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JOELSON OLIVEIRA SAMPAIO

**THE CERTIFICATION ROLE OF VENTURE CAPITALISTS, TOP
UNDERWRITERS AND BIG-N AUDITORS IN IPOS**

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Tese apresentada à Escola de Administração de Empresas de São Paulo da Fundação Getúlio Vargas, como requisito para a obtenção de título de Doutor em Administração de Empresas.

Campo de Conhecimento:
Mercados Financeiros e Finanças Corporativas

Orientador:
Prof. Dr. Antônio Gledson de Carvalho

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Banca Examinadora:

Prof. Dr. Antônio Gledson de Carvalho (Orientador)
FGV-EAESP

Prof. Dr. Walter Novaes
PUC-RIO

Prof. Dr. Roberto Pinheiro
UNIVERSITY OF COLORADO

Prof. Dr. Bruno Cara Giovannetti
USP-FEA

Prof. Dr. Marcelo Fernandes
FGV-EESP

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ABSTRACT

This thesis seeks to evaluate the impact of the recurring main actors during the IPO process, in particular the Venture Capitalist, the underwriter, and the auditor, have a lasting effect on the firm's marketability, captured by the bid-ask spread, the fraction of institutional investors that invest in the company, the equity dispersion, among others. Furthermore, this study also analyzes some benefits that venture capitalists (VCs) provide to the companies in which they invest. It investigates the role of VCs in hampering earnings management in IPOs and it quantifies the role VCs play in the operational performance of newly public firms after their IPO.

In the first chapter the results indicate that earning inflation occurs in the Pre-IPO and IPO periods. When we control for the four different periods of the IPO, we observe that venture-backed IPOs present significantly less earnings management in the IPO and Luck-up periods, exactly when firms inflate earnings. This result is robust across statistical methods and different methodologies used to estimate earnings management. Furthermore, by splitting the sample between venture and non-venture backed IPOs, we observe that both groups manage earnings. VC-backed and non-VC-backed subsamples present EM more intensively in different phases around the IPO. Finally, we also observe that top underwriter backed engage in less EM in VC-backed subsample.

In the second chapter, it was found that the choice of auditor, venture capitalist, and underwriter may indicate the firm's long-run choices. We presented evidence that the characteristics of the underwriter, auditor, and VC have an impact on the firms' characteristics and market performance. Furthermore, these effects are last for almost a decade. Firms that have a top underwriter and a big N-auditor at the time of the IPO have a higher marketability for the next 8 years, represented by a higher number of analysts following, a large dispersion of ownership across institutional investors, and higher liquidity through a lower bid-ask spread. They are also less likely to end up delisted as well as more likely to issue an SEO. Finally, VC-sponsorship positively affects all the measures for market liquidity, since the IPO and for up to almost a decade. Such effects are not due to survivorship bias. These results do not depend on the dot-com bubble, i.e., our findings are qualitatively the same once we exclude the bubble period of 1999 – 2000.

In the latter chapter has been shown that VC-backing firms incur in a higher level of cash holdings than non-VC-backed firms. This effect is permanent last for at least 8 years after the IPO. We also show that VC-backed firms are associated with a lower level of leverage and interest coverage over the first 8 years after the IPO. Finally, we do not have evidence stastic: significant between VC and dividend to earnings ratio. These results are robust across statistical methods and different methodologies.

Keywords: *Venture Capital, Earnings Management, Certification, IPO*

RESUMO

Esta tese avalia o impacto dos principais atores recorrentes durante o processo de IPO, em particular, o *venture capitalist*, o *underwriter*, e o auditor, sobre as condições de comercialização das ações da empresa, capturado pelo *bid-ask spread*, a fração de investidores institucionais que investem na empresa, a dispersão de capital, entre outros. Além disso, este estudo também analisa alguns benefícios que os fundos de *Venture Capital* (VCs) fornecem às empresas que eles investem. Ele investiga o papel dos VCs em dificultar o gerenciamento de resultados em IPOs e quantifica o papel desempenhado por eles no desempenho operacional das empresas após sua oferta inicial de ações.

No primeiro capítulo, os resultados indicam que as empresas inflam seus resultados principalmente nos períodos pré-IPO e do IPO. Quando nós controlamos para os quatro períodos diferentes do IPO, observamos que IPOs de empresas investidas por VCs apresentam significativamente menos gerenciamento de resultados no IPO e em períodos seguintes à oferta inicial das ações, exatamente quando as empresas tendem a inflar mais seus lucros. Este resultado é robusto a diferentes métodos estatísticos e diferentes metodologias usadas para avaliar o gerenciamento de resultados. Além disso, ao dividir a amostra entre IPOs de empresas investidas e não investidas por VCs, observa-se que ambos os grupos apresentam gerenciamento de resultados. Ambas as subamostras apresentam níveis de gerenciamento de resultados de forma mais intensa em diferentes fases ao redor do IPO. Finalmente, observamos também que *top underwriters* apresentam menores níveis de gerenciamento de resultados na subamostra das empresas investidas por VCs.

No segundo capítulo, verificou-se que a escolha do auditor, dos VCs, e *underwriter* pode indicar escolhas de longo prazo da empresa. Nós apresentamos evidências que as características do *underwriter*, auditor, e VC têm um impacto sobre as características das empresas e seu desempenho no mercado. Além disso, estes efeitos são persistentes por quase uma década. As empresas que têm um *top underwriter* e um auditor *big-N* no momento do IPO têm características de mercado que permanecem ao longo dos próximos 8 anos. Essas características são representadas por um número maior de analistas seguindo a empresa, uma grande dispersão da propriedade através de investidores institucionais, e maior liquidez através um *bid-ask spread* menor. Elas também são menos propensas a saírem do mercado, bem como mais propensas à emissão de uma oferta secundária. Finalmente, empresas investidas por VCs são positivamente afetadas, quando consideramos todas as medidas de liquidez de mercado, desde

a abertura de capital até quase uma década depois. Tais efeitos não são devido ao viés de sobrevivência. Estes resultados não dependem da bolha *dot-com*, ou seja, os nossos resultados são qualitativamente similares, uma vez que excluimos o período da bolha de 1999-2000.

No último capítulo foi evidenciado que empresas investidas por VCs incorrem em um nível mais elevado de saldo em tesouraria do que as empresas não investidas. Este efeito é persistente por pelo menos 8 anos após o IPO. Mostramos também que empresas investidas por VCs estão associadas a um nível menor de alavancagem e cobertura de juros ao longo dos primeiros oito anos após o IPO. Finalmente, não temos evidências estatisticamente significantes entre VCs e a razão dividendo lucro. Estes resultados também são robustos a diversos métodos estatísticos e diferentes metodologias.

Palavras-chave: *Venture Capital*, Gerenciamento de Resultados, Certificação, *IPO*

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1. INTRODUCTION

Initial Public Offering (IPO) is a milestone in a corporation's financial strategy. Because of this, post-issue stock performance dominates the IPO literature, valuation and pricing and ownership and structuring issues follow later in that order. The effect of institutional investors in various aspects of the IPO process is the theme of a relatively new stream of research on public offerings. There is also another focus that assesses the IPO as a financial strategy, combining factors, such as: underwriter, venture capital and big-N auditor. Ritter and Welch (2002) provide a review of IPO activity, pricing, and allocations. They believe that research into share allocation issues is the most promising area of research in IPOs. In addition, they argue that the allocation of shares by underwriters and venture capitalists is perhaps the most active area of current IPO research.

In this sense, this thesis seeks to analyze some benefits that venture capitalists (VCs) provide to the companies in which they invest. Thus, it investigates the role of VCs in hampering earnings management in IPOs and it also quantifies the role VCs play in the operational performance of newly public firms after their IPO. It also evaluates the impact of the recurring main actors during the IPO process, in particular the Venture Capitalist, the underwriter, and the auditor, have a lasting effect on the firm's marketability. We intend to contribute with the literature by addressing the following questions:

- 1) Does venture capital backing hamper earnings management in IPOs?
- 2) What are the long-run effect of public offering agents - venture capitalists, underwriters and auditors - on public companies?
- 3) What is the long-run effect of venture capital on operational performance of public companies?

It is a well known economic fact that venture capital significantly contributes to the success of start-up firms (Barry et al., 1990; Megginson and Weiss, 1991; Lerner, 1994). They provide sufficient capital resources as well as advising and monitoring services is of critical importance for the success of these firms. Thus, the answers to these questions seek to contribute to the current literature that provides empirical evidence related to the long-run benefits VCs provide.

The chief contributions this thesis set forth are: first, explore the empirical fact that, despite the difference in terms of level, venture-backed IPOs present significantly less earnings management in the IPO and Luck-up periods, exactly when firms inflate earnings; second, this is one of the few studies that undertakes the impact of the recurring main actors during the IPO process, in particular the Venture Capitalist, the underwriter, and the auditor, on public companies; and third, this is one of the first studies that investigates the role of venture capitalists in terms of operational performance after IPO and its persistence over time.

Beyond this introduction, the second chapter investigates the dynamics of earnings management in IPOs and the role of venture capitalists in hampering such practice. It tackles the determinants of the behavior of earnings management in four phases around the IPO, seeking to reveal whether there is a difference between VC-backed IPOs and non-VC-backed IPOs in terms of earnings management in some of these phases.

Chapter 3 attempts at identifying the impact of the recurring main actors during the IPO process – in particular the Venture Capitalist, the underwriter, and the auditor. Do they have a lasting effect on the firm's marketability, captured by the bid-ask spread, the fraction of institutional investors that invest in the company, the equity dispersion, the likelihood of a subsequent SEO, the probability of being followed and number of analysts following at any given time, and finally the likelihood of failure and mergers.

Chapter 4 investigates the role of venture capitalists play in the firms' financial policy, whilst looking into the persistence (firm fixed effects) VC-backed firms present over time, that is, it seeks to analyze whether VC-backed firms choose a set of policies that are different than those non-VC-backed.

2. THE DYNAMICS OF EARNINGS MANAGEMENT IN IPOs AND THE ROLE OF VENTURE CAPITAL

2.1. INTRODUCTION

The purpose of this chapter is to examine the role of venture capital backing in hampering earnings management in IPOs. Earnings management (EM) covers a wide variety of actions by management that affect an entity's earnings with any intention other than to represent the reality intrinsic to the business. Although not illegal, it can distort the information content of the financial statements in a way that can harm shareholders. The IPO process gives entrepreneurs both motivation and opportunities to engage into EM: if earnings were artificially inflated, investors who are unaware of this can be lead to pay an artificially high price. There is high information asymmetry between investors and issuers at the time of the IPO. Prospectus is the main source of information for IPO. However, prospectuses may contain financial statement for some few years preceding the IPO. As consequence, investors cannot rely on historical data to estimate the extent to which firms engage into EM at the time of the IPO. Because of this, managers of issuing firms have both the opportunity and the motivation to manipulate earnings in order to inflate offering price.

Venture capitalists seek to monitor and improving governance practices in the firms they finance. Venture capitalists also have incentives to force their invested firms to keep good corporate governance practices even after the IPO: frequently the IPO is not the exit of VC from their invested firms, but rather a mechanism to obtain funds to finance expansion venture capitalists retain their equity position for years after the IPO [Barry et al. (1990)]. Thus it is expect that ventures capitalists, as external monitor, has important role in hampering EM in IPOs.

Several authors studied EM at the time of public offerings. Teoh et al. (1998b) relate the poor long-term return of IPOs detected by Ritter (1991) to EM. They found that EM around the IPO is higher for issuing firms as compared to non-issuing ones. Hochberg (2012), using a sample of IPOs and annual data, finds evidence that VC backed IPOs present reduced EM. Morsfield and Tan (2006) show that such result is robust to controls such as the endogenous choice for VC financing, IPO lock-up provisions, and VC exit subsequent to the IPO. However, for using annual data, these authors were unable to capture the dynamics of EM and most likely

underestimated it. This is so because earnings inflation and subsequent reversal can occur in the same fiscal year not being reflected in the annual reports. Wongsunwai (2013) studies the dynamics of EM and the role of the reputation of the venture capitalist. He finds that VC backed IPOs present significantly less EM than non-VC backed ones in the IPO period and that this effect is mostly due to the influence of highly reputed venture capitalists.

Even though Morsfield and Tan (2006), Hochberg (2012) and Wongsunwai (2013) find that VC-backed IPOs present less EM than non-VC-backed ones, they do not answer whether this because both groups manage earnings and one group manage less than the other, or if VC-backed IPOs do not present earnings management at all. In this study, we analyze the dynamics of EM around the IPO to investigate differences in EMs between VC and non-VC backed IPO. We also seek to deal with endogeneity and omitted variables problem. Finally, we examine the role of top underwriter and big four audits in hampering earnings management in IPOs.

Initially, we show that VC backed uniformly reduces EM around the IPO and Lock-up periods, differently of the Wongsunwai (2013) that find that VC Backed IPOs present significantly less EM only in the IPO period. Our contribution is to show that in terms of EM VC backed and non-VC backed firms behave in different fashions. We note that if one splits the sample, both groups manage earnings. VC-backed and non-VC-backed subsamples present EM more intensively in different phases around the IPO. Finally, we also observe that top underwriter backed engage in less EM in VC-backed subsample. Our results are robust across statistical methods and different methodologies used to estimate EM.

This chapter is organized as follows: Section 2.2 reviews previous research on this topic. Section 2.3 describes our methodology and explains our hypotheses, regressions models and treatment for endogenous choice of venture capital investments. Section 2.4 describes our sample and basics descriptive statistics. Section 2.5 presents empirical results. Finally, Section 2.6 concludes the chapter.

2.2. RELATED LITERATURE

Earnings management (EM) may have several motivations as influencing the terms of contracts, regulators, and equity prices. Various models have been developed to analyze the incentives to manipulate earnings in different contexts. In general, these models use proxies for EM that are based on accruals; i.e., difference between reported earnings and cash flow from operations. Even though positive accruals suggest that reported earnings are greater than the cash flow

generated by the company's operations, positive accruals by themselves are not evidence of earnings manipulation. In firm's daily operations, some accrual adjustments are consistent with the accrual basis accounting regime, and sometimes appropriate and necessary to provide a good picture of earnings. Manipulation occurs when managers discretionarily increase or decrease accruals with other purposes than to express the real economic and financial situation of the business. Therefore, it is necessary to decompose accruals into non-discretionary (normal) accruals, which are derived from the company's activities, and discretionary accruals, which are artificial and have the only intention of manipulating results. Several methodologies have been developed to make such decomposition, e.g., Healy (1985), DeAngelo (1986), Jones (1991), Dechow et al. (1995), Kang and Sivaramakrishnan (1995) and Kothari et al. (2005). These procedures are similar to an event study: one uses operational/financial characteristics of the firm to predict normal (non-discretionary) accruals. Abnormal accruals (EM) are then estimated as the difference between observed and non-discretionary accruals.

Earnings are likely to be observed right before a public offering as an effort to increase offering price (Rangan, 1998). However, inflated earnings can last longer: insiders usually have their shares blocked during the lock-up period and may want to sell some of them at the end of this period. This would extend the length of time over which managers have the incentive to keep earnings inflated. Adding to this, concerns with reputation may prevent firms that inflated earnings before the IPO to make the reversion right after it. Therefore, one would expect to observe EM not only immediately before the IPO, extending possibly until the end of the lock-up period.

In general, venture capitalists are extensively involved in the firms they finance, closely monitoring their activities and improving governance practices. Venture capitalists have strong incentives to set strong governance structures in their portfolio firms. VCs negotiate complex control rights at the time of their investment and incorporate extensive governance and monitoring mechanism (Kaplan and Stromberg, 2002). Board and audit committee activity and their members' financial sophistication may be important factors in constraining the propensity of managers to engage in earnings management (Xie et al., 2003).

Some studies have analyzed the influence of venture capital in the practice of earnings manipulation. Morsfield and Tan (2006), show that the VC effect holds even when controlling for IPO lock-up provisions, VC partial cashing out subsequent to the IPO, and alternative proxies for earnings management. These authors perform many sensitivity tests, such as control

for the endogenous choice for VC financing, IPO lock-up provisions and VC exits subsequent to the IPO. The main results remain unchanged after all tests. Additionally, they find evidence that the post-issue performance of venture-backed companies exceeds that of the non-venture-backed ones, using both accounting measures of performance and stock returns. However, their results indicate that the best performance occurs only when the venture capitalists are effective in mitigating earnings management at the time of the IPO. It is worthwhile emphasizing that the conclusions of both Morsfield and Tan (2006) as Hochberg (2012) are based on cross-section analysis using data from the annual financial statements of the companies in the year of the IPO. However, annual data may underestimate earnings management because earnings inflation and posterior reversal could occur inside the same fiscal year. We expect to make more precise when earnings inflation and reversal occurs by using quarterly data. Chanine et al. (2012) examine the extent to which principal–principal agency conflicts within venture capital syndicates lead to additional principal–agent conflicts in IPO firms in two institutional contexts. Using a matched sample of 274 VC-backed IPOs in the US and the UK, they show that the diversity of a VC syndicate increases pre-IPO discretionary current accruals, used as a proxy for earnings management, but the impact of such diversity is higher in the US.

Finally, Wongsunwai (2013) extends previous studies by investigating whether the quality of the venture capital manager affects the corporate governance of companies in their portfolios. The author developed a new metric to measure for venture capitalist's quality that is highly correlated to VC funds' financial returns, and with the likelihood of successful exits (measure through the number of IPOs or trade sales). He defines four phases: pre-IPO, IPO, lock-up and post-lock-up periods. Next he estimated EM for each of the phases. He shows that VC-backed IPOs present significantly less EM in the IPO phase and that such effect is mostly due to the influence of VCs with high reputation. We tackle the unstudied issue of whether Wongsunwai (2013) results hold only comparatively (VC-backed firms manipulates earnings, but in smaller scale) or in absolute terms (they do not manipulate earnings at all). Therefore, we also analyze if VC-backed firms do not manage earnings around the IPO.

2.3. METHODOLOGY

In this study, we use three measures as proxy for of earnings management: 1) discretionary current accruals (non-justifiable changes on current accruals); discretionary total accruals (current accruals minus depreciation and amortization) and working capital accruals (current accruals plus change in taxes payable). These measures are based in Hochberg (2012); Teoh et

al. (1998a) and (1998b); Allen, Larson, and Sloan (2009) and Dechow et al. (2011). To estimate non-discretionary current accruals, we use two different econometric models: Modified Jones Model [Dechow et al. (1995), with adjustments suggested by Kothari et al. (2005)] and Modified Jones Model with ROA [Dechow et al. (1995), with adjustments suggested by Kothari et al. (2005)]. Subramanyan (1996) and Bartov et al. (2000) show that the cross-section applications of the Modified Jones Model present superior performance over the time series ones. In view of this, we use cross-sectional analysis to estimate non-discretionary accruals. The results reported in the study are based on a Modified Jones model. The same results were obtained using Modified Jones model with ROA. Table 2.1 describes each variable with more detailed definitions.

Table 2.1 - Definitions for principal variables

Discretionary Current Accruals	$[[\Delta \text{Current Assets (DATA 4)} - \Delta \text{Cash and Short-Term Investments (DATA 1)}] - [\Delta \text{Current Liabilities (DATA 5)} - \Delta \text{Debt in Current Liabilities (DATA 34)}]] / \text{Lagged Total Assets (DATA 6)}$
Discretionary Total Accruals	$[[\Delta \text{Current Assets (DATA 4)} - \Delta \text{Cash and Short-Term Investments (DATA 1)}] - [\Delta \text{Current Liabilities (DATA 5)} - \Delta \text{Debt in Current Liabilities (DATA 34)}] + \text{Depreciation and Amortization (DATA 14)}] / \text{Lagged Total Assets (DATA 6)}$
Working Capital Accruals	$[[\Delta \text{Current Assets (DATA 4)} - \Delta \text{Cash and Short-Term Investments (DATA 1)}] - [\Delta \text{Current Liabilities (DATA 5)} - \Delta \text{Debt in Current Liabilities (DATA 34)}] - \Delta \text{Taxes Payable (DATA 71)}] / \text{Average Total Assets (DATA 6)}$
Auditor	Dummy variable that takes value one when firm had their financial statements audited by one of the Big Four auditing companies, and zero otherwise
Underwriter	We use the Carter-Manaster index (updated for the period 2001-2010 by Ritter (2013)) of the member of the underwriting syndicate with the highest score
Size	Is the natural logarithm of book value of assets (DATA 5)
Growth	Is the geometric average sales growth during past three years (or available period if less) (DATA 12)
Leverage	Calculated as total liabilities (DATA 181) over total assets (DATA 5)
ROA	Is the geometric average return on assets between quarters t-3 and t-1, calculated as the ratio of net income (DATA 172) to total assets (DATA 5)
SEO	Dummy variable that takes value one if the firm (i) in the sequence conducted a seasoned equity offering (SEO), and the quarter (t) falls in the range considered with incentives for earnings manipulation concerning this new equity offering, and zero otherwise
fi	Industry dummies mapped to US 2-digit SIC codes when using common controls
gt	Time dummies per quarter

Variables Auditor and Underwriter control for the effect that key external monitors can have on constraining earnings management. The reputation of the external auditor could be harmed if it failed to identify or prevent accounting misstatements (Morsfield and Tan, 2006). The underwriters have the same incentives as the auditors to ensure the quality of financial statements since they can also suffer serious reputation damage if they are incapable of avoiding earnings manipulation.

Regarding the financial variables, larger companies have more complex financial statements, and, therefore, could exploit this feature to manage earnings. On the other hand, larger firms are also more likely to be closely followed by security analysts, which reduces the opportunities for earnings management (Hochberg, 2012). The same author also states that higher growth companies may be more likely to experience high discretionary accruals, especially if the decomposition model used contains some degree of imprecision. Companies highly leveraged have incentives to manipulate earnings upwards in order to avoid covenant default, but also faces greater monitoring from debt holders (Morsfield and Tan, 2006). Dechow et al. (1995) suggest that tests of earnings management may be incorrectly specified if discretionary accruals are correlated with firm performance. The variable ROA controls this potential bias. Finally, the inclusion of variable SEO seeks to control for the influence that a new equity offering could exercise on the level of earnings management. In the same way as in the IPO, firms have incentives to manipulate earnings when carrying out a SEO [Teoh (1998a), Rangan, (1998)].

2.3.1. PHASES OF THE IPO

As our purpose is to study the dynamics of earnings management in IPOs, we focus on four phases around the IPO date:

Pre-IPO period: comprises the four fiscal quarterly observations that are calculated from the five balance sheets that precede the last one before the IPO.

IPO period: comprises the two or three fiscal quarterly observations that starting with the fiscal quarter immediately preceding the IPO and ending on the fiscal quarter immediately preceding the lockup expiration date. It is important to mention that the lockup period is a contractual caveat referring to a period of time after a company has initially gone public, usually between 90 to 180 days. Then, we can not suppose that this period is symmetric for all firms. The

incentive to manipulate earnings is stronger in the quarter immediately before the IPO, because this is the quarter in which managers want the firm to be best valued (Rangan, 1998).

Lock-up period: composed of the four quarterly observations obtained from the five balance sheets immediately subsequent to the IPO. Insiders who wish to sell their shares after the lock-up period have incentives to support the stock price of the firm and, consequently, manage earnings in this period (Rangan, 1998).

Post-lock-up period: includes the four quarterly observations immediately subsequent to the lock-up period. In this phase, insiders no longer have incentives to manipulate earnings.

2.3.2. HYPOTHESES:

To test hypothesis that VC-backed firms present lower level of earnings management at the time of the IPO than non-VC-backed ones, we use panel regressions where the dependent variable is the level of EM for firm i at time t , $EM_{i,t}$ (measured by the discretionary current, total and working capital accruals for firm i at time t). The variable of interest is VC_i , a time unvarying dummy variable assuming value one when the observation comes from a firm with VC sponsorship. The model also includes a number of control variables that can influence the incentives for earnings manipulation:

$$EM_{i,t} = \beta_0 + \beta_1 VC_i + \beta_2 Auditor_i + \beta_3 Underwrite_i + \beta_4 Size_{i,t} + \beta_5 Growth_{i,t} + \beta_6 Leverage_{i,t} + \beta_7 ROA_{i,t} + \beta_8 SEO_{i,t} + g_t + f_i + \varepsilon_{i,t} \quad (1)$$

To test hypotheses that VC-backed firms present lower EM than non-VC-backed ones during the IPO and lock-up phases, which takes into account possible differences in the level of EM over time, we use the same basic equation of Model 1 with the addition of dummy variables for all the phases of the IPO and interactive terms of those dummy variables with variable VC_i :

$$EM_{i,t} = \beta_0 + \beta_1 PreIPO_{i,t} + \beta_2 IPO_{i,t} + \beta_3 Lockup_{i,t} + \beta_4 VC_i \times PreIPO_{i,t} + \beta_5 VC_i \times IPO_{i,t} + \beta_6 VC_i \times Lockup_{i,t} + \beta_7 VC_i \times PostLockup_{i,t} + \beta_8 Auditor_i + \beta_9 Underwriter_i + \beta_{10} Size_{i,t} + \beta_{11} Growth_{i,t} + \beta_{12} Leverage_{i,t} + \beta_{13} ROA_{i,t} + \beta_{14} SEO_{i,t} + g_t + f_i + \varepsilon_{i,t} \quad (2)$$

Finally, to test hypothesis that VC-backed firms do not manage earnings around the IPO, we use Model 3 below, but split the sample into venture backed and non-venture-backed firms. By doing so we are able identify whether the two groups are distinct and in which ways.

$$EM_{i,t} = \beta_0 + \beta_1 \text{PreIPO}_{i,t} + \beta_2 \text{IPO}_{i,t} + \beta_3 \text{Lockup}_{i,t} + \beta_4 \text{Auditor}_i + \beta_5 \text{Underwriter}_i + \beta_6 \text{Size}_{i,t} + \beta_7 \text{Growth}_{i,t} + \beta_8 \text{Leverage}_{i,t} + \beta_9 \text{ROA}_{i,t} + \beta_{10} \text{SEO}_{i,t} + g_t + f_i + \varepsilon_{i,t} \quad (3)$$

The regressions specified in Models 1-3 are estimated using pooled OLS with industry and time dummies and random effects. Fixed effects are used only in Models 2 and 3 for which the variables of interest vary along the time. We also employ the White (1980) procedure for robust standard errors that are clustered by firm.

