the same model, serial CEOs have a positive and significant relationship to one-year post IPO ROA. This finding is supported by prior research in that serial CEOs tend to be brought in to improve distressed companies (Gudell 2011; Parrino 1997). Here also, standard errors are clustered by firm and year to control for cross-sectional correlation and intertemporal correlation. For details see Tables 13 and 14 below.

Table 13 - The Relationship of Venture Backing, Serial CEOs, and Recycle CEOs to the Change in Future ROA - Industry Adjusted

TABLE 13 The Relationship of Venture backing, Serial CEOs, and Recycle CEOs to the Change in Future ROA - Industry Adjusted, One and Three years ahead IPO Year Dataset											
	Industry adjusted, One-year ahead					DV:	Industry adjusted, Three-years ahead				
	Coeff. (t-stat.)	Coeff. (t-stat.)	Coeff. (t-stat.)	Coeff. (t-stat.)	Coeff. (t-stat.)		Coeff. (t-stat.)	Coeff. (t-stat.)	Coeff. (t-stat.)	Coeff. (t-stat.)	Coeff. (t-stat.)
DV:	<i>IaChgROA_{t+1}</i>	<i>IaChgROA_{t+1}</i>	<i>IaChgROA_{t+1}</i>	<i>IaChgROA_{t+1}</i>	<i>IaChgROA_{t+1}</i>	DV:	<i>IaChgROA_{t+3}</i>	<i>IaChgROA_{t+3}</i>	<i>IaChgROA_{t+3}</i>	<i>IaChgROA_{t+3}</i>	<i>IaChgROA_{t+3}</i>
Intercept	0.044 (0.61)	-0.003 (-0.07)	0.009 (0.19)	0.045 (0.64)	0.040 (0.56)	Intercept	-0.157 (-1.25)	-0.049 (-0.30)	-0.071 (-0.53)	-0.121 (-0.85)	-0.144 (-0.95)
VB				-0.024 (-0.86)	-0.025 (-0.87)	VB	0.056 (1.38)			0.068 (1.78) *	0.060 (1.39)
Serial		-0.008 (-0.38)		0.010 (0.52)	0.011 (0.59)	Serial		0.034 (0.51)		0.051 (0.76)	0.060 (0.89)
Recycle			-0.046 (-0.97)	-0.040 (-0.85)	-0.044 (-0.99)	Recycle			0.001 (0.02)	-0.068 (-1.43)	-0.088 (-1.57)
MA-Score					0.032 (1.36)	MA-Score					0.128 (5.80) ***
CEO_Age _t	-0.001 (-0.63)	0.000 (-0.13)	0.000 (-0.35)	-0.001 (-0.74)	-0.001 (-0.66)	CEO_Age _t	0.002 (0.90)	0.001 (0.14)	0.001 (0.44)	0.001 (0.37)	0.002 (-0.47)
ROA _t	-0.146 (-4.11) ***	-0.144 (-3.52) ***	-0.143 (-3.34) ***	-0.141 (-3.69) ***	-0.150 (-4.01) ***	ROA _t	-0.582 (-8.72) ***	-0.553 (-4.22) **	-0.579 (-6.42) ***	-0.556 (-4.61) ***	-0.591 (-5.88) ***
ΔROA	0.819 (27.03) ***	0.826 (21.28) ***	0.829 (21.65) ***	0.826 (25.14) ***	0.821 (26.02) ***	ΔROA	0.259 (3.57) **	0.275 (2.28) *	0.253 (2.91) **	0.279 (2.43) **	0.251 (2.67) **
R ²	0.640	0.636	0.640	0.643	0.643	R ²	0.631	0.625	0.621	0.639	0.645
No. of Observations	244	244	244	244	244	No. of Observations	100	100	100	100	100

This table presents results for an IPO-year only dataset for one- and three-years ahead information. This table represents 300 distinct companies and 300 firm years. See appendix A for all other variable definitions. The market value of equity (MVE) and Firm Age are reported in natural log form. Significance at *10%, **5%, and ***1% are presented in bold italics (one-tailed tests).

Table 14 - The Relationship of Venture Backing, Serial CEOs, and Recycle CEOs to the Change in Future ROA - Industry Adjusted

TABLE 14 The Relationship of Venture backing, Serial CEOs, and Recycle CEOs to the Change in Future ROA - Industry Adjusted, One and Three years ahead Propensity Score Match Dataset											
	Industry adjusted, One-year ahead					DV:	Industry adjusted, Three-years ahead				
	Coeff. (<i>t-stat.</i>)	Coeff. (<i>t-stat.</i>)	Coeff. (<i>t-stat.</i>)	Coeff. (<i>t-stat.</i>)	Coeff. (<i>t-stat.</i>)		Coeff. (<i>t-stat.</i>)	Coeff. (<i>t-stat.</i>)	Coeff. (<i>t-stat.</i>)	Coeff. (<i>t-stat.</i>)	Coeff. (<i>t-stat.</i>)
DV:	<i>IaChgROA_{t+1}</i>	<i>IaChgROA_{t+1}</i>	<i>IaChgROA_{t+1}</i>	<i>IaChgROA_{t+1}</i>	<i>IaChgROA_{t+1}</i>	DV:	<i>IaChgROA_{t+3}</i>	<i>IaChgROA_{t+3}</i>	<i>IaChgROA_{t+3}</i>	<i>IaChgROA_{t+3}</i>	<i>IaChgROA_{t+3}</i>
Intercept	0.112 (0.92)	0.078 (2.01)	0.084 (1.27)	0.102 (0.90)	0.089 (0.45)	Intercept	-0.036 (-0.23)	0.012 (0.32)	0.021 (0.39)	-0.090 (-0.73)	-0.092 (-0.31)
VB	-0.024 (-0.47)			0.021 (0.57)	0.019 (0.57)	VB	0.033 (0.38)			0.107 (1.49)	0.108 (1.45)
Serial		0.002 (0.04)		0.090 <i>(1.67)</i> *	0.090 <i>(1.64)</i> *	Serial		-0.014 (-1.75)		0.085 (0.77)	0.085 (1.40)
Recycle			-0.035 (-0.86)	-0.108 <i>(-2.24)</i> **	-0.108 <i>(-2.40)</i> **	Recycle			-0.013 (-0.43)	-0.109 (-0.82)	-0.110 (-1.50)
MA-Score					0.0258 (0.17)	MA-Score					0.002 (0.01)
CEO_Age _t	-0.002 (-1.13)	-0.002 (-1.61)	-0.002 (-1.31)	-0.003 (-1.18)	-0.003 (-0.68)	CEO_Age _t	0.000 (0.10)	0.000 (0.01)	0.000 (-0.11)	0.000 (0.04)	0.000 (0.03)
ROA _t	-0.081 (-0.31)	-0.077 (-0.29)	-0.075 (-0.28)	-0.075 (-0.28)	-0.088 (-0.27)	ROA _t	-0.293 (-1.55)	-0.308 (-1.48)	-0.306 (-1.49)	-0.259 (-1.01)	-0.260 (-0.73)
ΔROA	(0.78) <i>(4.72)</i> ***	(0.77) <i>(4.76)</i> ***	(0.77) <i>(4.98)</i> ***	(0.78) <i>(4.37)</i> ***	(0.78) <i>(3.95)</i> ***	ΔROA	0.245 <i>(2.69)</i> *	0.237 <i>(2.44)</i> *	0.239 <i>(2.57)</i> *	0.251 <i>(2.28)</i> *	0.250 (1.58)
R ²	0.486	0.484	0.492	0.508	0.509	R ²	0.308	0.306	0.306	0.319	0.319
No. of Observations	70	70	70	70	70	No. of Observations	27	27	27	27	27