In this study, we seek to deal with endogeneity and omitted variables problem. We use fixed effects models to provide a means for controlling for omitted variable bias when we analyze the dynamics of EM around the IPO. However, omitted variables bias is not the only problem when analyze the role of venture capital backing in hampering earnings management in IPOs. Conventional econometric techniques that ignore the endogenous choice problem yield substantially different (and incorrect) estimates from methods that explicitly recognize selectivity (LaLonde, 1986). It would be perfect if we would could to observe EM for a VC backed IPO and the EM that the same IPO would have it not received venture financing. In other words, if the provision of venture financing were random, we could simply compute differences between EM of VC backed and non-VC-backed IPOs. However, the decision of a firm to raise venture capital funds (and the decision of a venture capitalist to provide financing to a particular firm) may be endogenous. Firm characteristics may determine which firms are VC backed in the first place. Even if VC-backed had no effect on EM, the control for VC backed in regression models of EM would still make sense, because firms that receive venture capital funds are possibly those that were ex ante less likely to engage in EM (Hochberg, 2012). To account for this bias, we use matching methods that endogenize the receipt of venture financing as suggested by Lee and Wahal (2004).

2.4. DATA

We use financial statement data observations from COMPUSTAT from 1990 through 2009. We supplement data on IPO with information from the new issues database of Securities Data Corporation (SDC). We collect information on the number of venture capital firms with

investment in each IPO from Venture Economics database. The data on analyst coverage are from the I/B/E/S. For each IPO on SDC, we set the coverage in any given year equal to the number of I/B/E/S analysts. If no I/B/E/S value is available (i.e., the SDC cusip is not matched in the I/B/E/S database), we set the coverage to zero. We also obtain institutional holdings from the Thomson Financial Spectrum database. As usual, deleted financial and utilities firms and real-estate investment trusts, for presenting accounting practices quite distinct from the other companies. Therefore, our final sample consists of 3,816 IPOs, comprising 37,388 firm-quarter observations (Table 2.2 presents descriptive statistics). This sample decomposes into 1,617 venture-backed firms comprising 15,722 firm-quarter observations and 2,199 non-venture-backed firms comprising 21,666 firm-quarter observations (see Table 2.3).

Table 2.2 - Descriptive Statistics for the Sample of IPO firms - Financial Characteristics

* The t statistics refer to the test of the null hypothesis of no difference between the means of venture and non-venture-backed firms.

	All firms				VC Backed				NON VC Backed				t-Stat*
	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max	
VC Backed	0.423	0.494	0.000	1.000	1	0	1	1	0	0	0	0	
Underwriter	0.714	0.452	0.000	1.000	0.807	0.395	0.000	1.000	0.646	0.478	0.000	1.000	50.31
Top Auditor	0.376	0.484	0.000	1.000	0.405	0.491	0.000	1.000	0.355	0.478	0.000	1.000	30.31
SEO	0.039	0.193	0.000	1.000	0.038	0.191	0.000	1.000	0.039	0.195	0.000	1.000	32.78
ROA	0.974	0.091	0.584	1.084	0.944	0.110	0.584	1.084	0.996	0.066	0.584	1.084	52.51
Book Leverage	0.484	0.357	0.032	1.936	0.379	0.335	0.032	1.936	0.561	0.352	0.032	1.936	46.37
Sales Growth	0.612	0.505	-0.466	2.317	0.723	0.547	-0.466	2.317	0.530	0.454	-0.466	2.317	26.85
Total Assets (US\$ mi)	280.4	1102.4	0.099	24146.5	107.6	357.0	0.455	18207.1	407.2	1405.4	0.099	24146.5	24.28

In order to estimate non-discretionary accruals for quarter t we use the balance sheets of a control group of firms in the same quarter and two-digit sic code. This group is composed of all public firms excluding: 1) financial firms and real-state investment trusts; 2) firms that had conducted either an IPO or SEO and were in the IPO or lock-up periods; 3) firms for which balance sheets were not available in the specific quarter and 4) Utilities firms. We also performed all the estimations winsorizing at 5%. As the main results remained unchanged, we do not report them.

Table 2.3 - Sample Distribution
Panel A: Sample Distribution along the Phases of the IPO

This table presents the sample distribution along the phases around the IPO date, described in section phases of the IPO. The sample consists of 3,816 IPO firms from 1990 to 2009, comprising 37,388 firm-quarter observations.

Sample	All firms		VC-backed		Non-VC-backed	
	# firms	# obs.	# firms	# obs.	# firms	# obs.
All phases together	3,816	37,388	1,617	15,722	2,199	21,666
Pre-IPO	660	1,021	247	305	413	716
IPO	3,511	8,136	1,496	3,490	2,015	4,646
Lock-up	3,721	14,075	1,568	5,980	2,153	8,095
Post-lock-up	3,714	14,156	1,571	5,947	2,143	8,209

Panel B: Number of IPOs and VC - backed firms

	Ritter	Wongsunwai
IPO	5,650	1,226
VC-backed	2,215	613
Period	1990-2012	1990-2004

Table 2.4 reports correlation among the exogenous variables. In general, correlations are quite low, although almost all correlations are statistically significant at the 1% level. As expected, VC-backed IPOs are associated with highly reputed auditors and underwriters. Moreover, variables Auditor and Underwriter also have correlation indicating that firms that chooses highly reputed auditors also tend to choose highly reputed underwriters. Large firms tend to hire better underwriters, present higher ROA. Finally, firms that hire top auditors are less indebted.

Table 2.4 - Correlation Matrix for Independent Variables

	VC	Underwriter	Auditor	SEO	ROA	Leverage	Growth	Size
VC	1							
Underwriter	0.17***	1						
Auditor	0.05***	0.08***	1					
SEO	0.01	0.06***	0.02***	1				
ROA	-0.23***	0.07***	0.03***	0.01	1			
Leverage	-0.26***	0.01	-0.04***	-	0.03***	1		
Growth	0.11***	0.02***	0.01	0.06***	-0.05***	-0.09***	1	
Size	-0.14***	0.45***	0.11***	0.1***	0.26***	0.11***	0.01	1

*** denote significance at the 1% levels

Table 2.5 presents descriptive statistics of the level of earnings management in IPOs based on three different proxies: discretionary current accruals; discretionary total accruals and working capital accruals estimated by Modified Jones Model. Panel (A) shows the pooled level of EM

without breaking the sample into the phases of the IPO. First of all, one can observe that the mean level of earnings management do not vary too much across the three models.

For the full sample (Table 2.5, Panel A), the mean level of EM varies from 4.37% to 5.07% depending on the model used. When we break the sample into venture-backed and non-venture-backed firms, a small, but statistically significant difference emerges: earnings management for venture-backed firms varies from 4.02% to 4.69%, while for non-venture-backed firms the mean is ranging from 4.64% to 5.37%. This difference is statistically significant at the 1% level, regardless of the model used to calculate accruals. This result is consistent with the hypothesis that the presence of venture capitalists hampers the practice of earnings manipulation in IPOs.

Panel B of Table 2.5 presents the data divided into the four phases of the IPO process. On average, discretionary current accruals are positive and high in the IPO period. Mean comparisons also suggest that for venture-backed firms the level of earnings management change across the IPO phases. Moreover, the mean level of EM in the IPO period are lower for venture-backed companies, ranging from 5.13% to 6.90%, while for non-venture-backed firms that figure ranges from 5.72% to 7.18%. The difference between the means of the two groups is small, between -0.14% and -0.55%, but always statistically significant at the 1% level.

Table 2.5 – Descriptive Statistics**(Panel A)****Descriptive Statistics and Mean Tests for the Level of Earnings Management in Venture and Non-venture-backed IPOs**

This table presents descriptive statistics and mean tests for the level of earnings management of a sample of 3,816 IPO firms from 1990 to 2009, totalizing 37,388 firm-quarter observations. We use discretionary current accruals, discretionary total accruals and working capital accruals (in % of lagged total assets), proxy for the level of earnings management, which are calculated using the Modified Jones model. The t statistics refer to the test of the null hypothesis of no difference between the mean EM in venture and non-venture-backed companies. Panel A presents the data for all periods together and Panel B presents the data separated into the phases.

Variables	Full Sample			VC-Subsample			Non-VC-Subsample			Difference
	N	Mean	Std. Dev.	N	Mean	Std. Dev.	N	Mean	Std. Dev.	
Current Discretionary Accruals	37388	5.07%	6.75%	15722	4.64%	6.39%	21666	5.37%	6.98%	-0.59%***
Total Discretionary Accruals	33455	5.02%	6.53%	14058	4.69%	6.29%	19397	5.25%	6.69%	-0.40%***
Working Capital Accruals	34205	4.37%	5.42%	14638	4.02%	5.09%	19567	4.64%	5.65%	-0.56%***

(Panel B)**Descriptive Statistics and Mean Tests for the Level of Earnings Management in Venture and Non-venture-backed IPOs by Phases of the IPO**

Variables	Sample	Pre-IPO		IPO		Lock-up		Post-lock-up	
		N	Mean	N	Mean	N	Mean	N	Mean
Current Discretionary Accruals	All firms	1021	6.39%	8136	7.06%	14075	4.59%	14156	4.30%
	VC-Backed	305	7.64%	3490	6.90%	5980	3.94%	5947	3.87%
	Non-VC-Backed	716	5.85%	4646	7.18%	8095	5.06%	8209	4.61%
	Difference		1.79%***		-0.80%***		-1.12%***		-0.74%***
Total Discretionary Accruals	All firms	932	6.03%	7212	6.77%	12606	4.57%	12705	4.39%
	VC-Backed	279	7.64%	3086	6.69%	5357	4.05%	5336	4.02%
	Non-VC-Backed	653	5.35%	4126	6.83%	7249	4.95%	7369	4.65%
	Difference		2.29%***		-0.14%***		-0.90%***		-0.63%***
Working Capital Accruals	All firms	933	5.46%	7571	5.46%	12900	4.08%	12801	3.94%
	VC-Backed	286	6.70%	3310	5.13%	5578	3.59%	5464	3.64%
	Non-VC-Backed	647	4.91%	4261	5.72%	7322	4.45%	7337	4.17%
	Difference		1.79%***		-0.59%***		-0.86%***		-0.53%***

2.5. EMPIRICAL RESULTS

Table 2.6 presents estimations of Model 1. Similar to what was found in the univariate analysis, we find evidence that VC-backed uniformly hampers EM. The coefficient on the VC dummy variable varies from -0.004 to -0.008. In another words, our estimates indicate that the difference in the level of EM between VC-backed and non-VC-backed firms is between 0.4%

and 0.8%. They are statistically significant at 1%. Thus, considering all the phases of the IPO, there is evidence that VC-backed firms presents levels of EM lower than non-VC-backed ones. It should be noted that control variables present statistical significance and sign consistent with the expected. The coefficient on the leverage variable is statistically significant at 1% and varies from 0.031 to 0.038. We also find evidence that larger firms present lower level of EM. The coefficient on the size variable is statistically significant at 1% and varies from -0.009 to -0.010. The coefficient on the growth variable is statistically significant at 1% and varies from 0.009 to 0.016. This result shows that higher growth companies may be more likely to experience high EM. We also find evidence that firms with higher performance present lower levels of EM. Although the coefficient on the ROA variable is not statistically significant for working capital accruals model, it is statistically significant at 1% and varies from -0.015 to -0.049 for current and total discretionary accruals.

We expected a negative sign for variable auditor, but we do not find evidences statistically significant. The underwriters have the same incentives as the auditors to ensure the quality of financial statements since they can also suffer serious reputation damage if they are incapable of avoiding earnings manipulation. Thus, we also expected a negative coefficient for variable Underwriter, but we also do not find evidences statistically significant for this variable. Finally, the inclusion of variable SEO seeks to control for the influence that a new equity offering could exercise on the level of EM. The coefficient on the SEO variable is statistically significant at 1% and varies from 0.006 to 0.014. Finally the F-test for the joint significance of all the explanatory variables for any model is statistically significant at the 1% level. We results are consistent with Morsfield and Tan (2006); Hochberg (2012); Rangan (1998) and Wongsunwai (2013).

Table 2.6 - VC-Backed and Earnings Management

Panel regressions analysis. The dependent variable is earnings management for firm i in the quarter t as percentage of the total assets. It was calculated using three different models: discretionary current accruals; discretionary total accruals and working capital accruals estimated by Modified Jones. The sample consists of 37,388 firm-quarter observations from 3,816 IPOs from 1990 to 2009. T (or z) statistics heteroskedastic-consistent by White (1980) are in brackets.

Variables	Current Accruals		Total Accruals		Working Capital Accruals	
	Pooled OLS (1)	Random Effects (2)	Pooled OLS (3)	Random Effects (4)	Pooled OLS (5)	Random Effects (6)
VC	-0.007*** (-6.03)	-0.008*** (-6.71)	-0.006*** (-5.02)	-0.006*** (-5.35)	-0.004*** (-4.16)	-0.005*** (-4.76)
Underwriter	-0.002 (-1.24)	-0.000 (-0.20)	-0.002* (-1.77)	-0.002 (-1.10)	0.000 (0.21)	0.002* (1.69)
Auditor	0.001 (1.11)	0.001 (1.20)	0.001 (1.08)	0.001 (1.15)	0.001 (0.66)	0.001 (0.95)
ROA	-0.039*** (-5.33)	-0.036*** (-4.63)	-0.049*** (-6.15)	-0.041*** (-4.94)	-0.015** (-2.50)	-0.010 (-1.56)
Leverage	0.031*** (14.45)	0.034*** (14.66)	0.030*** (13.32)	0.033*** (13.80)	0.034*** (16.74)	0.038*** (18.36)
Growth	0.016*** (14.95)	0.014*** (13.51)	0.015*** (13.65)	0.013*** (12.01)	0.010*** (12.08)	0.009*** (11.07)
Size	-0.010*** (-20.57)	-0.010*** (-19.73)	-0.009*** (-17.25)	-0.009*** (-15.63)	-0.010*** (-22.09)	-0.010*** (-23.14)
SEO	0.014*** (6.15)	0.014*** (6.26)	0.012*** (5.43)	0.012*** (5.65)	0.006*** (3.81)	0.006*** (3.85)
Quarter Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes
Firm Clusters	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
# of Firms	3,816	3,816	3,614	3,614	3,708	3,708
Observations	37,146	37,146	33,276	33,276	33,990	33,990
Adjusted R2	0.1062	0.1058	0.1076	0.1013	0.1266	0.1158
F-Test (Pooled OLS) and Chi2-test (Random Effects) :						
p-value:	0.000	0.000	0.000	0.000	0.000	0.000
Breusch-Pagan LM Test for Random Effects:						
p-value:	0.000		0.000		0.000	

*, ** and *** denote significance at the 10%, 5% and 1% levels (for two-tailed tests), respectively.

Table 2.7 presents estimations for Model 2, which includes the phases of the IPO as explanatory variables to capture in each phase VC-backed hampers EM. The dummy for the Post-lock-up phase is the omitted one. We note that regardless of how we measure EM, Hausman test presents p-values at 0.000. This indicates that fixed effect estimates are consistent. The dynamics captured in Table 2.7 is similar to that reported in the univariate analysis (Table 2.5, Panel B). The coefficients on the dummy variables Pre-IPO, IPO and Lock-up are almost all positive and statistically significant, except for fixed effect that the coefficients on the Lock-up is negative and statistically significant. This means that, during these phases, the level of EM is significantly higher than in the Post-lock-up one. Different to Wongsunwai (2013) that find

evidence that the interaction of VC and IPO is consistently negative and statistically significant at the 5% or 10% levels, only in the IPO phase. We find a quite interesting situation with respect to the interactive terms of the dummies for phases and VC. The coefficients on the interactions of VC and dummies for IPO, Lock-up or Post-Lock-up phases are negative and statistically significant for Pooled OLS, Random and Fixed Effects at the 1% and 10% levels. Thus, we can state that VC-backed firms present lower levels of EM in these phases. This difference may be related with the sample size and models used by Wongsunwai (2013). One should note that our result is robust with respect to the insertion of several controls, measures of EM and statistical methods. We use Pooled OLS with industry and time dummies, Random and Fixed Effects Models controlling per quarter and industry fixed effects. These results show that we have evidence that VC-backed firms presents levels of EM lower than non-VC-backed ones. In addition, we have evidence that VC-backed firms present lower EM than non-VC-backed ones during different IPO phases.

Table 2.7 - VC-backed and Earnings Management by Phases of the IPO

Panel regressions analysis of EM by phases of the IPO. The dependent variable is EM for firm i in the quarter t as percentage of the total assets. It was calculated using three different models: discretionary current accruals; discretionary total accruals and working capital accruals estimated by Modified Jones and Modified Jones with ROA. The sample consists of 37,388 firm-quarter observations from 3,816 IPOs from 1990 to 2012. T (or z) statistics heteroskedastic-consistent by White (1980) are in brackets. The Post-lock-up phase was omitted to avoid perfect colinearity.

Variables	Current Accruals			Total Accruals			Working Capital Accruals		
	Pooled OLS (1)	Random Effects (2)	Fixed Effects (3)	Pooled OLS (4)	Random Effects (5)	Fixed Effects (6)	Pooled OLS (7)	Random Effects (8)	Fixed Effects (9)
Pre-IPO	0.013*** (4.11)	0.013*** (4.71)	0.005 (1.57)	0.007** (2.32)	0.008*** (2.90)	-0.001 (-0.40)	0.003 (1.15)	0.002 (0.84)	-0.008*** (-2.79)
IPO	0.020*** (12.53)	0.021*** (13.56)	0.014*** (6.91)	0.017*** (10.15)	0.018*** (11.36)	0.009*** (4.59)	0.010*** (7.39)	0.010*** (8.02)	0.002 (1.26)
Lock-up	0.003*** (2.93)	0.004*** (3.87)	-0.001 (-0.58)	0.001 (1.26)	0.002** (2.32)	-0.003** (-2.31)	0.002* (1.91)	0.002*** (2.83)	-0.002** (-2.06)
VC x Pre-IPO	0.004 (0.59)	0.006 (1.03)	0.008 (1.12)	0.009 (1.41)	-0.003 (-1.45)	0.005 (1.26)	0.007 (1.37)	0.009 (1.57)	0.004 (1.43)
VC x IPO	-0.005** (-2.16)	-0.004* (-1.83)	-0.012* (1.93)	-0.004* (-1.80)	-0.012* (1.89)	-0.017*** (2.67)	-0.005*** (-2.58)	-0.004** (-2.37)	-0.014*** (2.63)
VC x Lock-up	-0.009*** (-6.75)	-0.010*** (-7.66)	-0.007*** (-3.01)	-0.008*** (-5.59)	-0.009*** (-6.17)	-0.006*** (-2.68)	-0.005*** (-4.54)	-0.006*** (-5.22)	-0.002 (-1.25)
VC x Post-Lock-up	-0.006*** (-4.77)	-0.007*** (-5.87)	-0.004* (-1.75)	-0.006*** (-4.31)	-0.007*** (-4.87)	-0.004* (-1.84)	-0.004*** (-3.03)	-0.004*** (-3.79)	-0.001 (-0.45)
Underwriter	-0.003** (-2.49)	-0.004*** (-2.73)		-0.004*** (-2.85)	-0.005*** (-3.17)		-0.000 (-0.22)	0.000 (0.32)	
Auditor	0.001 (1.06)	0.001 (1.26)		0.001 (1.16)	0.001 (1.25)		0.001 (0.60)	0.001 (0.96)	
ROA	-0.045*** (-5.92)	-0.039*** (-5.01)	-0.045*** (-4.03)	-0.050*** (-6.29)	-0.042*** (-5.21)	-0.037*** (-3.27)	-0.018*** (-2.84)	-0.011* (-1.76)	-0.015* (-1.70)
Leverage	0.028*** (12.45)	0.030*** (12.51)	0.036*** (9.51)	0.028*** (11.64)	0.029*** (11.85)	0.038*** (9.76)	0.033*** (15.57)	0.036*** (17.15)	0.040*** (13.13)
Growth	0.013*** (12.24)	0.012*** (11.17)	0.009*** (8.00)	0.012*** (11.28)	0.011*** (10.11)	0.008*** (6.81)	0.009*** (10.06)	0.008*** (9.59)	0.006*** (7.33)
Size	-0.009*** (-18.27)	-0.008*** (-15.79)	-0.004*** (-2.61)	-0.008*** (-15.40)	-0.007*** (-12.46)	-0.001 (-0.78)	-0.009*** (-20.91)	-0.010*** (-20.81)	-0.010*** (-9.07)
SEO	0.011*** (4.90)	0.011*** (5.26)	0.011*** (5.12)	0.010*** (4.40)	0.010*** (4.77)	0.010*** (4.73)	0.005*** (3.04)	0.005*** (3.12)	0.005*** (3.10)
Quarter Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Clusters	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# of Firms	3,816	3,816	3,816	3,614	3,614	3,614	3,708	3,708	3,708
Observations	37,146	37,146	37,146	33,276	33,276	33,276	33,990	33,990	33,990
Adjusted R-squared	0.1347	0.1025	0.0624	0.1260	0.0957	0.0523	0.1446	0.1032	0.0623
F-Test (Pooled OLS and Fixed Effects) and Chi2-test (Random Effects) :									
p-value:	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Breusch-Pagan LM Test for Random Effects:									
p-value:	0.000			0.000			0.000		
Hausman Test:									
p-value:	0.000			0.000			0.000		

*, ** and *** denote significance at the 10%, 5% and 1% levels (for two-tailed tests), respectively.

In order to test whether VC-backed firms manage earnings at all, we estimate Model 3 twice, one time restricting our sample to VC-backed firms and another time to non-VC backed ones

(Table 2.8 and Table 2.9). Initially we focus on the VC-backed sample (Table 2.8). We find that there is a relative evidence of EM between IPO phases. The Pre IPO and IPO phases are those for which there is a strong evidence of EM. This evidence is statistically significance at 1% and 5% regardless of the model estimated. To gauge the importance of EM we run regressions omitting the dummies for the phase of the Post-lock-up period. The change in R-squared is very small compare to the full model: the highest difference is 0.0231 (from 0.0623 to 0.0854 in fixed effect estimation using working capital discretionary accruals model) and the lowest is 0.0083 (from 0.1260 to 0.1177 in the Pooled OLS estimation using current discretionary accruals model). Therefore, there is strong evidence of EM for VC-backed firms between the IPO phases, being more intense in the Pre-IPO and IPO periods. These results are consistent with Rangan (1998).

Table 2.8 - Earnings Management Regressions in VC-Backed Sub-Sample

Panel regressions analysis for the level of earnings management (EM) by phases of the IPO. The dependent variable is EM for firm *i* in the quarter *t* as percentage of the total assets. It was calculated using three different models: discretionary current accruals; discretionary total accruals and working capital accruals estimated by Modified Jones and Modified Jones with ROA. *T* (or *z*) statistics heteroskedastic-consistent by White (1980) are in brackets. The VC-sponsored subsample consists of 15,722 firm-quarter observations from 1,617 VC-Sponsored IPOs.