This table presents results for an propensity score-matched dataset for one- and three-years ahead information. This table represents 300 distinct companies and 300 firm years. See appendix A for all other variable definitions. The market value of equity (MVE) and Firm Age are reported in natural log form. Significance at *10%, **5%, and ***1% are presented in bold italics (one-tailed tests).

Hypothesis 8 Results

Multivariable Results

Hypothesis 8 states that recycled CEOs will be positively associated with future buy-and-hold adjusted returns ($BHAR_{t+1, t+3}$). Although the base model shows some significance with control variables, the results show no significance with the main variable of interest, *Recycle*. This is most likely driven by the examination period of one- and three-years post IPO. Researchers who examine post IPO performance have used longer time periods and larger samples (Chemmanur et al. 2014) as well as more mature firms such as companies that have been through a leveraged buyout (Katz 2009). See Table 15 below for more detail.

Table 15 - One- and Three-Year Ahead Stock Return Analysis by Venture Backing and CEO type

TABLE 15					
One-year and Three-year Ahead Stock Return Analysis by Venture Backing and CEO Type					
	Coeff. (<i>t-stat.</i>)	Coeff. (<i>t-stat.</i>)	Coeff. (<i>t-stat.</i>)	Coeff. (<i>t-stat.</i>)	Coeff. (<i>t-stat.</i>)
DV:	<i>BHAR</i> _{t+1}	<i>BHAR</i> _{t+1}	<i>BHAR</i> _{t+1}	<i>BHAR</i> _{t+3}	<i>BHAR</i> _{t+3}
Intercept	0.090 (1.05)	0.137 (1.24)	0.089 (0.67)	0.227 (0.75)	0.680 (1.62) *
VB		-0.083 (-0.90)	-0.049 (-0.46)	-0.139 (-0.51)	-0.424 (-1.27)
Serial		-0.033 (-0.37)	0.001 (0.01)	0.198 (0.79)	0.265 (0.88)
Recycle		0.141 (0.91)	0.171 (0.86)	-0.170 (-0.29)	-0.353 (-0.35)
MA-Score		0.001 (0.00)	0.142 (0.37)	-0.091 (-0.09)	0.094 (0.08)
BETA	-0.086 (-1.57) *	-0.086 (-1.54) *	-0.076 (-1.18)	-0.008 (-0.05)	-0.140 (-0.72)
BM	0.063 * (1.43)	0.053 (1.14)	0.089 (1.62) *	-0.174 (-1.15)	-0.441 (-1.76) **
Size	0.000 (0.02)	0.000 (0.02)	0.000 (-0.95)	0.000 (-1.18)	0.000 (-0.85)
Momentum	1.020 (1.51) *	1.044 (1.53) *	1.756 (2.18) **	1.558 (0.78)	2.040 (0.78)
ChgWC			0.001 (1.46) *		-0.002 (-0.42)
ChgNCO			0.000 (0.46)		-0.002 (-1.33) *
ChgFIN			0.000 (0.30)		-0.001 (-0.56)
CAPX			0.095 (0.85)		0.355 (0.65)
CFO			-0.021 (-1.15)		0.209 (1.56) *
CFI			-0.015 (-0.06)		0.216 (0.24)
CFF			-0.416 (-1.52) *		0.890 (0.97)
Adj R ²	0.008	-0.002	-0.002	-0.081	-0.139
No. of Observations	283	283	283	63	59
This table presents results for IPO-year dataset for one- and three-years ahead information. This table represents 300 distinct companies and 300 firm years. See appendix A for all other variable definitions. Significance at *10%, **5%, and ***1% are presented in bold italics (one-tailed tests).					

Supplemental Tests

For a directional analysis of CEO experience, a distinction was made between the past and present structure of the CEO's organizational backing. For instance, I examined four types of paths to current employment of the CEOs in my sample. The four CEO experience paths of interest are venture backed to venture backed (VB_VB), venture backed to non-venture backed (VB_NVB), non-venture backed to venture backed (NVB_VB), and non-venture backed to non-venture backed (NVB_NVB). The intent is to see if the type of prior experience has any influence or relationship to managerial ability or firm performance. A regression analysis was performed using three of the four categories discussed above. If the path of a serial CEO was VB to VB that CEO was coded 1 (0 otherwise). If the path of a serial CEO was VB to NVB that CEO was coded 1 (0 otherwise). If the path of a serial CEO was NVB to VB that CEO was coded 1 (0 otherwise) and if the path of a serial CEO was NVB to NVB that CEO was coded 1 (0 otherwise). The dummy variables used in the regression were for VB_VB, VB_NVB, and NVB_VB. The results for NVB_NVB will be captured in the intercept. The dependent variables are MA-Score one and three-years post IPO, as well as the change in ROA, one and three-years post IPO.