Variables	Current Accruals			Total Accruals			Working Capital Accruals		
	Pooled OLS	Random Effects	Fixed Effects	Pooled OLS	Random Effects	Fixed Effects	Pooled OLS	Random Effects	Fixed Effects
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Pre-IPO	0.023*** (3.86)	0.027*** (4.74)	0.019*** (3.13)	0.022*** (3.68)	0.026*** (4.37)	0.018*** (2.77)	0.013** (2.55)	0.014*** (2.95)	0.008 (1.47)
IPO	0.023*** (11.82)	0.024*** (13.01)	0.016*** (6.47)	0.020*** (10.18)	0.021*** (11.17)	0.013*** (4.70)	0.009*** (5.99)	0.010*** (6.89)	0.005** (2.43)
Lock-up	0.001 (0.66)	0.002* (1.66)	-0.003** (-2.13)	0.000 (0.14)	0.001 (0.89)	-0.004*** (-2.65)	0.001 (0.56)	0.001 (1.45)	-0.002 (-1.23)
Underwriter	-0.004* (-1.84)	-0.005** (-2.12)		-0.004** (-2.06)	-0.005** (-2.33)		-0.001 (-0.34)	-0.000 (-0.04)	
Auditor	0.000 (0.28)	0.001 (0.48)		0.000 (0.31)	0.001 (0.35)		0.001 (0.46)	0.000 (0.21)	
ROA	-0.049*** (-5.14)	-0.045*** (-4.76)	-0.055*** (-3.97)	-0.052*** (-5.40)	-0.045*** (-4.74)	-0.039*** (-2.80)	-0.016** (-2.00)	-0.009 (-1.14)	-0.016 (-1.34)
Leverage	0.037*** (8.81)	0.038*** (9.21)	0.044*** (6.92)	0.037*** (8.65)	0.040*** (9.26)	0.051*** (7.65)	0.044*** (11.56)	0.047*** (12.68)	0.049*** (9.42)
Growth	0.010*** (6.73)	0.010*** (6.67)	0.008*** (4.99)	0.010*** (6.49)	0.009*** (6.29)	0.007*** (4.36)	0.006*** (5.03)	0.006*** (5.27)	0.005*** (4.20)
Size	-0.006*** (-7.36)	-0.005*** (-5.52)	-0.001 (-0.67)	-0.005*** (-5.27)	-0.004*** (-3.70)	0.002 (0.77)	-0.008*** (-10.78)	-0.008*** (-10.66)	-0.009*** (-5.48)
SEO	0.016*** (4.16)	0.016*** (4.27)	0.015*** (4.04)	0.015*** (3.76)	0.014*** (3.93)	0.014*** (3.93)	0.006** (2.38)	0.006** (2.29)	0.005** (2.12)
Quarter Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Clusters	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# of Firms	1,617	1,617	1,617	1,530	1,530	1,530	1,582	1,582	1,582
Observations	15,667	15,667	15,667	14,015	14,015	14,015	14,587	14,587	14,587
Adjusted R²	0.1252	0.1157	0.0885	0.1177	0.1025	0.0758	0.1345	0.1153	0.0854
F-Test (Pooled OLS and Fixed Effects) and Chi2-test (Random Effects) :									
p-value:	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Breusch-Pagan LM Test for Random Effects:									
p-value:	0.000			0.000			0.000		
Hausman Test:									
p-value:	0.000			0.000			0.000		

*, ** and *** denote significance at the 10%, 5% and 1% levels (for two-tailed tests), respectively.

By performing the same analysis on the non-VC-backed sample (Table 2.9), one can see that similar to VC backed sample the F and Chi-square tests for the joint significance of the variables

are always significant at the 1% regardless of the model estimated. Furthermore, when we rerun the regressions omitting the phase of the Post-lock-up, the difference in R-squared is also similar compared to the full model: the highest difference is 0.0313 (from 0.1032 to 0.1345 in the random effects estimation using working capital accruals model) and the lowest is 0.0063 (from 0.1446 to 0.1509 in the Pooled OLS estimation using current discretionary accruals model). We also find strong evidence of EM for non-VC-backed firms between the IPO phases. For both, VC-backed and non-VC-backed subsamples, the EM is present in different phases around the IPO. Finally, the results show the importance of the firms' heterogeneity to explain EM between subsamples. The F-test for the joint significance of the variables representing firms' characteristic on the VC-backed and non-VC-baked samples is always significant at the 1% level. Therefore, for both subsample, firms' characteristics seem to determine EM. In terms of firms characteristics we can see that there is a positive and statistically significant relationship between sales growth and leverage with EM. On the other hand, firm size and ROA are negatively associated with EM, statistically significant at 1% and 5%. These results are presents for both subsample and they are robust across different methodologies.

Table 2.9 - Earnings Management Regressions in Non-VC-Backed Sub-Sample

Panel regressions analysis for the level of earnings management (EM) by phases of the IPO. The dependent variable is EM for firm i in the quarter t as percentage of the total assets. It was calculated using three different models: discretionary current accruals; discretionary total accruals and working capital accruals estimated by Modified Jones and Modified Jones with ROA. T (or z) statistics heteroskedastic-consistent by White (1980) are in brackets. The Non-VC-Sponsored subsample consists of 21,666 firm-quarter observations from 2,199 Non-VC-Sponsored IPOs.

Variables	Current Accruals			Total Accruals			Working Capital Accruals		
	Pooled OLS	Random Effects	Fixed Effects	Pooled OLS	Random Effects	Fixed Effects	Pooled OLS	Random Effects	Fixed Effects
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Pre-IPO	0.014*** (4.61)	0.014*** (5.01)	0.007* (1.93)	0.009*** (3.06)	0.010*** (3.39)	0.001 (0.20)	0.005* (1.93)	0.003 (1.37)	0.008** (2.56)
IPO	0.020*** (11.90)	0.021*** (13.05)	0.015*** (6.31)	0.017*** (9.71)	0.018*** (11.04)	0.010*** (4.33)	0.010*** (7.15)	0.010*** (7.67)	0.001 (0.45)
Lock-up	0.003** (2.52)	0.003*** (3.31)	-0.001 (-0.39)	0.001 (1.08)	0.002** (1.97)	-0.003 (-1.35)	0.001 (1.53)	0.002** (2.16)	-0.003 (-1.42)
Underwriter	-0.002 (-1.04)	-0.002 (-1.00)		-0.002 (-1.25)	-0.003 (-1.27)		0.001 (0.34)	0.002 (1.06)	
Auditor	0.002 (1.10)	0.002 (1.60)		0.002 (1.27)	0.002* (1.65)		0.000 (0.24)	0.002 (1.26)	
ROA	-0.046*** (-3.74)	-0.034*** (-2.66)	-0.029 (-1.59)	-0.056*** (-4.12)	-0.043*** (-3.06)	-0.033* (-1.73)	-0.024** (-2.31)	-0.015 (-1.45)	-0.013 (-0.99)
Leverage	0.024*** (8.89)	0.025*** (8.81)	0.031*** (6.85)	0.023*** (7.87)	0.024*** (7.82)	0.031*** (6.55)	0.027*** (10.53)	0.030*** (11.64)	0.034*** (9.30)
Growth	0.015*** (9.63)	0.013*** (8.41)	0.010*** (6.01)	0.013*** (8.41)	0.011*** (7.32)	0.008*** (4.98)	0.011*** (8.55)	0.009*** (7.62)	0.008*** (5.81)
Size	-0.010*** (-15.71)	-0.009*** (-14.33)	-0.005** (-2.35)	-0.009*** (-13.61)	-0.008*** (-11.77)	-0.002 (-1.09)	-0.009*** (-16.43)	-0.010*** (-16.60)	-0.010*** (-6.62)
SEO	0.007** (2.56)	0.008*** (3.22)	0.008*** (3.21)	0.006** (2.25)	0.008*** (2.86)	0.007*** (2.84)	0.004* (1.85)	0.004** (2.19)	0.005** (2.28)
Quarter Fixed Effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Clusters	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
# of Firms	2,179	2,179	2,179	2,079	2,079	2,079	2,126	2,126	2,126
Observations	21,479	21,479	21,479	19,261	19,261	19,261	19,403	19,403	19,403
Adjusted R²	0.1417	0.1129	0.0480	0.1361	0.1148	0.0391	0.1509	0.1345	0.0486
F-Test (Pooled OLS and Fixed Effects) and Chi2-test (Random Effects) :									
p-value:	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Breusch-Pagan LM Test for Random Effects:									
p-value:		0.000			0.000			0.000	
Hausman Test:									
p-value:		0.000			0.000			0.000	

*, ** and *** denote significance at the 10%, 5% and 1% levels (for two-tailed tests), respectively.

Table 2.10 presents the results for the difference in EM between VC backed and non-VC backed IPOs using matching methods that endogenize the receipt of venture financing as suggested by

Lee and Wahal (2004). Each VC-backed IPO is matched with one or more non-VC-backed IPOs using the highest propensity score. We find again evidence that considering all the phases of the IPO there is evidence that VC-backed firms presents levels of EM lower than non-VC-backed ones. The coefficient on the VC dummy variable varies from -0.006 to -0.008. They are statistically significant at 1% and 5%. Our estimates also indicate that the difference in the level of EM between VC-backed and non-VC backed firms at the IPO phase is between -0.005 and -0.007. We also have evidences that VC-backed firms present lower levels of EM in other phases like: Lock-up and Post-lock-up.

Table 2.10 - Univariate analysis for the level of Earnings Management by Propensity Score Matching

For each VC backed IPO, a matched with one or many non-VC backed IPOs is computed using the two-digit SIC code dummies, calendar year dummies, headquarter state dummies, and underwriter ranks as instrumental variables in each matching approach. Panel B and C shows similar results using the two-digit SIC code dummies, calendar year dummies and headquarter state dummies, and roa lag for Top Underwriter and Big Four backed IPO, respectively.

VC backed IPO			
	Current Accruals	Total Accruals	Working Capital Accruals
Full Sample	-0.008*** (10.47)	-0.006*** (7.83)	-0.007*** (10.37)
Earnings Management by phases of the IPO			
Pre_IPO	0.018*** (2.84)	0.024*** (3.69)	0.017*** (3.21)
IPO	-0.005** (2.14)	-0.003** (2.25)	-0.007*** (4.31)
Lock-up	-0.012*** (11.08)	-0.010*** (8.68)	-0.009*** (9.68)
Post – Luck - up	-0.007*** (7.25)	-0.006*** (5.85)	-0.005*** (5.48)

2.6. CONCLUSION

Earnings management is related with a wide variety of actions by management that affect an entity's earnings with any intention other than to represent the reality intrinsic to the business. Previous studies show evidence that firms manage their earnings in the process of going public. Some studies find that IPO firms' earnings management is associated with the quality of auditor and underwriter, existence of an audit committee, leverage, growth opportunities and firm size. Some others have been dedicated to the role played by venture capitalists in terms of hampering earnings management at the time of the IPO. For using annual data, these studies do not unveil the dynamics of earnings management, i.e., at what moment they are inflated and subsequently deflated. Moreover, the lack of an explicit dynamics of earnings management limits the

understanding of the role played by venture capitalists in their portfolio firms. At what moment is there a difference between venture and non-venture-backed firms in terms of earnings management? Is the difference only relative or venture-backed firms do not manipulate earnings at all?

We investigated the dynamics of earnings management in IPOs and the role of venture capitalists in hampering such practice in the US. We analyzed the dynamics of EM around the IPO to investigate differences in EMs between VC and non-VC backed IPO. We also sought to deal with endogeneity and omitted variables problem. Finally, we examined the role of top underwriter and big four audits in hampering earnings management in IPOs.

According to the incentives that managers have to inflate earnings, we define four two-quarter periods: pre-IPO, IPO, lock-up and post-lock-up periods. We estimate earnings management for each of the four phases. Through regression analysis, we control for factors that could influence the estimated value of earnings management, such as: size, leverage, sales growth, ROA, SEO, Auditor and Underwriter. With this procedure, we determine when earnings are inflated and when reversion begins. By making explicit the dynamics of earnings management we can also answer 1) whether venture-backed IPOs present less earnings management than non-venture-backed ones; 2) at which phase of the IPO process this happens; and 3) whether venture-backed IPOs present lower earnings management only comparatively to non-venture-backed ones, or do not present earnings management at all.

Our results indicate that earning inflation occurs in the Pre-IPO and IPO periods. We do not confirm the result of Wongsunwai (2013) that VC Backed IPOs present significantly less EM only in the IPO period. We show that VC backed uniformly reduces EM around the IPO and Lock-up periods. Our contribution is to show that in terms of EM VC backed and non-VC backed firms behave in different fashions. We note that if one splits the sample, both groups manage earnings. VC-backed and non-VC-backed subsamples present EM more intensively in different phases around the IPO. Finally, we also observe that top underwriter backed engage in less EM in VC-backed subsample.

3. THE LONG-RUN EFFECT OF PUBLIC OFFERING AGENTS ON PUBLIC COMPANIES VENTURE CAPITALISTS, UNDERWRITERS AND AUDITORS CERTIFICATION IN IPOS

3.1. INTRODUCTION

In the process of taking companies public, underwriters, auditors, and venture capitalists are recurrent actors. Among other things, they price the issue, conduct and supervise the process of shares distribution, and certify both the quality of the accounting information and of the issue. Due to the importance of these activities, the participation of top underwriters, big-N auditors and venture capitalists should be beneficial to the issuing company. In spite of this, the overall role played by these agents has been little studied.

The function of venture capitalist as certifiers has already been addressed (most notably by Megginson and Weiss, 1991; Barry et al., 1990; and Brav and Gompers, 1997). Venture capital's market recognition have been justified by its importance on the development of firm's governance and operational practices, accelerating the professionalization of the firms it sponsors (Barry et al. 1990, Gompers, 1995; Lerner 1995, Hellman and Puri, 2002; Chemmanur et al., 2011; and Puri and Zarutskie, 2012). The literature has not addressed whether venture capitalists play any active role in the offering process (generation of demand, price setting, stock allocation, etc.). In principle, we should expect that in the IPO process VCs play a role similar to that of issuing firm insiders. However, the fact that VCs are repeated players in IPOs, along with their duties towards limited partners, may fundamentally change their goals and role during the process.

Underwriters' certification has already been studied (most notably by Beatty and Ritter, 1986; Carter and Manaster, 1990; and Fernando et al., 2005). Underwriters conduct the offering but do not get involved in the firm's operations. Their actions influence directly the conditions under which stocks trade and the way stocks are allocated. Therefore, the participation of reputable underwriter can be felt both through the quality of the tasks they perform and through the certification of the issuer's non-readily verifiable characteristics.

Finally, auditors neither take part in the firms' operations nor in the conduction of the offering. Their role is exclusively related to certification. Given that the fees of a Big-N auditor are considerably higher than those of less reputable ones, one should suppose that their participation is valuable. Nonetheless, little is known about auditors' contribution to the IPO process.

This chapter focuses on the roles played by venture capitalist, underwriters, and auditors on the going public process and their long-run effects. We take our motivations from the determinants of underpricing (Table 3.2). We observe, that 1) the presence of a top underwriter or a VC-sponsorship or a Big-N auditor seem to be associated to higher underpricing; 2) VC-sponsored IPOs can be more underpriced if underwritten by a top underwriters or Big-N auditor. These facts raise some questions: 1) If it is not underpricing reduction, what is the true value added by a VC, Big-N auditor or by a top underwriter? 2) Do investors in fact take these agents as a good sign by accepting higher underpricing? Are there other evidences pointing in this same direction? 3) Why is the large majority of VC-sponsored IPOs underwritten by top underwriters or by Big-N auditor if this occasion higher underpricing? Almost equivalently, what is the value of a top underwriter or Big-N auditor that is not associated with their pricing abilities?

These questions indicate that the success of the IPO has other dimensions that can be as important as underpricing. For example: 1) firms may go public to increase their acquisition value (Zingales, 1995). In this case it can be optimal to exchange underpricing for high trading volume, analyst coverage, ownership dispersion and other market conditions that would both attract acquires and increase acquisition price. On the other hand, those firms would not be willing to pay for benefits that would accrue only in the long run; 2) Firms may also go public to finance acquisitions (Schultz and Zaman, 2001). In this case, they would be much concerned with conditions that would facilitate subsequent SEOs and the use of their stocks as payment for acquisitions (e.g., liquidity and good disclosure to reduce of asymmetrical information); 3) Generally, venture capitalist distribute shares to their limited partners as soon as the lock-up period ends. Furthermore, the general partners typically also relinquish control via open market sales, rather than selling a strategic block (Ritter and Welch 2002). What would be the consequences on venture capitalists reputation among limited partners if stocks were illiquid? For the management of venture sponsored firms the IPO represents their chance to regain control over their enterprises (Black and Gilson, 1998). However, the management of VC-sponsored firms generally is left with small ownership. Consequently, the possibility for their maintaining control in the long run will depend on characteristics unfavorable to a takeover such as shares dispersion and stockholders fidelity.¹ If VC-sponsored firms were frequent targets for takeover, venture capitalists could lose reputation among entrepreneurs and senior managers, harming their deal flow. VC-sponsored firms are also renowned for their use of stock

¹ Brennan and Franks (1997) find that when shares are placed more widely rather than placed with just a few powerful large shareholders, the entrepreneur is less easy to oust from the company.

options to compensate key employees. It may take long before their employees get vested. If so, all the key employees would be concerned with the conditions under which stocks trade in the long run. Therefore, both venture capitalists and the management of their ventures have good reasons to exchange underpricing for liquidity, ownership dispersion, etc. Employees in VC-sponsored firms have their portfolio heavily loaded in stocks of the company. The need for diversification is another reason to seek liquidity. Finally, if investors are aware of such need for liquidity and ownership dispersion, VC-sponsorship becomes a certification for those characteristics that would naturally boost the demand for VC-sponsored IPOs.

This chapter builds on the effects of the participation of venture capitalists, top underwriters and big-n auditors on IPOs outcomes and their relation to IPO's objectives. We show that 1) the IPO have purposes that can make underpricing a secondary issue and also determine the choice of underwriters and auditors; 2) the choice of auditors and underwriters are related to both the firms' qualities and their strategies; and 3) venture capital sponsorship has an information content that is not fully embodied by the choice of underwriter and the auditor. Furthermore, the market effects of vc-sponsorship remains for up to a decade after the IPO; and 4) the effects of a Big-N auditor is felt mostly in the long run.

There are other features of the IPO that the firm may care about. For example, a higher stock liquidity. This could be obtained through several channels such as a higher dispersion of the offer across institutional investors, a higher number of analysts following the firm, and a lower bid-ask spread. In this study, we focus on these other IPO dimensions. We show that the characteristics of the underwriter, auditor, and VC have an impact on the firms' characteristics and market performance. Furthermore, these effects are last for almost a decade. Firms that have a top underwriter and a Big N-auditor at the time of the IPO have a higher marketability for the next 8 years, represented by a higher number of analysts following, a large dispersion of ownership across institutional investors, and higher liquidity through a lower bid-ask spread. They are also less likely to end up delisted as well as more likely to issue an SEO.

We show that firms that hire top underwriters to manage their IPOs gain in terms of underpricing. Additionally, they experience enhanced market liquidity. In particular, IPOs conducted by top underwriters present enhanced participation of institutional investors and ownership dispersion among such investors. Even more, firms with top underwriters have increased analysts' coverage both in terms of likelihood of being followed and number of analysts following at any given time. The effect of top underwriters on liquidity is also evident

on the relatively low bid-ask spread on the stocks that they underwrote. Surprisingly, their effects on liquidity are quite persistent since they can be observed for up to 8 years after the IPO. This lasting effect may explain why firms that go public with top underwriters are more likely to do a SEO.

The presence of prestigious auditors also provides enhanced liquidity. However, the effects of Big-N auditors, differently from those of underwriters, are not felt until few years after the IPO. We find that the presence of a Big-N auditor is associated to increased participation of and dispersion among institutional investors, increased analyst coverage, and lower bid-ask spreads. However, these effects appear two or three years after the IPO. We also observe that along the time, the effects of prestigious underwriters on analyst coverage tend to fade away, while those of Big-N auditor tend to become stronger. It is as if the initial conditions were set by the underwriter but their maintenance depended on the enhanced disclosure provided by the prestigious auditor. Consistent with this delayed effect, we find that the presence of a Big-N auditor is closely related to the strategy of remaining as an independent public company: firms that hire a reputable auditor present lower probability of being delisted due either to merger or failure (liquidation or drop). Firms audited by a Big-N are also more likely to do a SEO. We conjecture that this is a strategic decision: firms that expect to remain public for the long-run need to attract small investors. The participation of small investors depends on good disclosure and analysts' coverage that is enhanced by Big-N auditing. Therefore it is worth to pay the high fees of a Big-N auditor. Conversely, firms that do not expect to remain public in the long run would avoid such costs.

Finally, VC-sponsorship positively affects the measures for market liquidity. Such effects are not due to survivorship bias. This indicates that VC-sponsorship is in itself a certification to market participants. Companies funded by VC are more likely to be target to a merger, in the long run, i.e., within 6 to 8 years after the IPO. We also find that VC-sponsorship is associated to increased analyst coverage. Venture capital sponsorship does not affect the likelihood of a subsequent SEO. We can also show that VC-backed firms also fair better in these dimensions than non-VC backed firms throughout the 8-year period after the IPO. Even more, VC-backing implies in less earnings management by the firm in the period pre-IPO, indicating that VC-backed firms are looking to reduce asymmetry of information between insiders and potential investors.

This chapter is organized as follows: Section 3.2 explains our hypotheses and methodology;

Section 3.3 describes our data and sample; Section 3.4 presents empirical results; Finally, Section 3.5 concludes the chapter.

3.2. HYPOTHESES AND METHODOLOGY

3.2.1. HYPOTHESES

Our first hypothesis is that the presence of venture capitalists, as well as top underwriters and Big N auditors (certification agents) may have an effect on the firm's liquidity after the IPO period. Therefore, our first hypothesis can be stated as:

Hypothesis 1: the presence of certification agents has effect on the firm's liquidity after the IPO period.

According to Brau and Fawcet (2006), an IPO may be an opportunity for some of the insiders to cash out. However, this also gives the opportunity for outsiders to take control of the firm, taking the control out of the hands of the current blockholders and management. While dispersion may be an important factor to induce stock liquidity, it may also be important during an IPO in order to guarantee that insiders keep the firm's control (see Booth and Chua, 1996). In this sense, whenever the current insiders have a smaller stake at the firm, there is a higher demand for dispersion, and consequently a higher expected underpricing. Therefore, our second hypothesis is that the presence certification agents provide a higher dispersion of shares across institutional investors. Therefore, our second hypothesis can be stated as:

Hypothesis 2: the presence of certification agents has effect on the equity dispersion after the IPO period.

Delisting after the IPO period may be due to failure or acquisition. Some firms may go public even though their goal is to become a target for an acquisition. In this sense, we can investigate if firms that go public associated to a certification agent is associated with a higher likelihood of becoming an acquisition target. The other reason for delisting that we investigate is failure. By considering failure, we also can investigate if firms that go public associated to a certification agent is in a better or worse shape than their peers. Therefore, our third hypothesis is that the presence certification agents may have an effect on the likelihood of delisting after the IPO period. Therefore, our third hypothesis can be stated as:

Hypothesis 3: the presence of certification agents has effect on the likelihood of delisting after the IPO period.

3.2.2. METHODOLOGY

Hypothesis 1 relates to the firm's liquidity and marketability. We use three measures to evaluate marketability and liquidity: i) bid-ask spread; ii) the likelihood of undergoing an SEO; and iii) the likelihood of having Analysts following the firm's stock.

We test this first hypothesis with three regression models. For the first model we run Pooled OLS regression. Our specification for this model is:

$$Bid\ Ask\ Spread_{i,t} = \beta_0 + \beta_1 VC_i + \beta_2 Underwriter_i + \beta_3 Auditor_i + \gamma' x'_i + \pi' g'_i + \theta' industry_i + \mu_i \quad (1)$$

Where

VC_i : a dummy variable assuming value one for a Venture Capital backed IPO, and zero otherwise;

$Underwriter_i$: is a dummy variable indicating Carter-Manaster index for underwriters reputation above 8, and zero otherwise;

$Auditor_i$: a dummy variable assuming value one when firm i had their financial statements audited by one of the Big N auditors company, and zero otherwise;

x'_i : is a vector of predetermined characteristics of firm i at the IPO phase: technology, age at IPO, book value of assets, and sales growth;

g'_i : is a vector of predetermined characteristics of issue i : trade volume, market capitalization, Price Interval, offer size, and offer size scaled by book value of assets;

$Industry_i$: is a set of 9 industry dummies.

For the other two models, we run probit regressions on the probability of realizing a SEO and analyst coverage from the first year up to 8 years after the IPO. Our specification for these tests is:

$$Dependent_{i,t} = \beta_0 + \beta_1 VC_i + \beta_2 Underwriter_i + \beta_3 Auditor_i + \gamma' x'_i + \delta' z'_i + \theta' industry_i + \mu_i \quad (2)$$

Where

*Dependent*_{*i,t*}: is either a dummy variable that takes value one if the firm *i* conducted a seasoned equity offering (SEO) at time *t*, or a dummy variable indicating analysts' coverage, both over time;

z'_{*i*}: is a vector of predetermined characteristics of issue *i*: Price Interval, offer size, and offer size scaled by book value of assets;

*Industry*_{*i*}: is a set of 9 industry dummies.

Hypothesis 2 relates to the equity dispersion during an IPO. We use five measures to capture an attempt to increase equity dispersion during an IPO, as well as its components: i) percentage of institutional ownership; ii) number of institutional investors that hold the firm's stock; iii) probability that a firm have an institutional block holder, i.e., an institutional investor with more than 5% of the outstanding shares; iv) probability the firm has 10 or more institutional investors; and v) Herfindhal Index that capture the concentration of institutional ownership in a firm.