Results shown in Table 16 show no significance for one-year ahead MA-Score. However, for three-years post IPO, the path of VB_VB has a significant and positive association with managerial ability (t-statistic=1.97, $p < 0.05$). I also included a model with the control variables, CEO age, firm age, and firm size. The results are similar with VB_VB still having a significant and positive relationship with three years post IPO managerial ability (t-statistic=1.95, $p < 0.10$). This analysis provides more evidence of the importance of recycled CEOs.

A similar analysis was done with the change in future ROA as the dependent variable. In line with earlier analysis presented in this dissertation, the association between recycled CEOs (VB_VB) are also negative and significant (t-statistic=-1.66, $p < 0.10$). This significance does not hold for the change in ROA, three-years post IPO, but VB_NVVB is significant and positive (t-statistic=2.05, $p < 0.05$). These results are for the regression that does not include the control variables of CEO age, ROA and change ROA. When the full model is analyzed, none of the variables of interest are significant. See Table 17 for these results.

The results from this analysis offer further support that recycled CEOs (VB-VB) have a significant relationship to future firm performance when compared to other serial CEO types.

Table 16 - CEO Directional Experience Analysis – IPO-Year dataset

TABLE 16				
CEO Directional Experience Analysis - IPO-year dataset				
	Coeff. (<i>t-stat.</i>)	Coeff. (<i>t-stat.</i>)	Coeff. (<i>t-stat.</i>)	Coeff. (<i>t-stat.</i>)
DV:	MA-Score _{t+1}	MA-Score _{t+1}	MA-Score _{t+3}	MA-Score _{t+3}
Intercept	0.000 (-0.02)	-0.181 (-1.35)	-0.024 (-1.01)	-0.305 (-1.99) *
VB to VB	0.044 (1.46)	0.037 (1.31)	0.073 (1.97) **	0.067 (1.95) *
VB to NVB	-0.086 (-1.17)	-0.050 (-0.74)	-0.116 (-0.82)	0.001 (0.01)
NVB to VB	-0.005 (-0.13)	-0.001 (-0.04)	-0.017 (-0.29)	-0.008 (-0.15)
CeoAge		-0.001 (-0.58)		0.000 (-0.13)
Firm Age		-0.009 (-0.41)		-0.010 (-0.40)
Firm Size		0.040 (4.25) ***		0.050 (3.73) ***
Adj R ²	0.015	0.157	0.038	0.187
No. of Observations	109	109	66	66
<p>This table analyzes the relationships between dummy variables representing prior employment to current employment of CEOs: venture backed to venture backed (VB to VB), venture backed to non-venture backed (VB to NVB), and non-venture backed to venture backed (NVB to VB). The intercept captures non-venture backed to non-venture backed (NVB to NVB). See appendix A for all other variable definitions. Significance at *10%, **5%, and ***1% are presented in bold italics. (two-tailed tests).</p>				

Table 17 - CEO Directional Experience Analysis - Propensity Score-Matched Dataset

TABLE 17				
CEO Directional Experience Analysis - Propensity score-matched dataset				
	Coeff. (<i>t-stat.</i>)	Coeff. (<i>t-stat.</i>)	Coeff. (<i>t-stat.</i>)	Coeff. (<i>t-stat.</i>)
DV:	<i>ChgROA</i> _{<i>t+1</i>}	<i>ChgROA</i> _{<i>t+1</i>}	<i>ChgROA</i> _{<i>t+3</i>}	<i>ChgROA</i> _{<i>t+3</i>}
Intercept	0.014 (0.40)	0.146 (1.19)	-0.030 (-0.98)	-0.120 (-0.82)
VB to VB	-0.053 (-1.02)	-0.067 <i>(-1.66)</i> *	0.044 (0.87)	-0.027 (-0.52)
VB to NVB	0.024 (0.18)	0.064 (0.62)	0.313 <i>(2.05)</i> **	-0.051 (-0.28)
NVB to VB	-0.086 (-1.25)	-0.085 (-1.65)	0.033 (0.41)	-0.032 (-0.42)
CeoAge		-0.003 (-1.29)		0.002 (0.75)
ROA		-0.093 (-0.81)		-0.491 <i>(-2.81)</i> ***
ChgROA		0.759 <i>(6.88)</i> ***		0.179 (1.38)
Adj R ²	-0.009	0.465	0.037	0.254
No. of Observations	93	93	43	43
<p>This table analyzes the relationships between dummy variables representing prior employment to current employment of CEOs: venture backed to venture backed (VB to VB), venture backed to non-venture backed (VB to NVB), and non-venture backed to venture backed (NVB to VB). The intercept captures non-venture backed to non-venture backed (NVB to NVB). See appendix A for all other variable definitions. Significance at *10%, **5%, and ***1% are presented in bold italics. (two-tailed tests).</p>				

Logistic regression with binary dependent variable

In this dissertation, I also use the binary variables as dependent variables to measure their relationships to managerial ability and ROA. A logistic regression was performed using venture backing as the binary dependent variable (Table 18, Panel A). Venture backed was coded as 1 and non-venture backed was coded as 0. Results show that CEOs with venture backing are more likely to have a high managerial ability score.

A logistic regression was performed using serial/non-serial CEOs as the binary dependent variable (Table 18, Panel B). Serial CEOs are coded as 1 and non-serial CEOs coded as 0. Results show that serial CEOs are more likely to have a lower managerial ability score than non-serial CEOs. These results also support H1 in that the null hypothesis can be rejected.

A logistic regression was performed using recycled/non-recycled CEOs as the binary dependent variable (Table 18, Panel C). Recycled CEOs are coded as 1 and non-recycled CEOs coded as 0. Results show that recycled CEOs are more likely to have a higher managerial ability score than non-recycled CEOs. These results also support H2 in that the null hypothesis can be rejected.