To test Hypothesis 2 we run regressions controlling for the issues' characteristics, and firms' characteristics. Our econometric model is

$$\begin{aligned} \text{Equity Dispersion}_{i,t} = \beta_0 + \beta_1 VC_i + \beta_2 \text{Underwriter}_i + \beta_3 \text{Auditor}_i + \quad (3) \\ \gamma' x'_i + \delta' z'_i + \theta' \text{industry}_i + \mu_i \end{aligned}$$

Where

*Equity Dispersion*_{*i,t*}: is a set of five variables that measure the equity dispersion during an IPO: i) percentage of institutional ownership; ii) number of institutional investors that hold the firm's stock; iii) probability that a firm have an institutional investor with more than 5% of the outstanding shares; iv) probability the firm has 10 or more institutional investors; and v) Herfindhal Index.

Hypothesis 3 relates to the likelihood of delisting after the IPO period. We look at the firms that are delisted due to failure or acquisition. To test Hypothesis 3 we run probit regressions on the probability of delisting after the IPO period. Our specification for these tests is:

$$\begin{aligned} \text{Delisting}_{i,t} = \beta_0 + \beta_1 VC_i + \beta_2 \text{Underwriter}_i + \beta_3 \text{Auditor}_i + \gamma' x'_i + \delta' z'_i + \quad (4) \\ \theta' \text{industry}_i + \mu_i \end{aligned}$$

Where

Delisting_{i,t}: is a set of two variables dummies that measure the probability of delisting over time due to failure or acquisition.

3.3. DATA AND SAMPLE CHARACTERISTICS

Our sample consists of firms completing an initial public offering between January 1990 and December 2000. Information on offer price, offer date, proceeds, leading underwriter name, price interval, seasoned equity offering (SEO), and firm age comes from the new issues database of Securities Data Corporation (SDC-Platinum). Data on sales, book value of assets and Big-N auditing come from Compustat. Information on venture capital sponsoring comes from Venture Economics database. Information on analysts comes from the I/B/E/S database. Data on ownership structure (institutional ownership, Herfindahl index, etc.) comes from Thomson Reuters Institutional Holdings (13F). Measure of underwriter quality is the Carter and Manaster's index (1990) updated by Carter, Dark, and Singh (1998) and Loughran and Ritter (2004). Information on bid-ask spreads, delisting due to bankruptcy, mergers and drops, and daily quotation for NYSE and NASDAQ indices come from the CRSP U.S. stock database. High-tech firms are identified following Loughran and Ritter's (2001) classification. Our of Dotcom bubble period includes from 1999 to 2000. As usual, we deleted unit offerings, closed-end funds, American depositary receipts (ADRs), limited partnerships, IPOs with an offer price of less than five dollars, IPOs of financial institutions (SIC codes 6000–6999), utilities (SIC codes 4900–4999) and real-estate investment trusts. Our final sample consists of 2,755 IPOs.

Table 3.1 presents the characteristics of sample across periods and types of firms. You can see that Big-N auditor is homogeneous across VC and non-VC-backed firms and offer size. The presence of venture capitalists increases the likelihood of top underwriter for large firms. In addition, large offers have higher probability of top underwriter (Table 3.1 – Panel A).

Big-N auditor has no effect on bid-ask spread, analyst coverage and institutional ownership, but it has effect on number of institutional investors that hold the firm's stock and Herfindhal Index. It also decreases the likelihood of failure and mergers (Table 3.1 – Panel B). Top underwriter has no effect on bid-ask spread, but it has effect on number of institutional investors that hold the firm's stock and Herfindhal Index. In addition, it increases the likelihood of SEO, analyst coverage and mergers, and it decreases the likelihood of failure. Finally, you can see

that venture capitalists do not affect the likelihood of SEO or failure, however they increase the probability of mergers and analyst coverage. It also has effect on number of institutional investors that hold the firm's stock and Herfindhal Index.

Table 3.1 - Characteristics of Sample Across periods and types of firms

Venture Capital: dummy variable indicating venture capital sponsorship; *Top underwriter*: dummy variable indicating whether the Carter-Manaster index for the member of the underwriting syndicate with the highest score is bigger than 8; *Big-four*: dummy variable indicating auditing by Big-Four auditors; *SEO* is a dummy variable indicating whether the firm conducted a seasoned equity offering within one year from the IPO; *Mergers* is a dummy variable indicating that the firm was target for M&A between the 3rd and 8th years from the IPO; *Failure*: dummy variable indicating delisting for bankruptcy or drop; *Institutional ownership*: Percentage of outstanding shares held by institutional investors; *Herfindal index*: for institutional ownership; *Analysts coverage*: dummy variable indicating that the firms is followed by at least one analyst; and *Underpricing*: first trading day closing price relative to the offer price. Number of firms with the attribute and t-statistics are shown in parentheses. We use *, ** and *** to denote statistical significance at the 10%, 5% and 1% levels (two sided). The sample consists of 2,755 IPOS between 1990 and 2000. In this table we measure size (large or small) by offer size.

Panel A: Sample Description

	Full Sample				Venture Capital Sample				Non-Venture Capital Sample			
	Total	Large	Small	Difference	Total	Large	Small	Difference	Total	Large	Small	Difference
Venture Capital	46% (1259)	47% (550)	45% (709)	2% (1.25)								
Top Underwriter	71% (1962)	90% (1061)	57% (901)	33%*** (3.42)	81% (1024)	91% (498)	74% (526)	16%** (2.55)	63% (938)	90% (563)	43% (375)	46%*** (4.02)
Big-N Auditor	33% (911)	35% (411)	32% (500)	3% (1.43)	36% (447)	38% (210)	33% (237)	5%* (1.72)	31% (464)	32% (201)	30% (263)	2% (1.22)
Big-N & Top Underwriter	25% (678)	32% (374)	19% (304)	12%** (2.38)	29% (362)	35% (190)	24% (172)	10%** (2.30)	21% (316)	29% (184)	15% (132)	14%** (2.47)
Total Sample	100% (2755)	100% (1178)	100% (1577)		100% (1259)	100% (550)	100% (709)		100% (1496)	100% (628)	100% (868)	

Table 3.1 (continued)
Panel B: Subsequent Decisions at first year after IPO

	Total	Effect of Big-N Auditor			Effect of Top Underwriter			Effect of Venture Capital		
		Big	non-Big	difference	Top	non-Top	difference	VC	non-VC	difference
Bid-Ask Spread	4%	4%	4%	0% (0.41)	3%	5%	-2% (1.23)	4%	4%	0% (0.34)
SEO	21% (572)	22% (202)	20% (370)	2%* (1.73)	26% (518)	7% (54)	20%*** (4.22)	21% (267)	20% (305)	1% (0.33)
Analyst	72% (1983)	69% (630)	73% (1353)	-4% (-1.10)	75% (1479)	64% (504)	12%*** (2.77)	80% (1005)	65% (978)	15%*** (4.01)
Institutional Ownership (%)	29%	31%	29%	2% (1.22)	32%	22%	10%*** (4.23)	31%	28%	2% (1.22)
# Institutional Stockholders	30.06	34.24	27.9	6.3* (1.75)	36.24	14.54	21.7*** (3.34)	32.96	27.67	5.29** (2.48)
Ownership bigger than 5%	59% (1636)	62% (564)	58% (1072)	4%* (1.74)	63% (1241)	50% (395)	13%*** (4.12)	64% (808)	55% (828)	9%*** (3.61)
# firms with Institutional Stockholders>10	75% (2058)	82% (744)	71% (1314)	10%** (2.08)	85% (1658)	50% (400)	34%*** (3.21)	79% (993)	71% (1065)	8%*** (4.72)
Herfindahl Index	22%	20%	23%	-3%* (-1.82)	18%	32%	-14%*** (-2.83)	20%	23%	-4%*** (-3.44)
Mergers	18% (488)	3% (28)	25% (460)	-22%*** (-3.85)	19% (366)	15% (122)	3%** (2.34)	19% (240)	17% (248)	2%* (1.81)
Failure (Drop & Delisting)	9% (239)	4% (37)	11% (202)	-7%** (-2.33)	8% (150)	11% (89)	-4%** (-2.47)	8% (104)	9% (135)	-1% (-0.82)
Total Sample	2755	911	1844		1962	793		1259	1496	

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.

3.4. RESULTS

In this section, we will discuss the impacts of the presence and quality of the recurring actors during the IPO process. We can observe that the presence of a top underwriter or a VC-sponsorship or a Big-N auditor seem to be associated to higher underpricing (Table 3.2). In addition, VC-backed IPOs can be more underpriced if underwritten by a top underwriters or Big-N auditor. If it is not underpricing reduction, what is the true value added by a VC, Big-N auditor or by a top underwriter? Why is the large majority of VC-sponsored IPOs underwritten by top underwriters or by Big-N auditors if this occasion higher underpricing?

We will analyse these factors considering the impact of venture-backing, as well as the presence of top underwriters as book runners and Big-N companies auditing the IPO prospectus on three areas of firm marketability: liquidity, equity dispersion, and likelihood of delisting due to failure or acquisition. We discuss each one of these areas in the sections below.

Table 3.2 – Underpricing Regressions

The dependent variable is the underpricing: first trading day closing price relative to the offer price. *Age*: IPO year minus founding date; *Technologies firms*: as defined in Loughran and Ritter (2004); *Offer size* is the filled amount of IPO proceeds; *Book value of assets*: as in the last financial report before the IPO; *Price interval*: original filing high price minus original filing low price divided by their average; Sales Growth represents the average of quarterly growth. T-statistics are shown in parentheses. Estimates use White standard errors clustered by firm. We use *, ** and *** to denote statistical significance at the 10 percent, 5 percent and 1 percent levels (two sided). The number of observations is 2,755.

Regression	POOLED		POOLED	
	OLS	RE	OLS	RE
	1	2	3	4
Venture Capital	0.062*** (3.43)	0.062*** (2.76)	-0.033 (-1.01)	-0.033 (-0.76)
Top underwriter	0.039** (2.03)	0.039* (1.71)	0.005 (0.25)	0.005 (0.28)
Big-four	0.062*** (3.14)	0.062** (2.36)	0.021 (1.11)	0.021 (1.05)
Venture capital x Top			0.091** (2.43)	0.091** (2.33)
Venture capital x Big			0.088** (2.16)	0.088*** (2.70)
Bubble dummy (1999-2000)	0.360*** (10.64)	0.360*** (6.93)	0.361*** (10.65)	0.361*** (6.91)
Price Interval	-0.006*** (-3.87)	-0.006*** (-4.05)	-0.006*** (-3.75)	-0.006*** (-3.91)
Offer Size	-0.042** (-2.39)	-0.042** (-2.22)	-0.040** (-2.29)	-0.040** (-2.10)
Size offer-to-book value of assets	0.699* (1.93)	0.699* (1.91)	0.745** (2.04)	0.745** (2.02)
Technology companies	0.082*** (3.72)	0.082*** (3.68)	0.081*** (3.69)	0.081*** (3.57)
Age	-0.002*** (-5.23)	-0.002*** (-3.24)	-0.002*** (-5.17)	-0.002*** (-3.21)
Book value of assets	0.042*** (3.55)	0.042** (2.07)	0.043*** (3.65)	0.043** (2.15)
Sales growth	0.106*** (4.81)	0.106*** (5.11)	0.103*** (4.65)	0.103*** (4.94)
Observations	2,755	2,755	2,755	2,755
R-squared	0.288	0.315	0.292	0.324
Industry and Quarter Dummies	yes	yes	Yes	yes
Constant	yes	yes	Yes	yes

3.4.1. FIRM'S LIQUIDITY

As we will see in this section, the presence of venture capitalists, as well as top underwriters and Big N auditors may have a lasting effect on the firm's liquidity, even after we take into account the firm and market characteristics. In particular, we will evaluate marketability and

liquidity through the bid-ask spread, the likelihood of undergoing an SEO, and the likelihood of having Analysts following the firm's stock. These results are presented in Table 3.3 to Table 3.5.

3.4.1.1. BID-ASK SPREADS

Bid-ask spreads are an indication of market liquidity due to the fact that a thick market – i.e. a market in which there is a large number of buyers and sellers – would generate a large flow of transactions, allowing participants not only to have better information about the expected price, reducing the bid-ask spread, but also reducing the cost per transaction due to a falling average fixed cost.

In Table 3.3 we present our results. As you can see, the presence of a top underwriter as the book runner reduce the bid-ask spread and these results last for at least 8 years after the IPO. VC-backing firms incur in a lower average bid-ask spread in the medium term – first 4 to 7 years after the IPO. The presence of a Big-N auditor reduce the bid-ask spread for at least 8 years after the IPO.

In terms of offer characteristics, larger offer sizes would usually present of lower bid-ask spread over the first 8 years after the IPO. Finally, in terms of firm characteristics, firms that present a higher sales growth at the time of the IPO, as well as larger firms (in terms of the book value of assets) incur in a lower average bid-ask spread in the short term – between 2 and 4 years after the IPO. Firms in technology sectors incur in a lower average bid-ask spread for at least 8 years after the IPO.

As a robustness check, in Table A.3. 1 we present our results once we eliminate the observations during the dot-com bubble from our sample. As we can observe, most results are qualitatively the same, while the presence of a Big-N auditor is less consistently correlated with a lower bid-ask spread. In addition, although the sign of the coefficients for the Big-N auditor dummy and VC-backing firms are negative, they are not consistently statistically significant over time when we use only overlapping firms (Table A.3. 2).

Table 3.3 - Bid-Ask Spreads

The dependent variable is the bid-ask spread in percentage value from year 1 to year 8 after IPO. We run Pooled OLS with White standard errors clustered by firm.

Year	1	2	3	4	5	6	7	8
Venture Capital	-0.001 (-0.56)	-0.003 (-1.36)	-0.003 (-1.31)	-0.007*** (-3.27)	-0.004* (-1.73)	-0.005** (-2.41)	-0.005*** (-2.65)	-0.001 (-0.71)
Top Underwriter	-0.005*** (-2.66)	-0.006** (-2.51)	-0.006*** (-2.63)	-0.006** (-2.02)	-0.010*** (-3.27)	-0.005* (-1.92)	-0.006** (-2.32)	-0.009*** (-3.62)
Big-Four Auditor	-0.002** (-2.15)	-0.005*** (-3.02)	-0.004** (-2.00)	-0.007*** (-3.59)	-0.004* (-1.88)	-0.006*** (-2.99)	-0.004** (-2.26)	-0.005*** (-2.87)
Technology	-0.004** (-2.38)	-0.003* (-1.71)	-0.004** (-2.18)	-0.005** (-2.10)	-0.009*** (-3.45)	-0.004* (-1.85)	-0.002* (-1.73)	-0.004** (-2.12)
Trade Volume	-0.010 (-1.39)	-0.014* (-1.84)	-0.003 (-0.97)	-0.004 (-0.58)	0.013 (1.40)	-0.001 (-0.36)	0.002 (1.01)	-0.002 (-1.09)
Market Capitalization	-0.001** (-2.11)	-0.001** (-2.41)	-0.001*** (-2.89)	-0.001 (-1.60)	-0.001*** (-3.07)	-0.000 (-0.31)	-0.000 (-1.21)	-0.000 (-0.83)
Price Interval	-0.001*** (-4.02)	-0.000*** (-2.66)	-0.000* (-1.81)	-0.000 (-0.41)	-0.000 (-0.70)	-0.000 (-0.96)	-0.000 (-1.21)	-0.000 (-0.80)
Offer Size	-0.008*** (-6.92)	-0.008*** (-6.20)	-0.009*** (-7.15)	-0.008*** (-4.29)	-0.008*** (-4.16)	-0.008*** (-3.79)	-0.006*** (-4.29)	-0.006*** (-4.12)
Age at IPO	-0.000 (-0.33)	-0.000 (-0.08)	0.000 (0.54)	0.000 (0.78)	-0.000 (-0.15)	-0.000 (-0.44)	0.000 (1.06)	0.000 (0.42)
Book Value of Assets	-0.004*** (-4.45)	-0.003*** (-2.81)	-0.001 (-0.98)	-0.002 (-0.90)	0.000 (0.23)	0.001 (0.57)	-0.000 (-0.34)	0.001 (1.15)
Offer Size-to-Assets	0.100*** (4.68)	0.081*** (4.45)	0.273*** (15.25)	1.093 (0.94)	0.668 (0.58)	0.527 (0.46)	-0.176 (-0.37)	0.657 (1.15)
Sales Growth	-0.007*** (-4.36)	-0.006*** (-2.94)	-0.004*** (-2.62)	-0.007*** (-2.82)	-0.002 (-0.60)	-0.005 (-1.54)	-0.003 (-1.56)	0.000 (0.06)
Observations	2,657	2,397	2,057	1,754	1,524	1,340	1,184	1,053
R-squared	0.1955	0.1619	0.1738	0.1891	0.1622	0.1942	0.2460	0.2352
Industry and Quarter Dummies	yes	yes	Yes	yes	Yes	yes	yes	yes
Constant	yes	yes	Yes	yes	Yes	yes	yes	yes

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.

3.4.1.2. SEOs

The ability to do an SEO gives the firm an additional source of capital beyond debt and retained earnings. However, the ability to raise new equity depends on the demand for the firm's equity, which depends both on the firm's valuation and performance, but also on the degree of asymmetric information between insiders and outsiders. However, as presented by Carvalho et. al. (2014), around 30% of the IPO firms that do a SEO go back to the market within a year of the IPO. In this sense, there is usually no time to improve or change operational performance, so the information revealed during the IPO, as well as the potential reputation acquired by insiders with potential investors by fairly pricing the issue may be quite important towards the ability to perform a successful SEO.

In Table 3.4, we present our results for the probability that a SEO is performed. Our results are arranged such that in the first column it is a probit indicating the probability of realizing a SEO

within the first year after the IPO, the second column estimates the probability of realizing a SEO within the two years after the IPO and so on. In terms of the characteristics of the agents present at the IPO, we can see that, while being VC-backed does not increase the likelihood of a SEO, having a top underwriter as the IPO book runner is associated with a larger likelihood of a SEO already in the short run. In this sense, if the firm believes it will come back to the market in the near future, it is more likely to choose a top underwriter as the book runner. The presence of a Big-N auditor at the IPO, while not affecting the likelihood of a SEO within the first 3 years in a statistically significant way, its effect seems quite strong on the likelihood of a SEO in the medium to long run, i.e., within 4 to 8 years after the IPO. We interpret this result as an indication that, if the firm expects to stay public and eventually go back to the capital market through a SEO, choosing a Big-N auditor may attract the interest of smaller investors, that have less resources and ability to verify the quality of the firm's accounting information, relying more heavily on the auditor's opinion. While in the short term, the firm's liquidity may depend more on institutional investors, if the firm pretends to grow and come back to the market later, the participation of smaller investors on the firm's SEO may be more important. In terms of the offer characteristics, firms that have larger offer in absolute terms tend to go back to the market for a SEO, which may be related to how much market appetite for the firm's stocks exists. Differently, firms with a wide price interval at the IPO, which may indicate a higher degree of uncertainty about the firm's value, are less likely to go back to the equity market for a SEO for at least 8 years after the IPO. In terms of firm characteristics at the IPO, we find that firms that present higher sales growth at the IPO tend to go back for a SEO. As a robustness check, we eliminate the bubble period in Table A.4. 1. Even though our results become weaker, the results on the IPO agents are qualitatively the same. The results on the offer size and firm characteristics also remain qualitatively the same. When we use only overlapping firms (Table A.4. 2), the results also are similar to the ones obtained from the regression in Table 3.4.

Table 3.4 - SEO

The dependent variable is a dummy variable indicating whether the firm conducted a seasoned equity offering between one and eight years from the IPO. We run Probit Regressions with White standard errors.

Year	1	2	3	4	5	6	7	8
Venture Capital	-0.078 (-1.16)	-0.058 (-0.92)	-0.048 (-0.78)	-0.060 (-0.98)	-0.069 (-1.13)	-0.054 (-0.88)	-0.047 (-0.78)	-0.067 (-1.10)
Top Underwriter	0.491*** (5.72)	0.407*** (5.24)	0.378*** (4.98)	0.363*** (4.87)	0.371*** (5.03)	0.367*** (4.98)	0.366*** (4.98)	0.356*** (4.85)
Big-Four Auditor	0.019 (0.29)	0.032 (0.54)	0.065 (1.09)	0.115** (1.97)	0.141** (2.43)	0.167*** (2.89)	0.177*** (3.08)	0.211*** (3.68)
Technology	0.050 (0.74)	0.009 (0.14)	-0.004 (-0.07)	-0.018 (-0.29)	-0.027 (-0.42)	-0.018 (-0.29)	-0.021 (-0.33)	-0.020 (-0.32)
Price Interval	-0.033*** (-5.28)	-0.033*** (-5.59)	-0.030*** (-5.19)	-0.029*** (-5.02)	-0.031*** (-5.33)	-0.033*** (-5.59)	-0.033*** (-5.71)	-0.033*** (-5.64)
Offer Size	0.362*** (7.19)	0.383*** (7.89)	0.392*** (8.20)	0.438*** (9.08)	0.454*** (9.29)	0.482*** (9.72)	0.481*** (9.73)	0.492*** (9.90)
Age at IPO	0.001 (0.71)	-0.000 (-0.27)	-0.001 (-0.74)	-0.002 (-1.24)	-0.002 (-1.15)	-0.002 (-0.95)	-0.001 (-0.84)	-0.002 (-1.00)
Book Value of Assets	0.063* (1.72)	0.030 (0.86)	0.015 (0.44)	-0.014 (-0.42)	-0.038 (-1.09)	-0.057 (-1.61)	-0.056 (-1.60)	-0.060* (-1.71)
Offer Size-to-Assets	-4.582*** (-2.91)	-5.000*** (-3.27)	-5.204*** (-3.46)	-5.686*** (-3.82)	-5.832*** (-3.92)	-6.086*** (-4.07)	-6.163*** (-4.14)	-6.341*** (-4.29)
Sales Growth	0.231*** (3.57)	0.158** (2.52)	0.130** (2.13)	0.118* (1.94)	0.113* (1.86)	0.107* (1.76)	0.098 (1.62)	0.095 (1.58)
Observations	2,757	2,757	2,757	2,757	2,757	2,757	2,757	2,757
R-squared								
Industry and Quarter Dummies	yes	yes	yes	yes	yes	Yes	yes	Yes
Constant	yes	yes	yes	yes	yes	Yes	yes	Yes

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.

3.4.1.3. ANALYSTS' FOLLOWING

The presence of analysts' following the firm's performance is usually associated with an increased interest on the firm's stock, which indicate a higher liquidity for the firm's securities, Roulstone (2010). While there is some indication in the literature that the presence of Venture Capitalists as insiders, as well as top underwriters as book runners, may increase the likelihood of analysts following the firm, up to our knowledge there is no previous study that looks at the durability of the effect, i.e. if having VC-backing, top underwriter as book runner, and/or a Big-N auditing the IPO prospectus increases the likelihood of analyst following in the medium-long run.

We present our results in Table 3.5. As we can see, the presence of VC-backing is clearly associated with a higher likelihood of analyst following in the short and medium run, although the effect becomes weaker over time. Differently, the correlation between the presence of a top underwriter as book runner and of a Big-N company auditing the firm's IPO prospectus and analyst following becomes stronger over time. This again may be related to the importance

of smaller investors in the long run for firms that aim to stay public in the long run. In terms of the offer characteristics, we observe that large offers are usually associated with analyst following in the short to long run. Differently, if a larger fraction of the firm – proxied by the ratio of offer size to book value of assets – is sold during the IPO, the firm is less likely to be followed by analysts in the medium run. Again, in order to see how robust are the results to the exclusion of the dot-com bubble, we present in Table A.5. 1 our results without the bubble. While the effect of VC-backing and the presence of Big-N auditors are qualitatively the same, the effect of having a top underwriter as book runner comes from the bubble period. In terms of the offer characteristics, the results on the magnitude of the offer size and the results on the offer relative size hold even outside the bubble period, however the effect becomes weaker. Again, when we use only overlapping firms (Table A.5. 2), the results are similar to the ones obtained from the regression in Table 3.5.

Table 3.5 - Analyst

The dependent variable is a dummy variable indicating that the firms is followed by at least one analyst. We run Probit Regressions with White standard errors.

Year	1	2	3	4	5	6	7	8
Venture Capital	0.420*** (6.89)	0.367*** (6.32)	0.286*** (5.04)	0.233*** (4.09)	0.217*** (3.74)	0.152** (2.54)	0.094 (1.54)	0.047 (0.76)
Top Underwriter	0.166 (1.43)	0.106 (1.59)	0.123* (1.88)	0.104* (1.76)	0.087* (1.78)	0.122* (1.74)	0.188*** (2.59)	0.165** (2.24)
Big-Four Auditor	0.160 (1.21)	0.042 (0.76)	0.325*** (5.98)	0.592*** (10.97)	0.740*** (13.57)	0.906*** (16.39)	1.021*** (18.11)	1.096*** (18.97)
Technology	0.080 (1.29)	0.035 (0.60)	-0.008 (-0.14)	0.021 (0.36)	-0.016 (-0.27)	0.027 (0.44)	0.038 (0.60)	0.031 (0.48)
Price Interval	-0.007 (-1.20)	-0.006 (-1.14)	-0.007 (-1.40)	-0.010* (-1.86)	-0.011* (-1.91)	-0.003 (-0.55)	0.002 (0.41)	0.003 (0.44)
Offer Size	0.161*** (3.54)	0.144*** (3.15)	0.214*** (5.02)	0.260*** (5.40)	0.299*** (6.06)	0.282*** (5.51)	0.259*** (4.96)	0.302*** (5.51)
Age at IPO	0.002 (1.34)	0.003* (1.68)	0.003* (1.67)	0.003* (1.71)	0.004*** (2.72)	0.005*** (3.01)	0.003** (2.11)	0.003* (1.81)
Book Value of Assets	-0.038 (-1.13)	-0.028 (-0.79)	-0.035 (-1.11)	-0.086** (-2.28)	-0.124*** (-3.19)	-0.126*** (-3.13)	-0.129*** (-3.12)	-0.152*** (-3.51)
Offer Size-to-Assets	0.850 (0.43)	6.565 (0.62)	-4.951*** (-3.67)	-21.719* (-1.71)	-17.452 (-1.54)	-15.487 (-1.26)	-14.975 (-1.21)	-16.879 (-1.30)
Sales Growth	0.126** (2.07)	0.113* (1.94)	-0.017 (-0.30)	-0.012 (-0.21)	-0.046 (-0.80)	-0.009 (-0.15)	-0.016 (-0.26)	-0.122* (-1.90)
Observations	2,757	2,757	2,757	2,757	2,757	2,757	2,757	2,757
Industry and Quarter Dummies	yes	yes	yes	yes	yes	yes	yes	Yes
Constant	yes	yes	yes	yes	yes	yes	yes	Yes

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.

3.4.1.4. EQUITY DISPERSION

Beyond a potential increase in the stock's market liquidity, there are clear benefits as well as costs for equity dispersion. On the benefits' side, a larger dispersion during the IPO may

maximize the production of information about the firm. If more investors are allowed to take part in the IPO and are allocated stocks, this may induce these investors to produce and consequently reveal information about the firm – as presented in Benveniste and Spindt (1989). According to this argument, better-informed agents are more valued by the firm as IPO participants. Since institutional investors are in principle better informed, a larger presence of distinct institutional investors should be valued. On the costs' side, beyond the amount of money left on the table due to a higher underpricing, larger equity dispersion may generate entrenchment by the current management and insiders and consequently poor corporate governance. Finally, according to Boehmer, Boehmer and Fische (2006), a high dispersion at the IPO may induce more first day turnover, in particular from institutional investors, once a very small allocation becomes too costly to rebalance.

3.4.2.1. PERCENTAGE OF INSTITUTIONAL OWNERSHIP

We use several measures to capture an attempt to increase equity dispersion during an IPO, as well as its components. In Table 3.6, we look at the percentage of institutional ownership, based on the 13F database from Thomson Reuters. As before, the columns are ordered as the number of years since the IPO. As we can see, VC-backed firms as well as IPO firms with a top underwriter as the book runner have on average a higher fraction of institutional ownership. Moreover, this effect seems to last, as we see the effect of these variables even 8 years after the IPO. We obtain a similar qualitative effect from the presence of Big-N companies auditing the firm's prospectus, although the magnitude is smaller and it does not seem to have an effect immediately after the IPO, i.e., the coefficient is only statistically significant from the 2nd. year after the IPO on.

In terms of the offer characteristics, larger offers are more likely to have a larger institutional ownership, while offers that sell a higher fraction of the firm, proxied by the ratio of the offer size to the book value of assets, see a lower level of institutional ownership at the short and medium run, although the effect is economically small. Finally, in terms of firm characteristics at the IPO, older firms tend to have a higher institutional ownership, although the effect wears off over time, while firms that are larger at the IPO in terms of book value of assets tend to have a higher level of institutional ownership, and the effect becomes weaker over time.

As a robustness check, in Table A.6. 1 we present the results on institutional ownership once the period of the dot-com bubble is omitted from our sample. As we can see, most results are

qualitatively equal. We should also point to the fact that the length of the price interval seems positively correlated to the percentage of institutional ownership once we omit the dot-com period. It is stronger than when we use our full sample. When we use only overlapping firms (Table A.6. 2), the effect of the book value of assets and price interval become statistically insignificant.

Table 3.6 - Institutional Ownership (Percentage)

The dependent variable is the percentage of outstanding shares held by institutional investors. We run Pooled OLS Regressions with White standard errors.

Year	1	2	3	4	5	6	7	8
Venture Capital	0.040*** (4.35)	0.060*** (5.51)	0.057*** (4.71)	0.051*** (3.58)	0.048*** (2.88)	0.058*** (3.14)	0.057*** (2.76)	0.053** (2.31)
Top Underwriter	0.032*** (3.19)	0.038*** (3.22)	0.036*** (2.70)	0.063*** (4.18)	0.069*** (3.96)	0.093*** (4.72)	0.097*** (4.36)	0.078*** (3.24)
Big-Four Auditor	0.012 (1.38)	0.027*** (2.70)	0.054*** (4.87)	0.061*** (4.92)	0.072*** (5.04)	0.080*** (4.95)	0.077*** (4.25)	0.103*** (5.12)
Technology	-0.010 (-1.07)	-0.017 (-1.60)	-0.031** (-2.46)	-0.026* (-1.82)	-0.019 (-1.19)	-0.028 (-1.44)	-0.023 (-1.05)	-0.032 (-1.37)
Price Interval	0.001 (1.06)	0.002 (1.53)	0.002* (1.86)	0.003** (2.00)	0.002 (1.31)	0.001 (0.55)	-0.000 (-0.21)	-0.002 (-0.73)
Offer Size	0.052*** (5.75)	0.066*** (8.46)	0.078*** (9.35)	0.068*** (6.65)	0.066*** (5.22)	0.063*** (4.75)	0.070*** (5.01)	0.086*** (5.58)
Age at IPO	0.001*** (3.76)	0.001*** (3.35)	0.001*** (3.15)	0.001** (2.35)	0.001** (2.36)	0.001** (2.47)	0.001 (1.47)	0.001 (1.15)
Book Value of Assets	0.015** (2.21)	0.012** (2.00)	0.003 (0.53)	0.002 (0.23)	0.006 (0.67)	0.003 (0.32)	0.014 (1.30)	0.010 (0.81)
Offer Size-to-Assets	-0.405*** (-3.14)	-1.001*** (-7.62)	-1.324*** (-9.40)	-1.235*** (-7.92)	-1.250*** (-7.17)	-1.281*** (-7.43)	-1.482*** (-7.72)	0.167 (0.06)
Sales Growth	0.004 (0.51)	-0.010 (-0.97)	-0.023* (-1.96)	-0.016 (-1.13)	-0.012 (-0.74)	-0.017 (-0.85)	-0.009 (-0.38)	0.020 (0.83)
Observations	2,580	2,342	2,027	1,768	1,531	1,327	1,173	1,040
R-squared	0.1466	0.1558	0.1702	0.1642	0.1622	0.1822	0.1995	0.2079
Industry and Quarter Dummies	yes	yes	yes	yes	yes	yes	yes	yes
Constant	yes	yes	yes	yes	yes	yes	yes	yes

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.

3.4.2.2. NUMBER OF INSTITUTIONAL INVESTORS

Another measure of equity dispersion that we evaluate is the number of institutional investors that hold the firm's stock. In Table 3.7, Table A.7. 1 and Table A.7. 2 we present the results for a Poisson regression on the number of institutional stockholders – notice that as before, Table A.7. 1 represents our results for the case in which the dot-com bubble has been omitted and Table A.7. 2 represents our results when we use only overlapping firms. Results are similar as the ones presented on Table 3.6, Table A.6. 1 and Table A.6. 2 – the presence of Venture Capitalists, top underwriters, and Big-N auditors is positively correlated with the number of Institutional shareholders, and the effect is persistent over time even if we exclude the dot-com

bubble from the sample. Similarly, as before, the offer size is related to a larger institutional ownership in the short and long-run. The effects of firm size (book value of assets) and relative offer size (offer-size to total Assets) are positive and negative, respectively. Finally, similarly from the results on the percentage of institutional ownership, the effect of age at the IPO is not consistently statistically significant, while the length of the price interval has a negative correlation with the number of institutional ownership, and this correlation is only long-lived, it is not robust to the exclusion of the dot-com bubble.

Table 3.7 - Number of Institutional Stockholders

The dependent variable is the number of institutional investors that hold the firm's stock. We run Poisson Regressions with White standard errors.

Year	1	2	3	4	5	6	7	8
Venture Capital	0.187*** (5.23)	0.197*** (4.34)	0.186*** (3.75)	0.159*** (2.94)	0.184*** (3.05)	0.183*** (2.85)	0.195*** (2.86)	0.203*** (2.66)
Top Underwriter	0.311*** (8.07)	0.287*** (5.85)	0.283*** (4.72)	0.383*** (5.80)	0.484*** (6.43)	0.544*** (6.47)	0.596*** (6.84)	0.582*** (6.52)
Big-Four Auditor	0.110*** (2.90)	0.140*** (3.30)	0.229*** (4.75)	0.264*** (4.98)	0.250*** (4.35)	0.287*** (4.73)	0.286*** (4.55)	0.287*** (4.25)
Technology	0.188*** (3.73)	0.110** (1.97)	0.113* (1.71)	0.159** (2.34)	0.142** (2.12)	0.077 (1.06)	0.092 (1.25)	0.093 (1.15)
Price Interval	-0.007* (-1.90)	-0.006* (-1.78)	-0.003 (-0.55)	-0.005 (-0.87)	-0.002 (-0.42)	-0.003 (-0.63)	-0.006 (-1.25)	-0.009* (-1.70)
Offer Size	0.191*** (4.50)	0.233*** (5.26)	0.239*** (5.48)	0.192*** (4.22)	0.165*** (3.48)	0.133*** (2.75)	0.140*** (2.77)	0.104* (1.81)
Age at IPO	0.002* (1.83)	0.002* (1.70)	0.002 (0.99)	0.001 (0.53)	0.001 (0.63)	0.001 (0.68)	0.000 (0.20)	0.000 (0.01)
Book Value of Assets	0.266*** (6.55)	0.248*** (6.08)	0.261*** (5.55)	0.273*** (5.99)	0.246*** (6.44)	0.229*** (6.00)	0.231*** (6.17)	0.280*** (6.84)
Offer Size-to-Assets	-1.910* (-1.72)	-3.130*** (-2.59)	-3.758*** (-2.80)	-3.910** (-2.45)	-4.309** (-2.53)	-4.152*** (-2.66)	-4.448*** (-2.65)	-4.781** (-2.30)
Sales Growth	0.113*** (2.87)	0.100** (2.03)	0.079 (1.39)	0.023 (0.35)	0.015 (0.23)	-0.007 (-0.10)	-0.014 (-0.19)	0.076 (0.91)
Observations	2,612	2,347	2,030	1,769	1,532	1,328	1,175	1,041
Industry and Quarter Dummies	yes	yes	yes	yes	yes	yes	yes	yes
Constant	yes	yes	yes	yes	yes	yes	yes	yes

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.

3.4.2.3. LIKELIHOOD OF INSTITUTION OWNERSHIP BIGGER THAN 5% AND LIKELIHOOD OF MORE THAN 10 INSTITUTIONAL INVESTORS

Refinements of the results above are presented in Table 3.8, Table A.8. 1, Table A.8. 2, Table 3.9, Table A.9. 1 and Table A.9. 2, which look at the probability that a firm have an institutional block holder (Table 3.8, Table A.8. 1 and Table A.8. 2) – i.e., an institutional investor with more than 5% of the outstanding shares, and the probability the firm has 10 or more institutional investors. The results on the probability of having 10 or more institutional

investors are quite similar to the ones obtained from the Poisson regression in Table 3.7, Table A.7. 1 and Table A.7. 2. The likelihood of a blockholder is associated to having a top underwriter as bookrunner and with the presence of venture capitalists, although the effect becomes weaker over time. Finally, the presence of a Big-N company auditing the prospectus increase the likelihood of a blockholder in the medium to long -run, with the correlation becoming stronger over time.

Table 3.8 - Likelihood of Institution Ownership bigger than 5%

The dependent variable is a dummy variable for a firm that has an institutional block holder, i.e., an institutional investor with more than 5% of the outstanding shares. We run Probit Regressions with White standard errors.

Year	1	2	3	4	5	6	7	8
Venture Capital	0.354*** (6.02)	0.352*** (5.60)	0.317*** (4.61)	0.389*** (5.15)	0.223*** (2.76)	0.136* (1.68)	0.208** (2.21)	0.174* (1.69)
Top Underwriter	0.211*** (3.14)	0.249*** (3.46)	0.079* (1.73)	0.082 (0.98)	0.095 (1.04)	0.057 (0.58)	0.156 (1.49)	-0.022 (-0.20)
Big-Four Auditor	0.006 (0.11)	0.024 (0.42)	0.228*** (3.62)	0.269*** (3.96)	0.353*** (4.87)	0.275*** (3.60)	0.367*** (4.44)	0.479*** (5.31)
Technology	-0.084 (-1.40)	-0.172*** (-2.68)	-0.098 (-1.41)	-0.202*** (-2.65)	-0.067 (-0.81)	-0.121 (-1.33)	-0.164* (-1.68)	-0.272*** (-2.58)
Price Interval	0.005 (0.91)	0.012* (1.93)	0.016** (2.29)	0.024*** (3.47)	0.015** (1.98)	0.005 (0.64)	0.009 (1.02)	0.012 (1.30)
Offer Size	0.102** (2.32)	0.098** (2.17)	0.280*** (5.07)	0.237*** (4.00)	0.183*** (2.91)	0.173** (2.48)	0.183*** (2.72)	0.245*** (3.20)
Age at IPO	0.006*** (3.43)	0.007*** (3.65)	0.011*** (4.91)	0.010*** (4.21)	0.006*** (2.75)	0.007** (2.57)	0.004 (1.49)	0.002 (0.65)
Book Value of Assets	-0.019 (-0.60)	0.006 (0.17)	-0.116*** (-2.70)	-0.106** (-2.24)	-0.109** (-2.16)	-0.049 (-0.87)	0.002 (0.04)	-0.012 (-0.20)
Offer Size-to-Assets	0.140 (0.10)	0.308 (0.22)	-46.28*** (-2.89)	-33.640** (-2.36)	-37.980** (-2.56)	-33.479 (-1.49)	-22.480 (-1.63)	-21.572 (-0.92)
Sales Growth	0.031 (0.51)	-0.071 (-1.11)	-0.122* (-1.74)	-0.062 (-0.80)	-0.054 (-0.64)	-0.109 (-1.18)	-0.091 (-0.91)	0.020 (0.19)
Observations	2,612	2,347	2,030	1,769	1,532	1,328	1,175	1,041
Industry and Quarter Dummies	yes	yes	yes	Yes	yes	yes	yes	yes
Constant	yes	yes	yes	Yes	yes	yes	yes	yes

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.

Table 3.9 - Likelihood of more than 10 Institutional Investors

The dependent variable is a dummy variable for a firm that has 10 or more institutional investors. We run Probit Regressions with White standard errors.

Year	1	2	3	4	5	6	7	8
Venture Capital	0.268*** (3.63)	0.311*** (4.10)	0.362*** (4.52)	0.221** (2.57)	0.253*** (2.83)	0.347*** (3.69)	0.334*** (3.24)	0.333*** (3.07)
Top Underwriter	0.359*** (4.61)	0.257*** (3.11)	0.229*** (2.68)	0.330*** (3.62)	0.402*** (4.22)	0.467*** (4.69)	0.434*** (3.99)	0.303*** (2.60)
Big-Four Auditor	0.145** (1.99)	0.142** (2.01)	0.324*** (4.40)	0.364*** (4.78)	0.466*** (5.98)	0.390*** (4.79)	0.424*** (4.80)	0.657*** (6.88)
Technology	0.106 (1.38)	-0.173** (-2.25)	-0.069 (-0.85)	0.048 (0.54)	-0.020 (-0.22)	-0.124 (-1.27)	-0.151 (-1.42)	-0.044 (-0.38)
Price Interval	-0.005 (-0.57)	0.012 (1.51)	0.022** (2.47)	0.012 (1.48)	0.004 (0.42)	0.007 (0.74)	0.020** (2.05)	0.012 (1.21)
Offer Size	0.556*** (7.77)	0.580*** (8.58)	0.685*** (10.05)	0.536*** (7.85)	0.388*** (5.65)	0.264*** (3.99)	0.261*** (3.69)	0.240*** (2.98)
Age at IPO	0.007** (2.53)	0.006** (2.25)	0.002 (0.94)	0.002 (0.93)	0.002 (0.72)	0.007** (2.29)	0.005 (1.64)	0.003 (1.13)
Book Value of Assets	0.428*** (7.64)	0.258*** (5.06)	0.110** (2.44)	0.083* (1.78)	0.027 (0.53)	0.023 (0.48)	0.068 (1.17)	0.072 (1.10)
Offer Size-to-Assets	11.895 (1.03)	16.996 (1.16)	-11.05*** (-7.57)	-9.410*** (-6.73)	-32.797** (-2.03)	-8.598 (-1.36)	-16.515 (-1.14)	-7.217 (-0.30)
Sales Growth	0.248*** (3.06)	0.183** (2.35)	0.021 (0.24)	0.001 (0.01)	-0.082 (-0.89)	0.059 (0.60)	0.006 (0.06)	0.103 (0.92)
Observations	2,612	2,347	2,030	1,742	1,532	1,328	1,149	1,038
R-squared								
Industry and Quarter Dummies	yes	yes	yes	yes	yes	yes	yes	yes
Constant	yes	yes	yes	yes	yes	yes	yes	yes

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.

3.4.2.4. HERFINDHAL INDEX

Finally, the best measure of dispersion across institutional investors that we can obtain is the Herfindhal Index that capture the concentration of institutional ownership in a firm. It is the sum of squares of the proportions of the firm's shares held by institutional investors. As we can see in Table 3.10, Table A.10. 1 and Table A.10. 2, the presence of VCs, top underwriters, and Big-N auditors reduce the concentration of shares across institutional investors, and this effect is not only robust to exclusion of the dot-com period, but also persistent over time. In terms of offer characteristics, larger offers reduce concentration, an effect that is robust to the exclusion of the dot-com period, while a relative offer size (proxied by offer size to book value of total assets) is associated to a higher degree of concentration, in particular during the dot-com bubble. The length of the price interval seems negatively correlated to the Herfindhal Index in the short term – between 2 and 3 years after the IPO. In terms of firm characteristics, a higher sales growth before the IPO is associated with a higher dispersion across institutional

investors in the first year after IPO, while firm size – measure in terms of book value of total assets – is correlated to a higher dispersion of stocks across institutional investors in the short to medium -run.

Table 3.10 - Herfindahl Index

The dependent variable is the Herfindahl Index that capture the concentration of institutional ownership in a firm. We run Pooled OLS with White standard errors clustered by firm.

Year	1	2	3	4	5	6	7	8
Venture Capital	-0.038*** (-4.97)	-0.050*** (-5.01)	-0.049*** (-4.27)	-0.035** (-2.49)	-0.073*** (-4.47)	-0.066*** (-3.77)	-0.059*** (-3.02)	-0.041** (-1.97)
Top Underwriter	-0.061*** (-6.80)	-0.039*** (-3.68)	-0.036*** (-2.86)	-0.046*** (-3.05)	-0.045** (-2.55)	-0.079*** (-4.11)	-0.093*** (-4.18)	-0.074*** (-3.06)
Big-Four Auditor	-0.016** (-2.28)	-0.027*** (-3.22)	-0.049*** (-4.98)	-0.070*** (-6.01)	-0.092*** (-6.82)	-0.102*** (-6.73)	-0.106*** (-6.01)	-0.146*** (-7.62)
Technology	-0.005 (-0.59)	0.008 (0.82)	0.012 (1.05)	-0.018 (-1.29)	-0.014 (-0.89)	0.003 (0.19)	0.015 (0.73)	0.004 (0.20)
Price Interval	-0.003*** (-4.17)	-0.002* (-1.92)	-0.003*** (-2.63)	-0.002 (-1.22)	-0.000 (-0.27)	-0.002 (-1.11)	-0.002 (-1.27)	-0.002 (-0.86)
Offer Size	-0.055*** (-9.90)	-0.061*** (-9.63)	-0.071*** (-9.78)	-0.062*** (-6.99)	-0.050*** (-4.96)	-0.046*** (-3.89)	-0.048*** (-3.98)	-0.050*** (-3.71)
Age at IPO	-0.000*** (-2.74)	-0.001*** (-4.81)	-0.001*** (-3.03)	-0.001*** (-3.56)	-0.001*** (-3.46)	-0.001*** (-3.23)	-0.001** (-2.48)	-0.001* (-1.70)
Book Value of Assets	-0.022*** (-5.32)	-0.017*** (-3.39)	-0.015*** (-2.64)	-0.012* (-1.72)	-0.021*** (-2.67)	-0.006 (-0.70)	-0.010 (-1.02)	-0.010 (-0.95)
Offer Size-to-Assets	0.001*** (6.26)	0.001*** (7.65)	0.001*** (9.60)	0.002*** (11.43)	0.002*** (8.58)	0.001*** (7.38)	0.002*** (8.92)	0.002 (0.88)
Sales Growth	-0.024*** (-2.94)	-0.016 (-1.47)	-0.008 (-0.66)	-0.007 (-0.47)	0.003 (0.21)	-0.010 (-0.51)	-0.012 (-0.54)	-0.038* (-1.74)
Observations	2,612	2,347	2,030	1,769	1,532	1,328	1,175	1,041
R-squared	0.2334	0.1871	0.2026	0.1934	0.1779	0.1902	0.1827	0.1904
Industry and Quarter Dummies	yes	yes	yes	yes	yes	yes	yes	yes
Constant	yes	yes	yes	yes	yes	yes	yes	yes

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.

3.4.3. DELISTING DUE TO FAILURE OR ACQUISITION

In this section, we look at the firms that are delisted due to failure or acquisition. As discussed in the previous literature (see Zingales (1995)), some firms may go public even though their goal is to become a target for an acquisition. In this sense, these firms do not have an intention to stay public in the long run; therefore concerns on liquidity or the possibility of raising additional capital through a SEO do not play a role. Differently, for some firms, becoming a target for an acquisition may indicate that they are losers in a process of concentration in a particular industry, in which several companies were fighting in order to become one of the new industry leaders. In this sense, even though the firm goal at the IPO was to stay public and grow over time, it eventually became a target. In Table 3.11 we present the results for a probit on the probability of becoming a target for an acquisition. Since very few firms are acquired within the first two years after the IPO, we present results from the third year after the IPO on.

As we can see, the presence top underwriter as bookrunner is associated with a higher likelihood of becoming an acquisition target, while the presence of a Big-N auditor before the IPO is correlated with a lower chance of becoming a target. We also find relation between the presence of VC-backing and the likelihood of becoming a target in the long-run. These results are robust to the exclusion of the dot-com bubble period and overlapping sample. While offer characteristics do not seem to have any clear effect on the probability of being acquired, firms with higher sales growth before the IPO and firm size – measure in terms of book value of total assets - seem to be more likely to become an acquisition target.

The other reason for delisting that we investigate is failure. By considering failure, we can investigate if firms that go public associated to a VC, top underwriter, or Big-N auditor are in a better or worse shape than their peers. Our results are presented in Table 3.12, Table A.12. 1 and Table A.12. 2. Similarly to the case of mergers, due to the fact that very few firms fail in the first 2 years after the IPO, we present our results from the third year after the IPO on. As we can see, the presence of Big-N companies auditing the IPO firm's prospectus and a top underwriter as bookrunner are associated with a lower likelihood of failure throughout the 8 years after the IPO. We present in Table A.12. 1 our results without the bubble. The effect of the presence of Big-N auditors or of having a top underwriter as book runner is qualitatively the same.

The relationship between the presence of a VC and the likelihood of failure is not statistically significant. In terms of the offer's characteristics, we see that larger offers are associated with lower likelihood of failure, while offers that sell a larger fraction of the firm (proxied by the ratio of offer size to book value of total assets) are associated with a larger likelihood of failure in the medium run. In terms of firm characteristics, firms in technology sectors and older firms are less likely to fail. The results for firms in technology sectors and the effect of age at the IPO are robust to the exclusion of the dot-com bubble from the sample and overlapping sample.

Table 3.11 - Mergers

The dependent variable is a dummy variable indicating that the firm was target for M&A between the 3rd and 8th years from the IPO. We run Probit Regressions with White standard errors.