Table 18 - Logistic Regression of Binary Dependent Variables: Venture Backed, Serial, and Recycled

Table 18					
Logistic Regression of Binary Dependent Variables					
Analysis of Maximum Likelihood Estimates					
Panel A: Venture Backed vs. Non-Venture Backed					
Parameter	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq	
Intercept	1.570	0.634	6.133	0.013	
<i>MA-Score</i>	1.912	0.495	14.899	0.000	
<i>Serial</i>	0.602	0.139	18.852	<.0001	
<i>ROA</i>	-3.613	0.408	78.265	<.0001	
CEO Age	-0.076	0.009	64.747	<.0001	
Firm Age	0.261	0.104	6.264	0.012	
Firm Size	0.277	0.048	33.106	<.0001	
Firm Years	VB - 664	NVB - 505			
Panel B: Serial CEOs vs. Non-Serial CEOs					
Parameter	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq	
Intercept	-4.025	0.627	41.155	<.0001	
<i>MA-Score</i>	-0.954	0.451	4.465	0.035	
<i>VB</i>	0.579	0.137	17.811	<.0001	
<i>ROA</i>	-1.025	0.330	9.632	0.002	
CEO Age	0.077	0.009	76.392	<.0001	
Firm Age	-0.423	0.103	16.888	<.0001	
Firm Size	0.038	0.045	0.724	0.395	
Firm Years	Serial CEOs - 523	Non-Serial CEOs - 646			
Panel C: Recycled CEOs vs. Non-Recycled CEOs					
Parameter	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq	
Intercept	-1.567	0.894	3.076	0.080	
<i>MA-Score</i>	1.707	0.541	9.975	0.002	
<i>ROA</i>	-2.098	0.385	29.662	<.0001	
CEO Age	-0.006	0.011	0.232	0.630	
Firm Age	-0.378	0.157	5.793	0.016	
Firm Size	0.110	0.065	2.927	0.087	
Firm Years	Recycled CEOs - 152	Non-Recycled CEOs - 1017			
This table presents the results of a logistic regression. The binary dependent variables are venture backed vs. non-venture backed (Panel A), serial ceo v. non-serial ceo Panel B), and recycled CEO vs. non-recycled CEO (Panel C) The dataset used is the IPO-year dataset.					

Another logistic regression is also performed (Table 19, Panel A) using the managerial ability score as the dependent variable. The logistic dependent variable is High versus Low MA-Score. To create a binary dependent variable, MA-Score was ranked from low to high and divided into terciles. The middle tercile was removed, and the highest level was coded 1. The lowest level was coded 0. Results show that CEOs with venture backing are more likely to have a high managerial ability score.

Table 19 - Logistic Regression of Binary Dependent: High MA-Score versus Low MA-Score

Table 19 Logistic Regression of Binary Dependent Variable High MA-Score (1) versus Low MA-Score (0) Analysis of Maximum Likelihood Estimates					
Panel A					
Parameter	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq	
Intercept	-1.802	0.770	5.476	0.019	
<i>VB</i>	0.604	0.161	14.117	0.000	
CEO Age	-0.022	0.010	4.449	0.035	
Firm Age	-0.037	0.118	0.097	0.756	
Firm Size	0.420	0.057	54.240	<.0001	
Panel B					
Parameter	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq	
Intercept	-0.888	0.716	1.537	0.215	
<i>Serial</i>	-0.428	0.158	7.391	0.007	
CEO Age	-0.027	0.010	6.931	0.009	
Firm Age	-0.080	0.119	0.453	0.501	
Firm Size	0.422	0.056	56.397	<.0001	
Panel C					
Parameter	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq	
Intercept	-2.282	0.799	8.149	0.004	
<i>VB</i>	0.463	0.173	7.214	0.007	
<i>Serial</i>	-0.877	0.184	22.796	<.0001	
<i>Recycled</i>	1.224	0.285	18.453	<.0001	
CEO Age	-0.010	0.011	0.769	0.381	
Firm Age	-0.037	0.122	0.092	0.762	
Firm Size	0.434	0.059	54.016	<.0001	
This table presents the results of a logistic regression. The binary dependent variables are high- vs. low-ma-score. Each panel varies by variable of interest: Panel A - VB; Panel B - Serial; and Panel C - VB, Serial, and Recycled.					

V. CONCLUSION

Venture capitalists are known for providing financial support to entrepreneurs with new products, innovative ideas, and/or streamlined processes. Financial news sources constantly report on the companies supported by venture capitalists because many of these companies eventually seek funding through an initial public offering. Information on these private companies is sparse therefore, analysts and investors may use information about the venture capitalists. Maybe because of this limited information, a lot of the success of venture capital backed companies has been attributed to the monitoring and oversight of venture capitalists. There is some empirical evidence to support this assertion but researchers De Carvalho et al. (2008) recognized that venture capitalists, in many instances, reuse CEOs within venture backed firms and they argue that this practice may help to explain the success of venture backed companies. The authors label this practice *recycling*.

This dissertation empirically tests the primary premise of De Carvalho et al.'s study (2008) in that I examine the quality of *recycled* CEOs then determine the significance of their association to future firm performance. For purposes of this study, I consider a CEO at a venture backed firm, who has prior CEO experience at another venture backed firm, to be a *recycled* CEO. While prior literature focuses on the actions of venture capitalists, there are no known studies that specifically focus on *recycled* CEOs and their contributions to newly public companies. Earlier literature explores the differences in the quality of executive managers of venture backed companies verses the quality of executive managers of non-venture backed

companies. And there is extant literature on serial CEOs that examine the increasing prevalence of serial CEOs and their association to future profitability.

Before determining the relationship between *recycled* CEOs and future firm performance, this dissertation measures the quality, or managerial ability, of *recycled* CEOs. As a measure of managerial ability, I use the Demerjian et al. (2012, 2013) managerial ability score (MA-Score) which is available on Peter Demerjian's website. This score is created by analyzing the inputs (COGS, advertising, research and development, etc.) and outputs (revenue) of all public companies that date back to 1980. A score is created for each public company with the necessary information, then each score is regressed on firm fixed effects. The residual for each company is considered the MA-Score. By combining this MA-Score with this study's hand collected sample of serial and *recycled* CEOs, this dissertation is able to examine the comparative contributions of *recycled* CEOs.

Summary of Findings

Hypotheses 1 and 2 examine the MA-Score mean differences between serial versus non-serial CEOs and the mean differences between recycled and non-recycled CEOs respectively. The sample used for hypothesis 1 is the full sample of 1,169 firm years split between serial CEOs (179) and non-serial CEOs (200). This sample also consists of 300 companies. In the univariate test of H1, a significant difference is found between the mean MA-Score of serial CEOs and non-serial CEOs which provides support to reject the null hypothesis. Therefore, this study finds that there is a significant difference between the mean MA-Scores of serial CEOs and non-serial CEOs.