Year	1	2	3	4	5	6	7	8
Venture Capital			0.080 (1.15)	0.075 (1.12)	0.103 (1.62)	0.114* (1.85)	0.090* (1.77)	0.135** (2.24)
Top Underwriter			0.096 (1.14)	0.164** (2.08)	0.144* (1.92)	0.151** (2.08)	0.181** (2.54)	0.189*** (2.67)
Big-Four Auditor			-1.223*** (-13.92)	-1.294*** (-16.37)	-1.250*** (-17.54)	-1.216*** (-18.10)	-1.211*** (-18.70)	-1.176*** (-18.70)
Technology			-0.013 (-0.18)	0.079 (1.20)	0.060 (0.95)	0.052 (0.85)	0.082 (1.35)	0.077 (1.28)
Price Interval			0.004 (0.61)	0.004 (0.66)	0.005 (0.87)	0.006 (0.95)	0.006 (1.04)	0.006 (0.97)
Offer Size			-0.054 (-0.84)	-0.082 (-1.32)	-0.111** (-2.00)	-0.082 (-1.52)	-0.107* (-1.96)	-0.092* (-1.76)
Age at IPO			0.002 (0.90)	0.001 (0.57)	-0.001 (-0.52)	-0.001 (-0.76)	-0.000 (-0.24)	-0.001 (-0.43)
Book Value of Assets			0.072 (1.35)	0.084* (1.65)	0.122*** (2.67)	0.114*** (2.59)	0.135*** (2.99)	0.115*** (2.71)
Offer Size-to-Assets			-32.082 (-0.83)	-38.663 (-1.08)	-10.319 (-0.37)	-10.961 (-0.44)	-12.143 (-0.46)	-9.379 (-0.42)
Sales Growth			0.165** (2.36)	0.178*** (2.66)	0.122* (1.91)	0.115* (1.85)	0.155** (2.51)	0.149** (2.43)
Observations			2,731	2,731	2,731	2,731	2,731	2,731
Industry and Quarter Dummies	yes	yes	yes	yes	yes	yes	yes	Yes
Constant	yes	yes	yes	yes	yes	yes	yes	Yes

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.

Table 3.12 - Failure

The dependent variable is a dummy variable indicating delisting for bankruptcy or drop between the 3rd and 8th years from the IPO. We run Probit Regressions with White standard errors.

Year	1	2	3	4	5	6	7	8
Venture Capital			-0.077 (-0.89)	0.021 (0.26)	0.027 (0.37)	0.010 (0.14)	0.001 (0.02)	-0.032 (-0.49)
Top Underwriter			-0.226** (-2.27)	-0.238*** (-2.70)	-0.195** (-2.39)	-0.213*** (-2.71)	-0.229*** (-3.07)	-0.148** (-2.01)
Big-Four Auditor			-0.606*** (-6.77)	-0.559*** (-6.85)	-0.504*** (-6.82)	-0.502*** (-7.09)	-0.390*** (-5.87)	-0.331*** (-5.17)
Technology			-0.212** (-2.47)	-0.284*** (-3.60)	-0.249*** (-3.37)	-0.263*** (-3.72)	-0.209*** (-3.09)	-0.233*** (-3.53)
Price Interval			-0.011 (-1.43)	-0.015** (-2.05)	-0.018*** (-2.74)	-0.022*** (-3.32)	-0.018*** (-2.89)	-0.018*** (-2.91)
Offer Size			-0.195*** (-3.24)	-0.197*** (-3.39)	-0.158*** (-2.87)	-0.134** (-2.51)	-0.135*** (-2.67)	-0.161*** (-3.25)
Age at IPO			-0.015*** (-3.87)	-0.012*** (-3.89)	-0.006*** (-2.60)	-0.008*** (-3.24)	-0.005** (-2.52)	-0.006*** (-2.69)
Book Value of Assets			0.100** (2.06)	0.101** (2.26)	0.047 (1.09)	0.045 (1.08)	0.022 (0.55)	0.019 (0.49)
Offer Size-to-Assets			17.729** (2.51)	29.891*** (2.84)	26.971** (2.27)	21.326* (1.78)	17.035 (1.39)	20.739 (1.64)
Sales Growth			0.048 (0.54)	-0.002 (-0.03)	0.021 (0.29)	-0.041 (-0.57)	-0.025 (-0.37)	-0.030 (-0.45)
Observations			2,677	2,677	2,677	2,677	2,677	2,677
Industry and Quarter Dummies	yes	yes	yes	yes	yes	yes	yes	Yes
Constant	yes	yes	yes	yes	yes	yes	yes	Yes

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.

3.5. CONCLUSION

This chapter analyzed the roles played by venture capitalist, underwriters, and auditors on the going public process and their long-run effects. In the IPO process, these certification agents are recurrent actors. Among other things, they price the issue, conduct and supervise the process of shares distribution, and certify both the quality of the accounting information and of the issue. Due to the importance of these activities, their participation should be beneficial to the issuing company.

We presented evidence that the characteristics of the underwriter, auditor, and VC have an impact on the firms' characteristics and market performance. Furthermore, these effects are last for almost a decade. Firms that have a top underwriter and a big 4-auditor at the time of the IPO have a higher marketability for the next 8 years, represented by a higher number of analysts following, a large dispersion of ownership across institutional investors, and higher liquidity through a lower bid-ask spread. They are also less likely to end up delisted as well as more likely to issue an SEO.

We also show that IPOs conducted by top underwriters present enhanced participation of institutional investors and ownership dispersion among such investors. Even more, firms with top underwriters have increased analysts' coverage both in terms of likelihood of being followed and number of analysts following at any given time. The effect of top underwriters on liquidity is also evident on the relatively low bid-ask spread on the stocks that they underwrote. Additionally, we have evidence that the presence of prestigious auditors also provides enhanced liquidity. However, the effects of Big-N auditors, differently from those of underwriters, are not felt until few years after the IPO. We find that the presence of a Big-N auditor is associated to increased participation of and dispersion among institutional investors, increased analyst coverage, and lower bid-ask spreads. However, these effects appear two or three years after the IPO.

We also observe that along the time, the effects of prestigious underwriters on liquidity tend to fade away, while those of Big-N auditor tend to become stronger. It is as if the initial conditions were set by the underwriter but their maintenance depended on the enhanced disclosure provided by the prestigious auditor. Consistent with this delayed effect, we find that the presence of a Big-N auditor is closely related to the strategy of remaining as an independent public company: firms that hire a reputable auditor present lower probability of being delisted within 4 years of the IPO due either to merger or failure (liquidation or drop). Firms audited by a Big-N are also more likely to do a SEO.

Finally, VC-sponsorship positively affects all the measures for market liquidity, since the IPO and for up to a decade. Such effects are not due to survivorship bias. This indicates that VC-sponsorship is in itself a certification to market participants. Companies funded by VC are more likely to be target to a merger. We also find that VC-sponsorship is associated to increased analyst coverage. Venture capital sponsorship does not affect the likelihood of a subsequent SEO. We can also show that VC-backed firms also fair better in these dimensions than non-VC backed firms throughout the 8-years period after the IPO. Even more, VC-backing implies in less earnings management by the firm in the period pre-IPO, indicating that VC-backed firms are looking to reduce asymmetry of information between insiders and potential investors.

Overall, we interpret our results as an indication that firms that expected to stay public for the long run use top tier underwriters and auditors during the IPO process. These actors provide a higher dispersion of shares across institutional investors as well as certification of the higher quality of the accounting information, respectively. These services, while potentially harming

the firm at the short-run through a higher underpricing, generate long-term benefits for the firm in terms of higher liquidity that will only be ripped off if the firm expects to stay public for the medium to long-run.

4. VENTURE CAPITAL BACKING: OPERACIONAL PERFORMANCE AND PERSISTENCE OVER TIME

4.1. INTRODUCTION

Corporate culture matters for a firm's policy choices and financial performance. Corporate finance polices vary according to firms and a substantial portion of the cross-sectional variation remains unexplained. Additionally, there are few evidences on long-run benefit that Venture Capitalists (VCs) provide to companies in which they invest. This chapter investigates how VCs impact the firms' financing choices and their difference between non-VC-backed firms.

Brav and Gompers (1997) show moderate outperformance of VC-backed firms in the long-run. Others authors had analyzed the role of VCs at the time of the IPO. VCs could provide benefits for IPO firms by: monitoration (Barry et al., 1990) and certification (Megginson and Weiss, 1991). In this study, we quantify the role VCs play in the operating performance of newly public firms after their IPO. Our question is, do VCs provide long-term identifiable characteristics to the firms they have an equity stake?

There is a vast empirical literature that suggests that venture capital firms contribute significantly to the success of start-up companies. This is usually attributed to the VCs' superior abilities of screening, monitoring, and consulting of their portfolio companies (Barry, Muscarella, Peavy, and Vetsuypens, 1990). Brav and Gompers (1997) present three reasons why VC-backed IPOs might differ from non-VC-backed IPOs. First, VCs implement management structures that help the operating performance firm. Additionally, VCs can also use their industry expertise to improve the firm's operations also serving on the firm provide valuable information about raising capital. Second, VCs might affect who holds the firm's shares after an IPO. A greater number of large investors will hold shares of VC-backed IPOs because VCs have contacts with large investment banks. These relationships also lead to future relationships after the IPO. Finally, VCs obtain positions on the board of directors of the start-up firms and retain the positions long after the IPO. Having VCs on the board provides board members with experience in raising capital. Therefore, a question that emerges is whether these characteristics have an impact on the operating performance firm over time, i.e, is there a difference in terms of financial policy that VC-backed IPOs might differ from non-VC-backed IPOs over time?

For Kreps (1990) and Hermalin (2001) understanding corporate culture is necessary if one wants to understand firms' policy choices and ultimately their performance. Thus, several of

our key findings support a culture-based explanation for the difference between VC-backed and non-VC-backed firms in terms of financial policy and its persistence over time. There are many definitions for corporate culture. There is a common element in economic theories that corporate cultures is a specific set of norms, beliefs, values and preferences that is shared among its executives and workers. In this view, the firm's culture can matter for its policy choices because the culture defines the "right" behavior when players within a firm are confronted with unforeseen contingencies or when faced with situations with multiple equilibria, Kreps (1990).

In this study, we use four measures similar to Cronqvist, Low and Nilsson (2009) that relate to the firms' financial policy and its persistence over time. These measures are: i) Cash holdings; ii) Leverage; iii) dividends out of their earnings; and iv) interest coverage.

VCs are often considered value-added investors and their involvement with corporate strategies is one important value-added activity (Fried et al., 1998). The interest-alignment hypothesis suggests that shareholders are more willing to accept large cash holdings to finance potential investment projects if the firms have effective monitoring mechanisms. Thus, the relation between VC ownership and cash holdings should be positive. Our results show that there is a positive and statistically significant relationship between VC-backed firms and cash holdings. These results are persistent for at least 8 years after the IPO. Additionally, this result is robust even when we eliminate the observations during the dot-com bubble from our sample or when we consider only overlapping firms.

In general, VCs seek young, high growth and risky companies with the potential to produce breakthrough products and services and achieve strong growth. Thus, they tend to make their investments at an early stage of development when the prospects of success are far from certain. VCs, therefore, have an influential role in the strategic evolution of the company and its investment and financing decisions. In addition to playing an active role in the firms by participating in activities, they provide financing. Thus, VC-backed firms may be more likely to issue equity than debt, consequently they would have lower levels of leverage compared to non-VC-backed firms. Our results show that VC-backed firms have significantly less leverage in all 8 years both during and after their IPOs compared to non-VC-backed. Similarly with leverage, the interest coverage ratio is considered to be a financial leverage ratio in that it analyzes one aspect of a company's financial viability regarding its debt. We find that VC-backed firms present lower level of interest coverage than non-VC-backed firms. This result is robust and its persistent over time.

The life cycle and dividend signaling theories provide the theoretical background to explore the link between VC involvement and choice of post-IPO payout mechanism adopted by IPO firms. The life cycle theory suggests that dividends are typically paid by mature, profitable, established firms with low growth prospects while earnings retention is preferred by young, high growth firms with an abundance of investment opportunities and limited resources (DeAngelo et al., 2006). Since VC-backed firms are typically young, high growth firms that make the transition from private to public firms at an earlier stage in their growth cycle relative to similar non-VC backed firms (Lerner, 1994), the life cycle theory would suggest that VC backed IPO firms are more likely to prefer retention to payouts and therefore are not expected to initiate dividends during the post-IPO phase. Unfortunately, we do not have evidence that the presence of a VC presents relationship statistically significant with the level of dividend to earnings ratio.

This chapter is organized as follows: Section 4.2 describes our data and sample. Section 4.3 explains our hypotheses, regressions models and treatment for endogenous choice of venture capital investments. Section 4.4 presents empirical results. Finally, Section 4.5 concludes the chapter.

4.2. HYPOTHESES AND METHODOLOGY

4.2.1. HYPOTHESES

As financiers, VCs often oversee managerial decisions (Carpenter et al., 2003; Van den Berghe and Levrau, 2002). The interest-alignment hypothesis suggests that the existence of large shareholders improves shareholder protection, leading to a positive effect of VC ownership on cash holdings. Thus, our first hypothesis is that the presence of venture capitalists may have a positive effect on the firm cash holdings in the years immediately after its IPO. Therefore, our first hypothesis can be stated as:

Hypothesis 1: VC-backed firms present higher level of cash holdings in the years after its IPO than non-VC-backed ones.

Our second objective in this study is to analyze how VC backing affect a firm's financial structure in the years after its IPO. Venture Capitalists may play an important role in conveying a firm's intrinsic value to the financial market, thereby reducing the extent of information asymmetry it faces. Reduced informational asymmetry, in turn, may influence various aspects

of a firm's financial policies (see, e.g., Myers and Majluf (1984)). In particular, this implies that VC-backed firms may be more likely to issue equity (since they are more likely to get a fair price for their stock), so that they will have lower levels of leverage. Thus, if venture capitalists are able to certify intrinsic firm value and thus reduce the extent of information asymmetry facing the firm, VC-backed firms will be associated with lower leverage ratios. Therefore, our second hypothesis can be stated as:

Hypothesis 2: VC-backed firms present lower levels of leverage in the years after its IPO than non-VC-backed ones.

Companies which pay out a large part of their earnings in the form of dividends are less inclined to hoard cash on their balance sheet or feel obliged to spend cash on acquisitions or marginal investments. Jain, Shekhar and Torbey (2009) show that the probability of dividend initiation declines with number of uses of IPO proceeds, initial returns, risk of the issue, venture capital participation, membership in emerging industries, and pre-IPO capital expenditure intensity. Thus, if venture capitalists are related with young and high growth firms, VC-backed firms will pay less dividends out of their earnings. Therefore, our third hypothesis can be stated as:

Hypothesis 3: VC-backed firms present lower level of dividends out of their earnings in the years after its IPO than non-VC-backed ones.

Finally, the interest coverage ratio is considered to be a financial leverage ratio in that it analyzes one aspect of a company's financial viability regarding its debt. Similarly with hypothesis 2, our fourth hypothesis test if VC-backed IPOs present lower level of interest coverage than non-VC-backed IPOs. Therefore, our fourth hypothesis can be stated as:

Hypothesis 4: VC-backed firms present lower level of interest coverage in the years after its IPO than non-VC-backed ones.

4.2.2 METHODOLOGY

In this study, we use four measures for the firms's financial policy: i) Cash holdings; ii) Leverage; iii) dividends out of their earnings; and iv) interest coverage. These measures are based in Cronqvist, Low and Nilsson (2009). Table 4.1 describes each variable with more detailed definitions.

Table 4.1 - Definitions for principal variables

Cash Holdings	Is defined as cash and short-term investments (DATA 1) divided by book value of assets (DATA 6) less cash and short-term investments (DATA 1)
Leverage	Is defined as the sum of long-term debt (DATA 9) and debt in current liabilities (DATA 34) scaled by book assets (DATA 6).
Dividend/earnings	Is the ratio of the sum of common dividends (DATA 21) and preferred dividends (DATA 19) over operating income before depreciation (DATA 13).
Interest Coverage	Is defined as operating income before depreciation (DATA 13) divided by interest expenses (DATA 15).
Venture Capital (VC)	Is a dummy variable assuming value one for a Venture Capital backed IPO, and zero otherwise.
Underwriter	We use the Carter-Manaster index (updated for the period 2001-2010 by Ritter (2013)) of the member of the underwriting syndicate with the highest score
Auditor	Dummy variable that takes value one when firm had their financial statements audited by one of the Big Four auditing companies, and zero otherwise
Cash Flow	Is defined as the sum of earnings before extraordinary items (DATA 18) and depreciation (DATA 14) divided by lagged book value of assets (DATA 6).
Net property, plant, and equipment ratio	Is defined as the net property plant and equipment (DATA 8) divided by book value of assets (DATA 6). This variable is lagged.
Book Value of Assets (Size)	Is the natural logarithm of book value of assets (DATA 5)
Tobin's q	Is defined as the market value of assets divided by the book value of assets (DATA 6). The market value of assets equals the book value of assets plus the market value of common equity (DATA 25 × DATA 199) less the sum of the book value of common equity (DATA 60) and balance sheet deferred taxes (DATA 74). This variable is lagged.
Sales Growth	Is the geometric average sales growth during past three years (or available period if less) (DATA 12)
Technology	As defined in Loughran and Ritter (2002)
Age at IPO	The year of the IPO minus the founding year.
Offer Size	Filled amount of proceeds from IPO (MM).
Offer Size-to-Assets	Filled amount of proceeds from IPO (MM) divided by book value of assets.
Industry	Industry dummies mapped to US 2-digit SIC codes when using common controls
τ_t	Time dummies per year

Our hypotheses relate to the difference between VC-backed firms and non-VC-backed firms in terms of financial policy and its persistence. We use four measures to evaluate the firms'

financial policy: i) Cash holdings; ii) Leverage; iii) dividends out of their earnings; and iv) interest coverage. For the four hypotheses we run Pooled OLS regression. Our specification for this model is:

$$Dependent_{i,t} = \beta_0 + \beta_1 VC_i + \beta_2 Underwriter_i + \beta_3 Auditor_i + \gamma' x'_{i,t} + \pi' g'_i + \theta' industry_i + \tau_t + \mu_{i,t} \quad (1)$$

Where

Dependent_{i,t}: there are four dependent variables that vary over time: i) Cash holdings; ii) Leverage; iii) dividends out of their earnings; and iv) interest coverage;

x'_{i,t}: is a vector of predetermined characteristics of firm *i* at year *t*: cash flow, net PPE ratio, tobin's q, technology, age at IPO, book value of assets, and sales growth;

g'_i: is a vector of predetermined characteristics of issue *i*: offer size and offer size scaled by book value of assets;

The regression specified in Model 1 is estimated using pooled OLS with industry and time dummies and random effects. We also employ the White (1980) procedure for robust standard errors that are clustered by firm.

4.3. DATA AND SAMPLE CHARACTERISTICS

Our dataset has a broad range of firm variables related to financial policy. We use leverage, interest coverage, cash holdings, and dividends. Our set of control variables includes age at IPO, technology firms, lagged logarithm of book assets, cash flow, lagged Tobin's q, lagged ROA, Sales Growth, lagged net property, plant, and equipment, offer size and size offer-to-book value of assets.

Information on offer price, offer date, proceeds, leading underwriter name, price interval, SEO, and firm age comes from the new issues database of Securities Data Corporation (SDC-Platinum). Data on sales, book value of assets and Big-Four auditing come from Compustat. Information on venture capital sponsoring comes from Venture Economics database. Measure of underwriter quality is the Carter and Manaster's index (1990) updated by Loughran and

Ritter (2004). High-tech firms are identified following Loughran and Ritter's (2004) classification. Our variables are summarized in Table 4.2.

Our sample consists of firms completing an initial public offering between January 1991 and December 2000. As usual, we exclude unit offerings, closed-end funds, limited partnerships, IPOs with an offer price of less than five dollars, IPOs of financial institutions (SIC codes 6000–6999), utilities (SIC codes 4900–4999) and real-estate investment trusts. We also exclude American depositary receipts (ADRs). Our final sample consists of 2,833 IPOs with information on all variables used in regressions. Over the same period, Loughran and Ritter (2004) report 4,470 IPOs. Thus our sample contains 63.4% of their total number of IPOs.

Table 4.2 - Descriptive Statistics for Dependents and Covariates variables

The first line of each variable on the table is the sample average for the variable. The second line reports the standard deviation. * The t statistics refer to the test of the null hypothesis of no difference between the means of venture and non-venture-backed firms.

Panel A: Sample Description for Dependent Variables			
	VC-backed	Non-VC-backed	Difference*
Cash Holdings	2.767 (3.537)	1.508 (20.293)	1.26*** (4.42)
Dividend to Earnings Ratio	-0.013 (0.394)	0.001 (0.149)	-0.01 (1.43)
Interest Coverage	-0.233 (0.64)	0.093 (0.400)	-0.33*** (4.34)
Leverage	0.275 (0.231)	0.434 (0.349)	-0.16*** (4.74)
Panel B: Descriptive Statistics for Covariates			
Top Underwriter	0.812 (0.391)	0.626 (0.484)	0.19*** (3.74)
Big-Four Auditor	0.358 (0.48)	0.313 (0.464)	0.05*** (3.87)
Cash Flow	-0.213 (1.106)	0.056 (1.18)	-0.27* (1.85)
Net PPE	0.133 (0.151)	0.241 (0.224)	-0.11** (2.22)
Book Value of Assets	4.226 (0.966)	4.529 (1.362)	-0.30*** (2.75)
Tobin's q	8.924 (18.884)	4.674 (6.923)	4.25*** (3.83)
Sales Growth	0.786 (0.481)	0.629 (0.418)	0.16*** (3.21)
Technology	0.481 (0.5)	0.224 (0.417)	0.26*** (2.85)
Age at IPO	8.152 (9.15)	18.032 (22.012)	-9.88*** (2.77)
Offer Size	3.850 (0.753)	3.797 (1.061)	0.05* (1.72)
Offer Size-to-Assets	0.001 (0.001)	0.001 (0.016)	0.00 (0.47)

4.4. RESULTS

4.4.1. CASH HOLDINGS

In general cash holdings might result from precautionary reasons or from limited access to external finance. In this study, we analyze the factors conditioning firms' cash holdings and its persistence over time for VC-backed firms and non-VC-backed firms.

In Table 4.3 we present our results. As you can see, VC-backing firms incur in a higher level of cash holdings and these results last for at least 8 years after the IPO. This result is robust even when we eliminate the observations during the dot-com bubble from our sample (Table A.4.3. 1) or when we run only overlapping firms (Table A.4.3. 2). Neither the presence of a Big-Four auditor nor top underwriter present relationship statistically significant with the level of cash holdings.

In terms of offer characteristics, larger offer sizes would usually present higher level of cash holdings over the first 8 years after the IPO. Differently, if a larger fraction of the firm – proxied by the ratio of offer size to book value of assets – is sold during the IPO, the firm presents lower level of cash holdings over time.

Finally, in terms of firm characteristics, older firms, firms in technology sectors, larger firms, and firms with higher net PPE incur in a lower level of cash holdings.

Table 4.3 - Cash Holdings

The dependent variable is the cash holdings from year 1 to year 8 after IPO. We run Pooled OLS with White standard errors clustered by firm.

Year	1	2	3	4	5	6	7	8
Venture Capital	1.152*** (9.66)	0.754*** (7.91)	0.630*** (7.26)	0.617*** (6.40)	0.731*** (7.13)	0.770*** (7.68)	0.763*** (6.40)	0.781*** (5.83)
Top Underwriter	0.424*** (3.18)	0.262** (2.44)	0.184* (1.85)	0.150* (1.85)	0.263** (2.18)	0.129 (1.09)	0.172 (1.19)	0.150 (0.97)
Big-Four Auditor	0.056 (0.52)	0.088 (1.07)	0.148** (2.00)	0.136* (1.80)	0.237*** (2.86)	0.190** (2.28)	0.166* (1.74)	0.029 (0.26)
Bubble Dummy	1.043*** (6.72)	0.236* (1.71)	0.458*** (3.35)	0.402*** (2.90)	0.132 (0.94)	0.195 (1.26)	0.103 (0.62)	0.063 (0.35)
Cash Flow	-0.032 (-0.65)	0.041 (1.11)	-0.023 (-0.77)	0.017** (2.41)	-0.016 (-0.85)	0.015 (0.73)	-0.002 (-0.06)	-0.020 (-0.63)
Net PPE	-3.830*** (-16.48)	-2.259*** (-13.75)	-1.988*** (-12.85)	-1.787*** (-10.96)	-1.955*** (-10.51)	-1.816*** (-9.41)	-2.162*** (-9.04)	-2.165*** (-8.35)
Book Value of Assets	-0.361*** (-6.93)	-0.409*** (-9.40)	-0.313*** (-7.52)	-0.249*** (-5.98)	-0.263*** (-6.02)	-0.176*** (-3.76)	-0.193*** (-4.56)	-0.186*** (-3.85)
Tobin's q	0.001 (0.18)	0.017* (1.91)	-0.003 (-0.67)	-0.005 (-1.35)	-0.002 (-0.35)	0.001 (0.12)	0.006 (0.84)	0.012 (1.42)
Sales Growth	-0.606*** (-3.97)	-0.283** (-2.31)	-0.219** (-2.07)	-0.042 (-0.35)	0.003 (0.02)	0.159 (0.83)	-0.185 (-0.95)	-0.277 (-1.20)
Technology	-0.405*** (-3.42)	-0.350*** (-3.61)	-0.263*** (-2.96)	-0.255*** (-2.76)	-0.372*** (-3.39)	-0.490*** (-4.11)	-0.593*** (-4.40)	-0.758*** (-5.06)
Age at IPO	-0.015*** (-8.54)	-0.008*** (-7.03)	-0.007*** (-6.22)	-0.006*** (-6.23)	-0.007*** (-5.80)	-0.006*** (-4.38)	-0.008*** (-5.53)	-0.008*** (-5.39)
Offer Size	0.171** (2.32)	0.338*** (5.11)	0.346*** (5.26)	0.271*** (4.57)	0.250*** (3.62)	0.228*** (3.33)	0.300*** (3.79)	0.220*** (3.11)
Offer Size-to-Assets	-5.307*** (-3.35)	-5.380*** (-7.13)	-1.418*** (-7.18)	-0.829*** (-6.61)	-0.179*** (-6.39)	-0.137*** (-5.54)	-0.044*** (-5.73)	-0.034*** (-4.53)
Observations	2,833	2,663	2,361	2,084	1,829	1,586	1,424	1,259
R-squared	0.2248	0.1988	0.2059	0.1734	0.1764	0.1619	0.1743	0.1718
Industry and Quarter Dummies	yes	yes	Yes	yes	Yes	yes	yes	yes
Constant	yes	yes	Yes	yes	Yes	yes	yes	yes

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.

4.4.2. LEVERAGE

Our findings on leverage for VC-backed firms and non-VC-backed firms are the following. Table 4.4 shows that VC is associated with a lower level of leverage over the first 8 years after the IPO. This result is robust even when we eliminate the observations during the dot-com bubble from our sample (Table A.4.4. 1) or when we use only overlapping firms (Table A.4.4. 2). We obtain a similar qualitative effect for the presence of a Big-Four auditor, although the magnitude is smaller and it does not seem to have an effect immediately after the IPO, i.e., the coefficient is only statistically significant from the 2nd. year after the IPO on. There is also a negative relationship between leverage and the presence of a top underwriter, but only in the short term – first 1 year after the IPO.

In terms of offer characteristics, larger offer sizes present higher level of leverage in the medium to long run, i.e., within 5 to 8 years after the IPO. In terms of firm characteristics, older firms and larger firms incur in a higher level of leverage at the short and medium run, i.e., within 1 to 3 years after the IPO. Firms with higher net PPE present a higher level of leverage over the first 8 years after the IPO. Differently, firms in technology sectors incur in a lower level of leverage over time. These results are robust to the exclusion of the dot-com bubble and overlapping sample firms.

Table 4.4 - Leverage

The dependent variable is the leverage from year 1 to year 8 after IPO. We run Pooled OLS with White standard errors clustered by firm.

Year	1	2	3	4	5	6	7	8
Venture Capital	-0.075*** (-5.32)	-0.063*** (-4.89)	-0.102*** (-3.21)	-0.086*** (-4.76)	-0.087** (-2.49)	-0.097*** (-2.77)	-0.123*** (-2.72)	-0.068* (-1.71)
Top Underwriter	-0.024* (-1.66)	-0.020 (-1.55)	0.028 (1.18)	-0.015 (-0.81)	-0.041 (-1.24)	-0.064 (-1.59)	-0.034 (-1.03)	-0.024 (-0.66)
Big-Four Auditor	-0.002 (-0.16)	-0.014 (-0.98)	-0.062*** (-2.82)	-0.049*** (-2.88)	-0.084*** (-3.52)	-0.103*** (-3.78)	-0.075** (-2.37)	-0.034 (-1.14)
Bubble Dummy	-0.113*** (-7.09)	-0.080*** (-3.26)	-0.057 (-0.94)	-0.071*** (-2.96)	-0.095** (-2.32)	-0.195*** (-3.63)	-0.146** (-2.41)	-0.082 (-1.45)
Cash Flow	-0.009 (-1.64)	-0.067*** (-6.71)	-0.067*** (-4.17)	-0.042*** (-4.44)	-0.090*** (-2.84)	-0.042** (-2.46)	-0.076*** (-4.13)	-0.059*** (-2.89)
Net PPE	0.405*** (5.87)	0.296*** (7.11)	0.273*** (7.57)	0.314*** (7.47)	0.384*** (4.55)	0.261*** (4.62)	0.253*** (4.26)	0.246*** (4.36)
Book Value of Assets	0.049*** (3.56)	0.056*** (5.34)	0.036*** (2.61)	0.010 (0.83)	-0.002 (-0.09)	-0.008 (-0.52)	-0.008 (-0.31)	-0.022 (-0.92)
Tobin's q	0.004** (2.03)	0.001 (0.53)	0.009** (1.99)	0.008*** (3.75)	0.011*** (3.59)	0.016*** (4.47)	0.016*** (3.71)	0.010*** (3.17)
Sales Growth	-0.014 (-0.92)	-0.001 (-0.06)	-0.032 (-1.18)	-0.059*** (-2.88)	-0.025 (-0.76)	-0.068 (-1.64)	-0.059* (-1.90)	-0.024 (-0.58)
Technology	-0.026*** (-2.62)	-0.033** (-2.27)	-0.021 (-0.75)	-0.056*** (-3.15)	-0.057** (-2.15)	-0.069** (-2.07)	-0.072* (-1.92)	-0.083** (-2.57)
Age at IPO	0.002*** (5.56)	0.001*** (4.38)	0.001** (2.09)	0.000 (1.39)	0.000 (0.84)	0.001 (1.63)	0.002 (1.34)	0.000 (0.33)
Offer Size	-0.002 (-0.16)	-0.014 (-1.19)	-0.016 (-1.23)	0.018 (1.24)	0.021 (0.93)	0.046* (1.88)	0.047 (1.22)	0.084** (2.22)
Offer Size-to-Assets	0.502 (0.74)	0.085 (0.41)	0.055 (1.48)	-0.041 (-1.25)	-0.025** (-2.12)	-0.043*** (-3.06)	0.014*** (3.22)	0.014*** (3.02)
Observations	2,833	2,663	2,361	2,084	1,829	1,586	1,424	1,259
R-squared	0.1721	0.1605	0.0603	0.1279	0.1167	0.1329	0.1765	0.1400
Industry and Quarter Dummies	yes	yes	Yes	yes	Yes	yes	yes	yes
Constant	yes	yes	Yes	yes	Yes	yes	yes	yes

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.

4.4.3. DIVIDENDS OUT OF THEIR EARNINGS

There is a belief that VC money leads to greater innovation and hence greater pressures on publicly traded firms with less knowhow and experience. Thus, we would expect that less experienced firms with lower payout yield would be hurt more by VC investment than are financially healthy firms. Table 4.5 presents the results on dividend to earnings ratio.

We do not have evidence that the presence of a VC or top underwriter or Big-Four auditor present relationship statistically significant with the level of dividend to earnings ratio. The results are similar for offer characteristics and firms' characteristics.

Table 4.5 - Dividend to Earnings

The dependent variable is the dividend to earnings ratio from year 1 to year 8 after IPO. We run Pooled OLS with White standard errors clustered by firm.

Year	1	2	3	4	5	6	7	8
Venture Capital	-0.006 (-0.40)	0.039* (1.70)	0.144 (1.05)	-0.102 (-1.04)	0.005 (0.30)	-0.026 (-1.28)	-0.016 (-0.48)	0.108 (0.89)
Top Underwriter	-0.028** (-2.32)	-0.023* (-1.73)	-0.041 (-0.96)	0.123 (1.05)	-0.019 (-0.98)	0.005 (0.31)	0.074** (2.05)	-0.044 (-0.62)
Big-Four Auditor	0.019* (1.66)	0.007 (0.40)	0.090 (1.13)	-0.055 (-0.68)	-0.046 (-1.35)	0.028 (1.14)	0.029 (1.37)	0.111 (1.36)
Bubble Dummy	-0.021 (-1.02)	-0.026 (-1.05)	-0.227 (-1.05)	-0.039 (-0.71)	-0.015 (-0.50)	0.021 (0.45)	0.050 (1.27)	-0.180 (-1.07)
Cash Flow	0.010 (1.24)	-0.002 (-0.39)	0.015 (0.82)	-0.021 (-0.65)	0.010** (2.12)	-0.016 (-0.57)	0.014 (0.80)	0.029 (0.68)
Net PPE	0.019 (0.55)	-0.052 (-1.28)	0.058 (0.47)	0.018 (0.67)	0.024 (0.66)	0.124 (1.10)	-0.092 (-1.25)	0.034 (0.42)
Book Value of Assets	-0.002 (-0.45)	0.022 (1.29)	0.005 (0.55)	0.034 (1.24)	0.009 (0.99)	-0.001 (-0.09)	-0.034 (-1.38)	0.046 (0.96)
Tobin's q	0.000 (0.78)	-0.000 (-0.94)	0.006 (0.85)	-0.001 (-0.88)	-0.010 (-1.29)	0.002 (1.07)	-0.005*** (-2.64)	0.005 (0.86)
Sales Growth	0.009 (0.80)	-0.018 (-1.08)	0.105 (0.93)	-0.157 (-1.04)	-0.032 (-0.69)	-0.026 (-1.15)	-0.042 (-0.93)	-0.016 (-0.66)
Technology	0.008 (0.55)	-0.013 (-0.95)	-0.150 (-1.14)	-0.042 (-0.70)	0.107 (1.24)	0.041 (1.12)	-0.026 (-0.58)	-0.103 (-1.03)
Age at IPO	0.000 (1.14)	0.000 (0.64)	0.002 (1.18)	-0.002 (-0.99)	-0.000 (-0.23)	-0.000 (-0.12)	0.001 (1.28)	0.001 (1.19)
Offer Size	0.013* (1.75)	-0.004 (-0.56)	-0.030 (-0.84)	-0.038 (-1.08)	-0.011 (-0.66)	0.022** (2.21)	-0.004 (-0.43)	-0.036 (-0.83)
Offer Size-to-Assets	-0.144 (-1.40)	0.033 (0.53)	0.092 (0.98)	0.040 (1.18)	0.033 (1.24)	-0.011 (-1.51)	0.000 (0.31)	0.002 (0.75)
Observations	2,443	2,352	2,079	1,828	1,632	1,426	1,292	1,152
R-squared	0.0062	0.0083	0.0064	0.0032	0.0242	0.0120	0.0170	0.0133
Industry and Quarter Dummies	yes	Yes	Yes	yes	Yes	yes	yes	yes
Constant	yes	Yes	Yes	yes	Yes	yes	yes	yes

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.

4.4.4. INTEREST COVERAGE

Similarly with the results for leverage presented in Table 4.4, we find that there is a negative and statistically significant relationship between VC-backed firms and interest coverage over time (Table 4.6). The effect of the presence of a top underwriter is also negative, however this effect is not persistent over time if we exclude the dot-com bubble from the sample or if we use only overlapping firms. We do not find results statistically significant for the presence of a Big-N auditor.

In terms of offer characteristics, larger offer sizes present lower level of interest coverage over the first 8 years after the IPO, while offers that sell a larger fraction of the firm (proxied by the ratio of offer size to book value of total assets) are associated with a lower level of interest coverage over time.

Finally, in terms of firm characteristics, older firms, firms in technology sectors, larger firms, firms with higher net PPE, firms with higher cash flow and firms that present a higher sales growth incur in a higher level of interest coverage. These results are robust to the exclusion of the dot-com bubble and when we use only overlapping firms.

Table 4.6 - Interest Coverage

The dependent variable is the interest coverage from year 1 to year 8 after IPO. We run Pooled OLS with White standard errors clustered by firm.

Year	1	2	3	4	5	6	7	8
Venture Capital	-0.216*** (-8.99)	-0.120*** (-5.25)	-0.100*** (-5.56)	-0.082*** (-4.59)	-0.092*** (-5.00)	-0.096*** (-4.27)	-0.069** (-2.17)	-0.097*** (-3.83)
Top Underwriter	-0.046* (-1.71)	-0.050** (-2.00)	-0.029 (-1.33)	-0.030 (-1.49)	-0.026 (-1.05)	-0.075 (-1.55)	-0.012 (-0.23)	-0.017 (-0.58)
Big-Four Auditor	0.028 (1.30)	-0.011 (-0.56)	-0.013 (-0.78)	-0.004 (-0.21)	0.020 (1.10)	-0.006 (-0.23)	-0.012 (-0.37)	0.025 (1.02)
Bubble Dummy	-0.351*** (-11.02)	-0.145*** (-5.12)	-0.032 (-1.10)	0.058** (1.99)	0.060** (2.07)	0.086** (2.44)	0.117* (1.87)	0.035 (0.80)
Cash Flow	0.059** (2.41)	0.146*** (5.93)	0.067*** (4.44)	0.021** (2.02)	0.046*** (4.25)	0.077*** (4.34)	0.061*** (4.08)	0.074*** (3.36)
Net PPE	0.247*** (5.69)	0.118*** (2.79)	0.079** (2.26)	0.080** (2.42)	0.080** (2.48)	0.104** (2.28)	0.174** (2.51)	0.116** (2.38)
Book Value of Assets	0.098*** (6.43)	0.154*** (10.32)	0.114*** (9.19)	0.118*** (7.44)	0.098*** (6.26)	0.103*** (4.46)	0.071*** (3.43)	0.086*** (4.09)
Tobin's q	0.002 (1.19)	-0.002 (-1.26)	-0.003** (-2.41)	-0.003*** (-2.58)	-0.002 (-1.29)	-0.003** (-2.22)	-0.008* (-1.69)	-0.002 (-1.01)
Sales Growth	0.117*** (3.74)	0.083** (2.52)	0.140*** (5.12)	0.123*** (5.34)	0.099*** (3.39)	0.128*** (3.04)	0.157*** (2.80)	0.169*** (3.09)
Technology	0.127*** (5.17)	0.091*** (3.85)	0.075*** (3.47)	0.096*** (4.20)	0.078*** (3.15)	0.063* (1.84)	0.078** (1.97)	0.082*** (2.91)
Age at IPO	0.002*** (4.14)	0.001** (2.47)	0.001*** (2.75)	0.001** (2.46)	0.001* (1.68)	0.000 (0.50)	0.000 (0.06)	0.001 (0.79)
Offer Size	-0.047** (-2.40)	-0.110*** (-6.29)	-0.075*** (-5.09)	-0.070*** (-4.89)	-0.046*** (-2.84)	-0.024 (-1.28)	-0.032 (-1.27)	-0.017 (-0.60)
Offer Size-to-Assets	0.121 (0.42)	1.287*** (6.18)	0.267*** (5.82)	0.191*** (6.14)	0.033*** (4.61)	0.033*** (4.42)	0.010*** (2.70)	0.006*** (2.82)
Observations	2,444	2,353	2,080	1,828	1,633	1,427	1,292	1,152
R-squared	0.2183	0.2511	0.2445	0.2381	0.1949	0.1598	0.1499	0.2081
Industry and Quarter Dummies	yes	Yes	Yes	yes	Yes	yes	yes	yes
Constant	yes	Yes	Yes	yes	Yes	yes	yes	yes

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.

4.4.5. ROBUSTNESS

In this study, our interest lies in the relationship between VC-backed firms and the firms' financial policy and its persistence. In an ideal experiment, we would want to observe the firm' financial policy for a VC-backed IPO and the firm' financial policy that the same IPO would experience had it not received venture financing. This would allow us to make causal inferences about the effect of venture backing on the firms' financial policy. Unfortunately, given the nonexperimental nature of the data, what we actually observe is the firm' financial policy for a VC-backed IPO and the firm' financial policy for a non-VC-backed IPO. In that case, the problem is that venture backing is not randomly distributed, introducing a selectivity bias, one

that can easily reverse inferences

To account for this bias, we use a methodology similar to Lee and Wahal (2004) that endogenize the receipt of venture financing and do not impose linearity or function form restrictions. Each VC-backed IPO is matched with a non-VC-backed IPO in the same two-digit SIC code and closest in ROA and firm size. Addressing the endogeneity issue directly produces results that are similar with initial results presented in this study.

Table 4.7 presents the results for the difference in terms of firms' financial policy between VC-backed and non-VC-backed IPOs. Each VC-backed IPO is matched with one or more non-VC-backed-IPOs using the highest propensity score. We find again evidence that there is evidence that VC-backed firms present higher levels of cash holdings and lower levels of leverage than non-VC-backed ones. The results are statistically significant at 1% level.

Table 4.7 - Propensity Score Matching

Univariate analysis for the level of Earnings Management by Propensity Score Matching

For each VC backed IPO, a matched with one or many non-VC backed IPOs is computed using the two-digit SIC code dummies, firm size, and ROA as instrumental variables in each matching approach.

	1	2	3	4	5	6	7	8
Cash Holdings	1.935 (18.37)***	1.279 (16.00)***	1.088 (14.55)***	1.017 (13.00)***	1.121 (13.10)***	1.103 (11.77)***	1.100 (10.38)***	1.090 (9.20)***
Leverage	-0.172 (11.57)***	-0.134 (10.53)***	-0.127 (5.14)***	-0.116 (7.28)***	-0.086 (2.80)***	-0.083 (2.75)***	-0.117 (3.76)***	-0.069 (2.29)**
Dividend to Earnings Ratio	-0.015 (1.25)	0.019 (1.42)	0.068 (0.81)	-0.105 (1.02)	-0.043 (1.06)	-0.009 (0.36)	-0.002 (0.07)	0.043 (0.68)
Interest Coverage	-0.326 (15.79)***	-0.264 (12.81)***	-0.191 (10.76)***	-0.168 (9.21)***	-0.132 (7.17)***	-0.165 (5.86)***	-0.130 (4.13)***	-0.144 (5.48)***

4.5. CONCLUSION

In this chapter, we analyzed the role of venture capitalists in terms of firms' financial policy and persistence (firm fixed effects) that VC-baked firms present over time. A key finding was that a common firm origin leads to similarities in firm policies even a long period after the IPO. VC-backed firms choose a set of policies that are different than those non-VC-bakced over time.

We have found that VC-backed firms incur in a higher level of cash holdings than non-VC-backed firms. This effect is permanent last for at least 8 years after the IPO. We show also that VC-backed firms are associated with a lower level of leverage and interest coverage over the first 8 years after the IPO. Finally, we have been unable to find statistically significant evidence of the connection between VC and dividend to earnings ratio. Our results are robust across statistical methods and different methodologies.

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6. APPENDICES

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Table A.3. 1 - Bid-Ask Spreads (without bubble sample)

The dependent variable is the bid-ask spread in percentage value from year 1 to year 8 after IPO. We run Pooled OLS with White standard errors clustered by firm.

Year	1	2	3	4	5	6	7	8
Venture Capital	-0.001 (-0.78)	-0.003 (-1.47)	-0.003 (-1.43)	-0.007*** (-2.87)	-0.004* (-1.79)	-0.006** (-1.99)	-0.005** (-2.18)	-0.001 (-0.43)
Top Underwriter	-0.003 (-1.57)	-0.004 (-1.61)	-0.004 (-1.57)	-0.005 (-1.51)	-0.010*** (-2.70)	-0.004* (-1.75)	-0.005* (-1.69)	-0.009*** (-3.13)
Big-Four Auditor	-0.001 (-0.50)	-0.004** (-2.01)	-0.003* (-1.74)	-0.008*** (-3.47)	-0.004* (-1.83)	-0.007*** (-2.80)	-0.005** (-2.24)	-0.005** (-2.45)
Technology	-0.004** (-2.14)	-0.006*** (-3.30)	-0.007*** (-2.95)	-0.006** (-2.07)	-0.011*** (-3.44)	-0.005* (-1.78)	-0.003 (-1.19)	-0.004 (-1.61)
Trade Volume	-0.104*** (-4.14)	-0.074*** (-3.96)	-0.026 (-1.11)	-0.042*** (-2.77)	-0.030 (-1.49)	-0.050*** (-2.62)	-0.015 (-1.07)	-0.021 (-1.34)
Market Capitalization	0.000 (0.22)	-0.000 (-0.34)	-0.000 (-0.50)	-0.000 (-0.35)	-0.001** (-2.15)	0.000 (0.45)	-0.000 (-1.28)	-0.000 (-1.18)
Price Interval	-0.001*** (-3.40)	-0.000*** (-2.97)	-0.000* (-1.83)	-0.000 (-0.24)	-0.000 (-0.92)	-0.000 (-0.76)	-0.000 (-1.34)	-0.000 (-1.31)
Offer Size	-0.008*** (-5.91)	-0.010*** (-7.73)	-0.010*** (-6.66)	-0.008*** (-3.70)	-0.009*** (-3.54)	-0.009*** (-3.11)	-0.006*** (-3.40)	-0.006*** (-3.12)
Age at IPO	-0.000 (-0.79)	-0.000 (-0.08)	0.000 (0.32)	0.000 (0.73)	-0.000 (-0.34)	-0.000 (-0.50)	0.000 (1.01)	0.000 (0.06)
Book Value of Assets	-0.004*** (-3.82)	-0.002** (-2.03)	-0.001 (-0.95)	-0.003 (-1.35)	0.001 (0.40)	0.001 (0.56)	-0.001 (-0.29)	0.002 (1.15)
Offer Size-to-Assets	0.102*** (4.40)	0.095*** (5.41)	0.277*** (14.65)	0.926 (0.74)	0.931 (0.57)	0.517 (0.30)	-0.641 (-0.93)	-0.055 (-0.08)
Sales Growth	-0.009*** (-4.80)	-0.007*** (-3.06)	-0.005* (-1.91)	-0.009*** (-3.11)	-0.003 (-0.74)	-0.008** (-2.23)	-0.005** (-2.02)	-0.002 (-0.62)
Observations	2,068	1,906	1,666	1,441	1,230	1,073	940	837
R-squared	0.2219	0.1895	0.1496	0.1469	0.1228	0.1486	0.2072	0.2278
Industry and Quarter Dummies	yes	yes	yes	yes	Yes	Yes	yes	yes
Constant	yes	yes	yes	yes	Yes	Yes	yes	yes

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.

Table A.3. 2 - Bid-Ask Spreads – Overlapping Firms

The dependent variable is the bid-ask spread in percentage value from year 1 to year 8 after IPO period. We run Pooled OLS with White standard errors clustered by firm.

Year	1	2	3	4	5	6	7	8
Venture Capital	-0.001 (-0.21)	-0.002 (-0.50)	-0.002 (-0.96)	-0.006*** (-2.87)	-0.002 (-0.64)	-0.002 (-0.97)	-0.005** (-2.49)	-0.001 (-0.71)
Top Underwriter	-0.008*** (-3.07)	-0.011*** (-2.90)	-0.010*** (-3.67)	-0.009*** (-3.76)	-0.012*** (-3.61)	-0.008*** (-3.35)	-0.007*** (-3.24)	-0.009*** (-3.61)
Big-Four Auditor	0.000 (0.20)	-0.002 (-0.85)	-0.001 (-0.47)	-0.002 (-1.12)	0.000 (0.11)	-0.003 (-1.36)	-0.003* (-1.85)	-0.005*** (-2.86)
Technology	0.001 (0.56)	0.001 (0.39)	-0.001 (-0.52)	-0.002 (-1.02)	-0.004* (-1.68)	-0.006*** (-3.13)	-0.003* (-1.75)	-0.004** (-2.13)
Trade Volume	-0.011 (-1.55)	-0.005 (-0.88)	-0.006* (-1.75)	-0.003 (-0.43)	0.003 (0.33)	-0.000 (-0.16)	0.002 (0.89)	-0.002 (-1.08)
Market Capitalization	-0.000 (-1.39)	-0.001 (-1.56)	-0.001** (-2.27)	-0.000 (-1.38)	-0.001** (-2.26)	-0.000 (-0.16)	-0.000 (-1.11)	-0.000 (-0.83)
Price Interval	-0.000*** (-3.13)	-0.000 (-1.05)	-0.000 (-1.57)	-0.000 (-0.10)	-0.000 (-0.79)	-0.000 (-1.07)	-0.000* (-1.69)	-0.000 (-0.80)
Offer Size	-0.008*** (-4.20)	-0.006** (-2.38)	-0.008*** (-4.38)	-0.007*** (-4.29)	-0.004*** (-3.30)	-0.006*** (-3.72)	-0.005*** (-3.53)	-0.006*** (-4.12)
Age at IPO	0.000* (1.95)	0.000 (0.33)	-0.000 (-0.24)	0.000 (0.63)	-0.000 (-0.05)	0.000 (0.49)	0.000 (1.28)	0.000 (0.43)
Book Value of Assets	-0.005*** (-3.10)	-0.005** (-2.08)	0.001 (0.35)	-0.000 (-0.27)	0.000 (0.05)	0.001 (0.63)	-0.000 (-0.27)	0.001 (1.15)
Offer Size-to-Assets	0.630 (1.15)	-0.360 (-0.45)	0.649 (1.14)	0.280 (0.39)	-0.437 (-0.77)	-0.052 (-0.09)	-0.357 (-0.67)	0.657 (1.14)
Sales Growth	-0.008*** (-3.62)	-0.007** (-2.46)	-0.004* (-1.68)	-0.003 (-1.40)	0.000 (0.03)	-0.002 (-0.67)	-0.001 (-0.64)	0.000 (0.07)
Observations	1,053	1,053	1,053	1,053	1,053	1,053	1,053	1,053
R-squared	0.2881	0.1958	0.2323	0.2446	0.1794	0.2256	0.2539	0.2350
Industry and Quarter Dummies	yes	yes	Yes	Yes	Yes	yes	yes	yes
Constant	yes	yes	Yes	Yes	Yes	yes	yes	yes

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.