Similar results are found for hypothesis 2 that analyzes the mean difference in MA-Score for recycled CEOs and non-recycled CEOs. This sample includes only serial CEOs since

recycled CEOs are a particular type of serial CEO. In other words, this sample is a comparison of two different types of serial CEOs: CEOs with CEO experience at two different companies, and CEOs with CEO experience at two different venture backed companies. Here the comparison is 59 recycled CEOs with 120 non-recycled CEOs. As with hypothesis 1, this study finds a significant difference in the means of the MA-scores of recycled versus non-recycled CEOs. Therefore, evidence supports rejecting the null for hypothesis 2 because there is evidence that recycled CEOs are of higher ability than non-recycled CEOs.

Hypotheses 3 and 4 examine the relationships of venture backing to future managerial ability and the relationship of serial CEOs to future managerial ability respectively. The sample used for hypothesis 3 consists of IPO-year observations and their corresponding one- and three-year ahead managerial ability (MA-Score). There are 300 companies in this sample which represent 300 firm years. This examination finds no significant association between venture backing and future MA-Score, one-year ahead but there is a significant and positive association between venture backing and three-years ahead managerial ability. This finding supports hypotheses 3.

The sample used for hypothesis 4 also consists of IPO-year observations and their corresponding one- and three-year ahead managerial ability (MA-Score). 300 companies are represented with 300 firm years. This examination finds no significant association between serial CEOs and future MA-Score, one-year ahead but there is a significant yet *negative* association between serial CEOs and three-years ahead managerial ability. This finding supports hypotheses 4 but the relationship is negative, not positive. A possible reason for this may be that serial CEOs are more focused on profitability and not necessarily on turning resources into revenue.

Hypotheses 5 and 6 examine the relationships of recycled CEOs to future managerial ability. The sample used for hypotheses 5 and 6 consists of IPO-year observations and their corresponding one- and three-year ahead managerial ability (MS-Score). Again, 300 companies are represented with 300 firm years. This examination finds a significant and positive association between recycled CEOs and future MA-Score for both one- and three-years ahead (hypothesis 5). Hypothesis 6 exams the full model for the relationship of venture backing, serial CEOs, and recycled CEOs to future managerial ability (MA-Score). Still, recycled CEOs have a significant and positive relationship to future managerial ability score. Therefore, this dissertation finds empirical support for hypotheses 6.

Hypothesis 7 examines the relationship between recycled CEOs and future profitability (ROA). Unadjusted and adjusted ROA one- and three- years post IPO are examined. Here a propensity-score matched sample is used and consists of 52 recycled CEOs that are matched with 39 non-recycled CEOs. A negative significant relationship between recycled CEOs and future ROA for both unadjusted and adjusted is found. This empirical evidence supports hypothesis 7.

Finally, hypothesis 8 examines the relationship between recycled CEOs and buy-and-hold-adjusted returns (BHAR). The sample used here is the IPO-year sample of 300 firm years and 300 company. This study finds no significant relationship between recycled CEOs and BHAR. The reason for this outcome may be due to the type of companies in the study. This study consists of newly public companies that are one- and three- years post IPO. Therefore, these types of companies may have fluctuating returns.

Overall, the findings of this study suggest that *recycled* CEOs are of high ability and add value above venture backing and serial CEOs when considering future managerial ability. Managerial ability, or the ability to turn resources into revenue, has a positive relationship with

recycled CEOs. The managerial ability measure (Demerjian et al. 2012, 2013) employed in this study is shown to have a positive association to earnings quality (Demerjian et al. 2012, 2013), an inverse relationship to audit fees and going concerns (Krishnan et al. 2014), and an inverse relationship to reductions in corporate income tax payments (Koester, Shevlin, and Wangerin 2016). Although this study finds that recycled CEOs do not have a positive relationship to future ROA, it appears that recycled CEOs do a good job at turning resources into revenue, maybe at the expense of profitability. The positive relationship found between serial CEOs and future ROA provides additional support for past research and adds to the growing literature on serial CEOs.

Limitations

As with all empirical research, this dissertation has its limitations. First, the observations used in the analyses only consist of publicly traded corporations and must meet certain minimum criteria. To the extent these corporations differ from private companies or corporations excluded from the analysis due to lack of data availability, the results of this study may not generalize to the full population.

Another limitation of this study is the assumption that venture capitalists find CEOs from other venture backed companies solely by networking with other venture capitalists. It is possible that CEOs were recruited by head hunters or recommended by associates other than venture capitalists.

Contributions

The main contribution of this paper is to provide an additional explanation for post IPO performance of venture backed and non-venture backed companies as discussed by De Carvalho et al. (2008). These findings are important because most of the literature on venture backing

success focuses on the venture capitalists, and not on the CEOs who are set in place to lead the company. CEO ability and CEO involvement in young growth companies has been overlooked. This study contributes to the venture capital and managerial ability literature by considering CEO experience and venture backing, as an indicator of management quality in young growth companies.

This study also provides empirical evidence of an overlooked subgroup of serial CEOs which makes this information useful to academics, analysts, investors and venture capitalists.

Future Research

Testing the concept of *recycled* CEOs provides insight into the success of venture backed companies. *Recycled* CEO information may open a new stream of research that can address financial statement quality, venture capital oversight, audit quality, and entrepreneurial success. While the empirical results are informative to the literature and to practitioners, they also open several research opportunities to improve our understanding of private equity involvement and the success of venture backed firms.

Future research can focus on IPOs that occurred prior to the 2008 financial crisis, specific focus can be on the selection process or overall managerial ability score. This time frame will also provide a longer period for post IPO results. Since this study focuses on post-IPO performance, a pre-IPO analysis of *recycled* and serial CEOs may provide more insight into the success and failures of CEO influence as well. Finally, another area of focus can be on CEO compensation for *recycled* CEOs and the relationship to financial statement quality or future performance.

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LIST OF APPENDICES

APPENDIX A – VARIABLE DEFINITIONS

APPENDIX A
Variable Definitions

Variables used in models

Beta	= Market model beta estimated using rolling regressions over no more than 60 months (but a minimum of 30 months)
BHAR	= [Buy-and-hold Abnormal Return] = Value-weighted industry (3-digit SIC mean) adjusted returns cumulated from the beginning of the fourth month of year t+1 through the end of the third month of year t+2
BM	= [Book-to-Market] = total Common Equity [ceq] divided by MVE
CapEx	= [Capital Expenditures] = capital expenditures [capx] divided by average Net Operating Assets [NOA]
CEO Age	= Age as reported in company prospectus, company website, or Bloomberg.com.
CFF	= [CASH Flows from Financing Activities] = cash flows from financing activities from the statement of cash flows divided by the MVE at the beginning of the year
CFI	= [CASH Flows from Investing Activities] = cash flows from investing activities from the statement of cash flows divided by the MVE at the beginning of the year
CFO	= [Cash Flows from Operating Activities] = income before extraordinary items [ib] plus depreciation expense [dp] minus accruals divided by average Net Operating Assets [NOA] defined by Desai et al. (2004)
FIN	= [Net Financial Assets] = financial assets [ivst + ivao] minus financial liabilities [dltt + dlc + pstk] defined by Richardson et al. (2005)
Firm Age	= Annual age measured from the company's start date, prior to the company's IPO
GRAS	= [Growth in Assets] = ((total assets (at) at time t minus total assets t-1) scaled by prior year total assets))
MA-Score	= Managerial ability - The decile rank (by industry and year) of the MA-Score (managerial efficiency from Demerjian et al. (2012)) in year t.
MVE	= [Market Value of Equity] Prc_c_f (price close - annual - fiscal) x CHSO (common shares outstanding).
Momentum	= Cumulative stock return over prior six months
NCO	= [Non-Current Operating Accruals] = Non-current operating assets [at - act - ivao] minus non-current operating liabilities [lt - lco - dltt] defined by Richardson et al. (2005)
Price	= Annual Fiscal Year Price Close [$prcc_f$]
Recycle	= a CEO at a venture backed company with prior CEO experience at another venture backed company. Dummy variable set to 1 if <i>recycled</i> and 0 otherwise
ROA	= Net income before extraordinary items [ibc] scaled by total assets [AT]
Serial	= [Serial CEO] a CEO that has prior CEO experience at another company. Dummy variable is set to 1 if Serial CEO and 0 otherwise
Tenure	= CEO years of service at one company
Log_Size	= Log of [MVE] Market Value of Equity (Prc_c_f x CSHO)
VB	= [Venture Backed Company] a dummy variable set to 1 if company is backed by venture capital
WC	= [Working Capital] = Working capital accruals defined as current operating assets [act - che] minus current operating liabilities [lco - dlc] defined by Richardson et al. (2005)

APPENDIX B – RECYCLED CEO’S ROA: CURRENT AND PRIOR COMPANY

APPENDIX B

Recycled CEOs Prior Company ROA compared to Current Company ROA

Panel A - No outliers	Prior Company			Current Company			Difference in ROAs
	Prior Company TIC	Year CEO left Company	Prior Co. ROA	New Company TIC	Year CEO started at new Co.	Beginning ROA at current Co.	
Faheem Hasnain	RCPT	2013	-0.6784	FACT	2010	-0.334	-0.344
Antonius Schuh	TROV	2011	-0.9915	SRNE	2011	-0.708	-0.283
Marc Beer	AEGR	2010	-0.4451	VIAC	2007	-0.259	-0.186
Anthony Bettencourt	IMPV	2014	-0.1229	IWOV	2009	0.061	-0.184
Godfrey Sullivan	SPLK	2008	-0.0939	HYSL	2007	0.064	-0.158
Robert D. Thomas	BLOX	2004	-0.0338	NSCN	2004	0.105	-0.139
Frank Sloodman	NOW	2011	-0.0781	DDUP	2009	0.056	-0.134
David G. Dewalt	FEYE	2012	-0.0877	MFE	2011	0.044	-0.131
Mark McLaughlin	PANW	2011	0.0018	VRSN	2011	0.075	-0.073
Kleanthis Xanthopoulos	RGLS	2007	-0.1682	ANDS	2006	-0.299	0.131
Sean Moriarity	LFGR	2014	-0.4288	TKTM	2009	-0.589	0.160
Mark Pincus	ZNGA	2007	-0.1607	SPRT	1999	-0.764	0.603
Total Mean ROA			-0.274			-0.213	-0.061
Panel B - With outliers	Prior Company			Current Company			Difference in ROAs
	Prior Company TIC	Year CEO left Company	Prior Co. ROA	New Company TIC	Year CEO started at new Co.	Beginning ROA at current Co.	
Faheem Hasnain	RCPT	2013	-0.6784	FACT	2010	-0.334	-0.344
Antonius Schuh	TROV	2011	-0.9915	SRNE	2011	-0.708	-0.283
Marc Beer	AEGR	2010	-0.4451	VIAC	2007	-0.259	-0.186
Anthony Bettencourt	IMPV	2014	-0.1229	IWOV	2009	0.061	-0.184
Godfrey Sullivan	SPLK	2008	-0.0939	HYSL	2007	0.064	-0.158
Robert D. Thomas	BLOX	2004	-0.0338	NSCN	2004	0.105	-0.139
Frank Sloodman	NOW	2011	-0.0781	DDUP	2009	0.056	-0.134
David G. Dewalt	FEYE	2012	-0.0877	MFE	2011	0.044	-0.131
Mark McLaughlin	PANW	2011	0.0018	VRSN	2011	0.075	-0.073
Kleanthis Xanthopoulos	RGLS	2007	-0.1682	ANDS	2006	-0.299	0.131
Sean Moriarity	LFGR	2014	-0.4288	TKTM	2009	-0.589	0.160
Mark Pincus	ZNGA	2007	-0.1607	SPRT	1999	-0.764	0.603
John Orwin	RLYP	2013	-1.9379	AFFY	2013	-0.642	1.296
Richard M. Rosenblatt	LFGR	2006	-5.7147	KOOP	2001	-0.031	5.683
Total Mean ROA			-0.781			-0.230	0.446

This table shows the profitability measure of recycled CEOs who were at a public venture backed company then hired at another public venture backed company. Panel A presents the ROA measure without the the two outliers of John Orwin and Richard Rosenblatt (highlighted in Panel B). Their respective ROAs (at prior company) are -1.938 and -5.715.

APPENDIX C – RECYCLED CEO’S MA-SCORE: PRIOR AND CURRENT COMPANY

APPENDIX C

Recycled CEOs Prior Company MA- Score compared to New Company MA-Score

Panel A - No outliers							
	Prior Company			Current Company			
CEO Name	Prior Company TIC	Year CEO left Company	Ending MA-Score at Prior Co.	New Company TIC	Year CEO started at new Co.	Beginning MA-Score at new Co.	Difference in MA-Score
Faheem Hasnain	ZNGA	2007	0.619	SPRT	1999	-0.131	0.750
Antonius Schuh	SPLK	2008	0.318	HYSL	2007	0.037	0.281
Marc Beer	AEGR	2010	0.227	VIAC	2007	-0.012	0.240
Anthony Bettencourt	IMPV	2014	0.092	IWOV	2009	0.016	0.076
Godfrey Sullivan	RGLS	2007	-0.114	ANDS	2006	-0.182	0.068
Robert D. Thomas	RCPT	2013	-0.137	FACT	2010	-0.200	0.063
Frank Sloatman	PANW	2011	0.178	VRSN	2011	0.119	0.059
David G. Dewalt	LFGR	2014	-0.061	TKTM	2009	-0.103	0.042
Mark McLaughlin	NOW	2011	0.108	DDUP	2009	0.082	0.027
Kleanthis Xanthopoulos	TROV	2011	-0.056	SRNE	2011	-0.064	0.008
Sean Moriarity	BLOX	2004	-0.028	NSCN	2004	0.178	-0.206
Mark Pincus	FEYE	2012	-0.023	MFE	2011	0.262	-0.285
Total MA-Score			0.094	0.000			0.094
Panel B - With outliers							
	Prior Company			Current Company			
CEO Name	Prior Company TIC	Year CEO left Company	Ending MA-Score at Prior Co.	New Company TIC	Year CEO started at new Co.	Beginning MA-Score at new Co.	Difference in MA-Score
Faheem Hasnain	ZNGA	2007	0.619	SPRT	1999	-0.131	0.750
Antonius Schuh	SPLK	2008	0.318	HYSL	2007	0.037	0.281
Marc Beer	AEGR	2010	0.227	VIAC	2007	-0.012	0.240
Anthony Bettencourt	IMPV	2014	0.092	IWOV	2009	0.016	0.076
Godfrey Sullivan	RGLS	2007	-0.114	ANDS	2006	-0.182	0.068
Robert D. Thomas	RCPT	2013	-0.137	FACT	2010	-0.200	0.063
Frank Sloatman	PANW	2011	0.178	VRSN	2011	0.119	0.059
David G. Dewalt	LFGR	2014	-0.061	TKTM	2009	-0.103	0.042
Mark McLaughlin	NOW	2011	0.108	DDUP	2009	0.082	0.027
Kleanthis Xanthopoulos	TROV	2011	-0.056	SRNE	2011	-0.064	0.008
Sean Moriarity	BLOX	2004	-0.028	NSCN	2004	0.178	-0.206
Mark Pincus	FEYE	2012	-0.023	MFE	2011	0.262	-0.285
John Orwin	LFGR	2006	-0.001	KOOP	2001	-0.174	-0.173
Richard M. Rosenblatt	RLYP	2013	-0.194	AFFY	2013	NA	
Total MA-Score			0.066	-0.013			0.073
<p>This table shows the managerial ability measure of recycled CEOs who were at a public venture backed company then hired at another public venture backed company. Panel A presents the MA-Score without the the two outliers of John Orwin and Richard Rosenblatt (highlighted in Panel B).</p>							

APPENDIX D – LIST OF RECYCLED CEOS FOR IPO-YEAR DATABASE

APPENDIX D
List of Recycled CEOs - IPO Year Sample

CEO	Company Name	CEO	Company Name
Keith R. Leonard	Kythera Biopharma Inc	Tuan Ha-Ngoc	Aveo Pharmaceuticals, Inc
Kleanthis Xanthopoulos	Regulus Therapeutics Inc	Zorik Gordon	Reachlocal, Inc
Christopher Lien	Marin Software Inc	Jeffrey Stein	Trius Therapeutics, Inc
Kenneth L. Moch	Chimerix, Inc	Tim Jenks	Neophotonics Corp
Faheem Hasnain	Receptos Inc	Elon Musk	Tesla, Inc
Mark Floyd	Cyan Inc	Clifford Reid	Complete Genomics, Inc
Robert Palay	Cellular Dynamics Intl Inc.	Adam Miller	Cornerstone Ondemand, Inc
Pamela Marrone	Marrone Bio Innovations	Richard M. Rosenblatt	Leaf Group LTD
Martin Plaehn	Control4 Corp	Daniel Springer	Responsys, Inc
David G. Dewalt	Fireeye, Inc	David Friend	Carbonite, Inc
Dick Costolo	Twitter, Inc	Paul Nahi	Enphase Energy, Inc
Pardeep Kohli	Mavenir Systems, Inc	Mark Pincus	Zynga, Inc
Michael Kauffman	Karyopharm Therapeutics, Inc	Gordon Nye	Zeltiq Aesthetics, Inc
John Orwin	Relypsa, Inc	Thomas Ebling	Demandware, Inc
Douglas C. Robinson	Lifevantage Corp	Robert Zollars	Vocera Communications, Inc
Antonius Schuh	Trovagene Inc	Jeremy Allaire	Brightcove, Inc
Robert D. Thomas	Infoblox Inc	Joseph P. Payne	Eloqua, Inc
Godfrey Sullivan	Splunk Inc	Brett A. Hurt	Bazaarvoice, Inc
Frank Sloodman	Servicenow Inc	Sang Park	Magnachip Semiconductor Corp
Mark McLaughlin	Palo Alto Networks Inc	Jill D. Smith	Digitalglobe, Inc
Marc Beer	Aegerion Pharmaceuticals Inc	Mark Heaney	Addus
David Perry	Anacor Pharmaceuticals, Inc	Ken Xie	Fortinet, Inc
Michael Bennett	Solarwinds, Inc		
		Total	45

This is a list of all recycled CEOs for the smaller IPO-year database.

APPENDIX E – LIST OF RECYCLED CEOS FOR THE FULL SAMPLE

APPENDIX E
List of Recycled CEOs - Full Sample

CEO	Company Name	CEO	Company Name
Keith R. Leonard	Kythera Biopharma Inc	Tuan Ha-Ngoc	Aveo Pharmaceuticals, Inc
Kleanthis Xanthopoulos	Regulus Therapeutics Inc	Zorik Gordon	Reachlocal, Inc
Christopher Lien	Marin Software Inc	Jeffrey Stein	Trius Therapeutics, Inc
Kenneth L. Moch	Chimerix, Inc	Tim Jenks	Neophotonics Corp
Faheem Hasnain	Receptos Inc	Elon Musk	Tesla, Inc
Mark Floyd	Cyan Inc	Ford Tamer	Inphi Corp
Robert Palay	Cellular Dynamics Intl Inc.	Behrooz Abdi	Invensense, Inc
Pamela Marrone	Marrone Bio Innovations	Clifford Reid	Complete Genomics, Inc
Martin Plaehn	Control4 Corp	Adam Miller	Cornerstone Ondemand, Inc
David G. Dewalt	Fireeye, Inc	Richard M. Rosenblatt	Leaf Group LTD
Dick Costolo	Twitter, Inc	Sean Moriarty	Leaf Group LTD
Jack Dorsey	Twitter, Inc	Christopher Carrington	Servicesource Intl Inc
Pardeep Kohli	Mavenir Systems, Inc	Daniel Springer	Responsys, Inc
Michael Kauffman	Karyopharm Therapeutics, Inc	David Friend	Carbonite, Inc
John Orwin	Relypsa, Inc	Mohamad Ali	Carbonite, Inc
Douglas C. Robinson	Lifevantage Corp	Paul Nahi	Enphase Energy, Inc
Antonius Schuh	Trovogene Inc	Anthony Bettencourt	Imperva, Inc
Robert D. Thomas	Infoblox Inc	Mark Pincus	Zynga, Inc
Michael Barrett	Millennial Media Inc	Don Matrick	Zynga, Inc
Godfrey Sullivan	Splunk Inc	Gordon Nye	Zeltiq Aesthetics, Inc
Frank Sloatman	ServiceNow Inc	Thomas Ebling	Demandware, Inc
Mark McLaughlin	Palo Alto Networks Inc	Bruce McWilliams	Intermolecular, Inc
Marc Beer	Aegerion Pharmaceuticals Inc	Robert Zollars	Vocera Communications, Inc
Thomas J. Reilly	Arcsight, Inc.	Jeremy Allaire	Brightcove, Inc
David Perry	Anacor Pharmaceuticals, Inc	David Mendels	Brightcove, Inc
Michael Bennett	Solarwinds, Inc	Joseph P. Payne	Eloqua, Inc
Jill D. Smith	Digitalglobe, Inc	Brett A. Hurt	Bazaarvoice, Inc
John Hass	Rosetta Stone, Inc	Gene Austin	Bazaarvoice, Inc
Mark Heaney	Addus	Sang Park	Magnachip Semiconductor Corp
Ken Xie	Fortinet, Inc		
		Total	59

This is a list of recycled CEOs for the full sample, not just IPO year

VITA

Business Address
Providence College
1 Cunningham Square
Providence RI, 02918

Sydnee C. Manley
CPA (AR inactive)
smanley@go.olemiss.edu

Home Address
2 Lucille Street
Providence, RI 02908
Mobile: 501-730-4475

EDUCATION

E.H. Patterson School of Accountancy, University of Mississippi
Doctor of Philosophy in Accountancy, Degree Anticipated May 2018

Georgia State University
Master of Business Administration (emphasis finance), March 1998

University of Arkansas
Bachelor of Science – Accounting, August 1990

RESEARCH

Dissertation topic:
“Recycled CEOs and Managerial Ability: Do Venture-Backed Companies have a Comparative Advantage?”

Working papers:
“Examining Cash Flow Based Life Cycle and the Value-Glamour Anomaly”

“American Latino Professionals in Finance and Accounting, Fifty Years (2022) of Influence – An Interview with the Founders”

Research Interests:
Venture capitalism, earnings quality, entrepreneurship, managerial ability and earnings management

TEACHING EXPERIENCE

University of Mississippi

Financial Accounting	2012 – 2016
Managerial Accounting	2013 – 2017

University of Central Arkansas

Principles of Accounting I & II (part-time)	2006 – 2009
---	-------------

Teacher evaluations

Summer 2016	4.33/5.00
Fall 2015	3.54/5.00

PROFESSIONAL EXPERIENCE

Alltel/Verizon Wireless

Quality Analyst

2004 – 2010

Wise Foods, Inc.

Senior Financial Analyst

2002 – 2004

Arthur Andersen, LLP

Senior Financial Analyst

2000 – 2002

Bank of America

Senior Financial Analyst

1998 – 2000

Georgia State University

Research Assistant

1996 – 1998

Division of Legislative Audit

Senior Auditor

1991 – 1996

Kremer & Associates, LLC

Staff Auditor

1989 – 1991

CONFERENCE ACTIVITIES

AAA Annual Meeting

San Diego, CA 2017

Moderator - Using Beautiful Models for Valuation

New York, NY 2016

Chicago, IL 2015

Atlanta, GA 2014

Anaheim, CA 2013

Washington, DC 2012

The PhD Project Accounting Doctoral Students Association Annual Meeting

San Diego, CA 2017

Chicago, IL 2015

Presenter – “Examining Cash Flow Based Life Cycle and the Value Glamour Anomaly”

Atlanta, GA 2014

Anaheim, CA 2013

Discussant – “The Impact of FIN48 on Earnings Management” by C. Bowler

Washington, DC 2012

AAA FARS Midyear Meeting

Chicago, IL 2012

Nashville, TN 2015

Accounting PhD Rookie Recruiting & Research Camp (observer)

Miami, FL 2014

AAA Diversity Section

Atlanta, GA 2014

New Orleans, LA 2017

Emerging Research Presenter – “Recycled CEOs and Managerial Ability: Do Venture-Backed Companies have a Comparative Advantage?”

Moderator – Gender & Diversity Issues in Financial Reporting

The PhD Project Conference

Chicago, IL 2003 and 2000

FELLOWSHIPS, HONORS, AND AWARDS

3 Minute Thesis finalist – University of Mississippi

Fall 2017

AICPA Doctoral Fellowship

2013 – Present

KPMG Foundation Doctoral Scholarship

2012 – 2017

University of Mississippi Minority Fellowship

2011 - Present

PROFESSIONAL AFFILIATIONS

Accounting Doctoral Student Association

2012 - Present

Board member – Conway Housing Authority

2010 – 2013

Inactive member – Arkansas Society of Certified Public Accountants