Table A.4. 1 - SEO (without bubble sample)

The dependent variable is a dummy variable indicating whether the firm conducted a seasoned equity offering between one and eight years from the IPO. We run Probit Regressions with White standard errors.

Year	1	2	3	4	5	6	7	8
Venture Capital	-0.094 (-1.18)	-0.054 (-0.74)	-0.052 (-0.72)	-0.064 (-0.90)	-0.059 (-0.84)	-0.043 (-0.61)	-0.036 (-0.51)	-0.060 (-0.85)
Top Underwriter	0.336*** (3.51)	0.250*** (2.90)	0.232*** (2.76)	0.219*** (2.64)	0.221*** (2.69)	0.218*** (2.66)	0.221*** (2.70)	0.214*** (2.62)
Big-Four Auditor	0.035 (0.46)	0.056 (0.79)	0.089 (1.28)	0.153** (2.25)	0.183*** (2.71)	0.201*** (2.98)	0.204*** (3.02)	0.236*** (3.52)
Technology	0.074 (0.89)	0.009 (0.12)	0.011 (0.15)	-0.005 (-0.07)	-0.023 (-0.31)	0.001 (0.01)	-0.003 (-0.04)	-0.004 (-0.05)
Price Interval	-0.036*** (-5.03)	-0.038*** (-5.43)	-0.034*** (-4.95)	-0.034*** (-4.89)	-0.035*** (-5.13)	-0.037*** (-5.34)	-0.038*** (-5.45)	-0.038*** (-5.53)
Offer Size	0.465*** (7.79)	0.478*** (8.35)	0.486*** (8.61)	0.559*** (9.79)	0.578*** (9.98)	0.614*** (10.43)	0.609*** (10.39)	0.624*** (10.60)
Age at IPO	0.002 (1.15)	0.000 (0.07)	-0.001 (-0.37)	-0.002 (-0.98)	-0.002 (-0.85)	-0.001 (-0.63)	-0.001 (-0.54)	-0.001 (-0.68)
Book Value of Assets	0.047 (1.09)	0.015 (0.36)	-0.004 (-0.11)	-0.046 (-1.14)	-0.073* (-1.81)	-0.094** (-2.31)	-0.088** (-2.16)	-0.094** (-2.30)
Offer Size-to-Assets	-5.778*** (-3.60)	-6.088*** (-3.90)	-6.261*** (-4.09)	-7.049*** (-4.65)	-7.223*** (-4.76)	-7.523*** (-4.91)	-7.532*** (-4.93)	-7.756*** (-5.09)
Sales Growth	0.255*** (3.18)	0.159** (2.08)	0.121* (1.44)	0.126* (1.72)	0.129* (1.78)	0.127* (1.75)	0.128* (1.77)	0.122* (1.69)
Observations	2,124	2,124	2,124	2,124	2,124	2,124	2,124	2,124
Industry and Quarter Dummies	yes	yes	yes	yes	yes	yes	yes	Yes
Constant	yes	yes	yes	yes	yes	yes	yes	Yes

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.

Table A.4. 2 – SEO (Overlapping Firms)

The dependent variable is a dummy variable indicating whether the firm conducted a seasoned equity offering between one and eight years from the IPO. We run Probit Regressions with White standard errors.

Year	1	2	3	4	5	6	7	8
Venture Capital	-0.078 (-1.16)	-0.058 (-0.92)	-0.048 (-0.78)	-0.060 (-0.98)	-0.069 (-1.13)	-0.054 (-0.88)	-0.047 (-0.78)	-0.067 (-1.10)
Top Underwriter	0.491*** (5.72)	0.407*** (5.24)	0.378*** (4.98)	0.363*** (4.87)	0.371*** (5.03)	0.367*** (4.98)	0.366*** (4.98)	0.356*** (4.85)
Big-Four Auditor	0.019 (0.29)	0.032 (0.54)	0.065 (1.09)	0.115** (1.97)	0.141** (2.43)	0.167*** (2.89)	0.177*** (3.08)	0.211*** (3.68)
Technology	0.050 (0.74)	0.009 (0.14)	-0.004 (-0.07)	-0.018 (-0.29)	-0.027 (-0.42)	-0.018 (-0.29)	-0.021 (-0.33)	-0.020 (-0.32)
Price Interval	-0.033*** (-5.28)	-0.033*** (-5.59)	-0.030*** (-5.19)	-0.029*** (-5.02)	-0.031*** (-5.33)	-0.033*** (-5.59)	-0.033*** (-5.71)	-0.033*** (-5.64)
Offer Size	0.362*** (7.19)	0.383*** (7.89)	0.392*** (8.20)	0.438*** (9.08)	0.454*** (9.29)	0.482*** (9.72)	0.481*** (9.73)	0.492*** (9.90)
Age at IPO	0.001 (0.71)	-0.000 (-0.27)	-0.001 (-0.74)	-0.002 (-1.24)	-0.002 (-1.15)	-0.002 (-0.95)	-0.001 (-0.84)	-0.002 (-1.00)
Book Value of Assets	0.063* (1.72)	0.030 (0.86)	0.015 (0.44)	-0.014 (-0.42)	-0.038 (-1.09)	-0.057 (-1.61)	-0.056 (-1.60)	-0.060* (-1.71)
Offer Size-to-Assets	-4.582*** (-2.91)	-5.000*** (-3.27)	-5.204*** (-3.46)	-5.686*** (-3.82)	-5.832*** (-3.92)	-6.086*** (-4.07)	-6.163*** (-4.14)	-6.341*** (-4.29)
Sales Growth	0.231*** (3.57)	0.158** (2.52)	0.130** (2.13)	0.118* (1.94)	0.113* (1.86)	0.107* (1.76)	0.098 (1.62)	0.095 (1.58)
Observations	2,757	2,757	2,757	2,757	2,757	2,757	2,757	2,757
Industry and Quarter Dummies	yes	yes	Yes	yes	yes	yes	yes	Yes
Constant	yes	yes	Yes	yes	yes	yes	yes	Yes

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.

Table A.5.1 - Analyst (without bubble sample)

The dependent variable is a dummy variable indicating that the firms is followed by at least one analyst. We run Probit Regressions with White standard errors.

Year	1	2	3	4	5	6	7	8
Venture Capital	0.390*** (5.63)	0.398*** (5.92)	0.325*** (5.04)	0.283*** (4.41)	0.252*** (3.85)	0.152** (2.28)	0.081 (1.18)	0.040 (0.57)
Top Underwriter	0.168 (1.21)	0.084 (1.12)	0.109 (1.49)	0.066 (0.89)	0.038 (0.50)	0.095 (1.22)	0.176** (2.20)	0.165** (2.05)
Big-Four Auditor	0.192 (1.93)	-0.063 (-0.99)	0.203*** (3.27)	0.538*** (8.70)	0.671*** (10.73)	0.869*** (13.69)	0.959*** (14.83)	1.030*** (15.60)
Technology	0.062 (0.85)	-0.036 (-0.52)	-0.051 (-0.75)	0.014 (0.21)	-0.006 (-0.08)	0.044 (0.60)	0.066 (0.89)	0.097 (1.29)
Price Interval	0.006 (0.93)	-0.001 (-0.08)	-0.003 (-0.41)	-0.006 (-0.96)	-0.009 (-1.39)	-0.001 (-0.18)	0.007 (1.02)	0.003 (0.43)
Offer Size	0.154*** (2.96)	0.164*** (3.15)	0.206*** (4.25)	0.284*** (4.85)	0.347*** (6.07)	0.323*** (5.47)	0.270*** (4.56)	0.314*** (5.06)
Age at IPO	0.001 (0.66)	0.002 (1.15)	0.002 (1.30)	0.002 (1.38)	0.004** (2.27)	0.005*** (2.87)	0.003* (1.66)	0.003 (1.63)
Book Value of Assets	-0.029 (-0.73)	-0.038 (-0.93)	-0.035 (-0.96)	-0.106** (-2.24)	-0.143*** (-3.15)	-0.152*** (-3.21)	-0.128*** (-2.70)	-0.139*** (-2.81)
Offer Size-to-Assets	1.031 (0.54)	6.966 (0.63)	-4.831*** (-3.52)	-34.563 (-1.63)	-22.199* (-1.67)	-24.446* (-1.67)	-17.411 (-1.33)	-17.621 (-1.32)
Sales Growth	0.177** (2.42)	0.198*** (2.80)	0.102 (1.54)	0.098 (1.47)	0.059 (0.87)	0.083 (1.19)	0.094 (1.30)	-0.012 (-0.16)
Observations	2,124	2,124	2,124	2,124	2,124	2,124	2,124	2,124
Industry and Quarter Dummies	yes	yes	yes	yes	yes	yes	yes	yes
Constant	yes	yes	yes	yes	yes	yes	yes	yes

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.

Table A.5. 2– Analyst (Overlapping Firms)

The dependent variable is a dummy variable indicating that the firms is followed by at least one analyst. We run Probit Regressions with White standard errors.

Year	1	2	3	4	5	6	7	8
Venture Capital	0.420*** (6.89)	0.367*** (6.32)	0.286*** (5.04)	0.233*** (4.09)	0.217*** (3.74)	0.152** (2.54)	0.094 (1.54)	0.047 (0.76)
Top Underwriter	0.166 (1.43)	0.106 (1.59)	0.123* (1.88)	0.104* (1.76)	0.087* (1.78)	0.122* (1.74)	0.188*** (2.59)	0.165** (2.24)
Big-Four Auditor	0.160 (1.21)	0.042 (0.76)	0.325*** (5.98)	0.592*** (10.97)	0.740*** (13.57)	0.906*** (16.39)	1.021*** (18.11)	1.096*** (18.97)
Technology	0.080 (1.29)	0.035 (0.60)	-0.008 (-0.14)	0.021 (0.36)	-0.016 (-0.27)	0.027 (0.44)	0.038 (0.60)	0.031 (0.48)
Price Interval	-0.007 (-1.20)	-0.006 (-1.14)	-0.007 (-1.40)	-0.010* (-1.86)	-0.011* (-1.91)	-0.003 (-0.55)	0.002 (0.41)	0.003 (0.44)
Offer Size	0.161*** (3.54)	0.144*** (3.15)	0.214*** (5.02)	0.260*** (5.40)	0.299*** (6.06)	0.282*** (5.51)	0.259*** (4.96)	0.302*** (5.51)
Age at IPO	0.002 (1.34)	0.003* (1.68)	0.003* (1.67)	0.003* (1.71)	0.004*** (2.72)	0.005*** (3.01)	0.003** (2.11)	0.003* (1.81)
Book Value of Assets	-0.038 (-1.13)	-0.028 (-0.79)	-0.035 (-1.11)	-0.086** (-2.28)	-0.124*** (-3.19)	-0.126*** (-3.13)	-0.129*** (-3.12)	-0.152*** (-3.51)
Offer Size-to-Assets	0.850 (0.43)	6.565 (0.62)	-4.951*** (-3.67)	-21.719* (-1.71)	-17.452 (-1.54)	-15.487 (-1.26)	-14.975 (-1.21)	-16.879 (-1.30)
Sales Growth	0.126** (2.07)	0.113* (1.94)	-0.017 (-0.30)	-0.012 (-0.21)	-0.046 (-0.80)	-0.009 (-0.15)	-0.016 (-0.26)	-0.122* (-1.90)
Observations	2,757	2,757	2,757	2,757	2,757	2,757	2,757	2,757
Industry and Quarter Dummies	yes	yes	yes	yes	yes	yes	yes	Yes
Constant	yes	yes	yes	yes	yes	yes	yes	Yes

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.

Table A.6. 1 - Institutional Ownership - Percentage - (without bubble sample)

The dependent variable is the percentage of outstanding shares held by institutional investors. We run Pooled OLS Regressions with White standard errors clustered by firm.

Year	1	2	3	4	5	6	7	8
Venture Capital	0.055*** (5.71)	0.080*** (6.97)	0.068*** (5.29)	0.055*** (3.55)	0.056*** (3.12)	0.060*** (2.95)	0.061*** (2.67)	0.068*** (2.78)
Top Underwriter	0.019* (1.80)	0.025** (2.00)	0.032** (2.32)	0.061*** (3.71)	0.065*** (3.44)	0.087*** (4.04)	0.099*** (4.13)	0.074*** (2.86)
Big-Four Auditor	0.005 (0.54)	0.019* (1.68)	0.045*** (3.75)	0.056*** (4.13)	0.064*** (4.13)	0.069*** (3.92)	0.069*** (3.55)	0.093*** (4.39)
Technology	-0.014 (-1.37)	-0.014 (-1.18)	-0.021 (-1.51)	-0.008 (-0.50)	0.006 (0.31)	0.007 (0.31)	-0.004 (-0.16)	-0.013 (-0.50)
Price Interval	0.001 (1.09)	0.001 (1.03)	0.003** (2.65)	0.004** (2.09)	0.002 (1.22)	0.003 (1.27)	0.001 (0.31)	-0.001 (-0.30)
Offer Size	0.055*** (4.94)	0.073*** (8.22)	0.081*** (8.55)	0.068*** (5.82)	0.066*** (4.57)	0.063*** (4.09)	0.066*** (4.16)	0.089*** (5.22)
Age at IPO	0.001*** (2.93)	0.001** (2.40)	0.001** (2.11)	0.001 (1.33)	0.001 (1.55)	0.001 (1.47)	0.001 (0.94)	0.000 (0.84)
Book Value of Assets	0.021** (2.45)	0.017** (2.51)	0.008 (1.15)	0.008 (0.89)	0.012 (1.21)	0.007 (0.65)	0.015 (1.20)	0.008 (0.60)
Offer Size-to-Assets	-0.415*** (-2.77)	-1.046*** (-8.66)	-1.325*** (-9.82)	-1.209*** (-7.73)	-1.246*** (-6.74)	-1.267*** (-6.72)	-1.441*** (-7.02)	-0.092 (-0.03)
Sales Growth	0.018* (1.79)	0.017 (1.45)	-0.004 (-0.30)	0.012 (0.75)	0.020 (1.04)	0.022 (1.00)	0.027 (1.08)	0.047* (1.74)
Observations	2,009	1,842	1,604	1,390	1,184	1,028	917	819
R-squared	0.1751	0.1959	0.1969	0.1780	0.1766	0.1800	0.1928	0.2172
Industry and Quarter Dummies	yes	yes	yes	yes	yes	Yes	yes	yes
Constant	yes	yes	yes	yes	yes	Yes	yes	yes

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.

Table A.6. 2– Institutional Ownership – Percentage – (Overlapping Firms)

The dependent variable is the percentage of outstanding shares held by institutional investors. We run Pooled OLS Regressions with White standard errors clustered by firm.

Year	1	2	3	4	5	6	7	8
Venture Capital	0.039** (2.53)	0.047*** (2.72)	0.050*** (2.79)	0.065*** (3.51)	0.054*** (2.65)	0.070*** (3.27)	0.061*** (2.72)	0.051** (2.23)
Top Underwriter	0.035** (2.21)	0.052*** (2.88)	0.052*** (2.61)	0.073*** (3.58)	0.080*** (3.78)	0.080*** (3.57)	0.091*** (3.81)	0.079*** (3.29)
Big-Four Auditor	0.008 (0.61)	0.021 (1.42)	0.036** (2.27)	0.038** (2.31)	0.063*** (3.54)	0.066*** (3.56)	0.072*** (3.64)	0.104*** (5.14)
Technology	-0.016 (-1.08)	-0.021 (-1.22)	-0.044** (-2.33)	-0.048** (-2.50)	-0.042** (-2.10)	-0.032 (-1.43)	-0.025 (-1.07)	-0.034 (-1.44)
Price Interval	0.001 (0.67)	0.001 (0.74)	0.001 (0.67)	0.001 (0.38)	0.000 (0.13)	-0.001 (-0.30)	-0.001 (-0.36)	-0.002 (-0.77)
Offer Size	0.069*** (6.42)	0.079*** (6.62)	0.079*** (6.03)	0.064*** (5.13)	0.064*** (4.35)	0.065*** (4.39)	0.064*** (3.59)	0.085*** (5.55)
Age at IPO	0.001* (1.72)	0.001* (1.73)	0.001* (1.81)	0.001 (1.56)	0.001 (1.25)	0.001 (1.23)	0.001 (1.55)	0.001 (1.16)
Book Value of Assets	0.003 (0.38)	-0.002 (-0.21)	-0.005 (-0.48)	0.005 (0.50)	0.006 (0.55)	0.006 (0.46)	0.019 (1.31)	0.010 (0.82)
Offer Size-to-Assets	-8.846*** (-2.75)	-13.535*** (-3.93)	-9.229*** (-2.76)	-4.032* (-1.67)	-3.072 (-1.12)	-2.059 (-0.76)	0.894 (0.13)	0.096 (0.03)
Sales Growth	-0.012 (-0.82)	-0.024 (-1.47)	-0.032* (-1.76)	-0.013 (-0.67)	-0.004 (-0.21)	-0.008 (-0.34)	0.009 (0.39)	0.023 (0.94)
Observations	1,040	1,040	1,040	1,040	1,040	1,040	1,040	1,040
R-squared	0.1711	0.1780	0.1739	0.1771	0.1896	0.1933	0.1977	0.2088
Industry and Quarter Dummies	yes	Yes	yes	yes	yes	yes	yes	yes
Constant	yes	Yes	yes	yes	yes	yes	yes	yes

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.

Table A.7. 1 - Number of Institutional Stockholders (without bubble sample)

The dependent variable is the number of institutional investors that hold the firm's stock. We run Poisson Regressions with White standard errors.

Year	1	2	3	4	5	6	7	8
Venture Capital	0.212*** (6.16)	0.242*** (5.05)	0.219*** (4.12)	0.177*** (2.93)	0.196*** (2.86)	0.179** (2.44)	0.198** (2.54)	0.212** (2.49)
Top Underwriter	0.252*** (6.70)	0.227*** (4.41)	0.240*** (3.81)	0.359*** (4.91)	0.459*** (5.35)	0.534*** (5.63)	0.594*** (5.93)	0.553*** (5.39)
Big-Four Auditor	0.025 (0.74)	0.068 (1.56)	0.200*** (4.01)	0.261*** (4.49)	0.263*** (4.20)	0.292*** (4.55)	0.287*** (4.22)	0.259*** (3.65)
Technology	0.173*** (3.20)	0.174*** (2.77)	0.232*** (3.13)	0.316*** (4.07)	0.328*** (4.25)	0.260*** (3.10)	0.203** (2.29)	0.217** (2.32)
Price Interval	-0.005 (-1.09)	-0.007 (-1.22)	-0.003 (-0.46)	-0.007 (-0.97)	-0.002 (-0.24)	0.002 (0.25)	-0.002 (-0.26)	-0.005 (-0.73)
Offer Size	0.235*** (5.23)	0.290*** (5.60)	0.291*** (5.95)	0.223*** (4.12)	0.211*** (3.86)	0.192*** (3.47)	0.214*** (3.60)	0.205*** (3.04)
Age at IPO	0.001 (1.30)	0.001 (0.68)	0.000 (0.01)	-0.001 (-0.69)	-0.001 (-0.89)	-0.001 (-0.65)	-0.002 (-1.12)	-0.003 (-1.45)
Book Value of Assets	0.260*** (5.83)	0.252*** (5.12)	0.267*** (4.76)	0.296*** (5.37)	0.260*** (5.63)	0.217*** (4.55)	0.194*** (3.91)	0.240*** (4.41)
Offer Size-to-Assets	-3.019*** (-3.30)	-4.219*** (-3.71)	-4.801*** (-3.70)	-5.210*** (-3.15)	-6.486*** (-3.21)	-6.301*** (-3.99)	-6.597*** (-3.66)	34.241** (2.04)
Sales Growth	0.200*** (4.66)	0.261*** (4.61)	0.195*** (2.98)	0.192** (2.39)	0.205** (2.54)	0.188** (2.22)	0.208** (2.36)	0.268*** (2.90)
Observations	2,041	1,847	1,607	1,391	1,185	1,029	919	820
Industry and Quarter Dummies	yes	yes	yes	yes	yes	yes	yes	yes
Constant	yes	yes	yes	yes	yes	yes	yes	yes

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.

Table A.7. 2 – Number of Institutional Stockholders (Overlapping Firms)

The dependent variable is the number of institutional investors that hold the firm's stock. We run Poisson Regressions with White standard errors.

Year	1	2	3	4	5	6	7	8
Venture Capital	0.180*** (3.10)	0.178*** (2.65)	0.212*** (3.08)	0.229*** (3.39)	0.209*** (3.05)	0.218*** (3.10)	0.209*** (2.94)	0.199*** (2.60)
Top Underwriter	0.356*** (5.62)	0.344*** (4.51)	0.330*** (3.67)	0.433*** (4.90)	0.482*** (5.25)	0.512*** (5.46)	0.599*** (6.54)	0.583*** (6.53)
Big-Four Auditor	0.018 (0.32)	0.052 (0.83)	0.096 (1.43)	0.127* (1.89)	0.175*** (2.59)	0.214*** (3.14)	0.219*** (3.31)	0.287*** (4.26)
Technology	0.144** (2.00)	0.090 (1.25)	0.119 (1.52)	0.118 (1.51)	0.107 (1.47)	0.103 (1.37)	0.090 (1.18)	0.091 (1.12)
Price Interval	-0.012** (-2.16)	-0.010* (-1.70)	-0.009 (-1.45)	-0.011 (-1.50)	-0.006 (-1.00)	-0.008 (-1.51)	-0.008 (-1.57)	-0.009 (-1.52)
Offer Size	0.221*** (4.27)	0.235*** (4.30)	0.241*** (3.60)	0.252*** (3.40)	0.266*** (3.70)	0.257*** (3.25)	0.209*** (3.40)	0.202*** (3.05)
Age at IPO	0.002 (1.53)	0.002 (1.29)	0.001 (0.73)	0.001 (0.44)	0.001 (0.38)	0.001 (0.43)	-0.000 (-0.05)	0.000 (0.01)
Book Value of Assets	0.348*** (6.23)	0.355*** (7.03)	0.383*** (7.93)	0.352*** (8.17)	0.302*** (7.35)	0.283*** (6.80)	0.289*** (7.15)	0.279*** (6.84)
Offer Size-to-Assets	-1.702** (-2.42)	-2.120*** (-2.65)	-3.458*** (-2.85)	-3.915** (-2.55)	-4.320** (-2.50)	-4.242*** (-2.76)	-4.415*** (-2.65)	-4.254** (-2.25)
Sales Growth	0.122* (1.80)	0.074 (0.97)	0.055 (0.69)	0.049 (0.59)	0.028 (0.35)	0.003 (0.04)	0.021 (0.26)	0.080 (0.95)
Observations	1,041	1,041	1,041	1,041	1,041	1,041	1,041	1,041
Industry and Quarter Dummies	yes	yes	yes	yes	yes	yes	yes	yes
Constant	yes	yes	yes	yes	yes	yes	yes	yes

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.

Table A.8. 1 - Likelihood of Institution Ownership bigger than 5% (without bubble sample)

The dependent variable is a dummy variable for a firm that has an institutional block holder, i.e., an institutional investor with more than 5% of the outstanding shares. We run Probit Regressions with White standard errors.

Year	1	2	3	4	5	6	7	8
Venture Capital	0.375*** (5.58)	0.404*** (5.66)	0.351*** (4.50)	0.401*** (4.65)	0.231** (2.50)	0.146 (1.48)	0.168 (1.58)	0.143 (1.22)
Top Underwriter	0.210*** (2.81)	0.234*** (2.94)	0.059* (1.69)	0.057 (0.60)	0.072 (0.69)	0.028 (0.26)	0.174 (1.49)	0.018 (0.14)
Big-Four Auditor	-0.016 (-0.25)	-0.015 (-0.22)	0.218*** (3.03)	0.227*** (2.94)	0.322*** (3.89)	0.242*** (2.80)	0.311*** (3.37)	0.453*** (4.47)
Technology	-0.133* (-1.89)	-0.205*** (-2.74)	-0.097 (-1.19)	-0.144 (-1.61)	-0.033 (-0.34)	-0.054 (-0.50)	-0.141 (-1.25)	-0.197 (-1.61)
Price Interval	0.008 (1.26)	0.012* (1.74)	0.022*** (2.78)	0.032*** (3.86)	0.020** (2.23)	0.012 (1.30)	0.006 (0.57)	0.015 (1.39)
Offer Size	0.111** (2.19)	0.096* (1.86)	0.225*** (3.73)	0.211*** (3.26)	0.146** (2.03)	0.182** (2.24)	0.183** (2.40)	0.277*** (3.08)
Age at IPO	0.005*** (3.03)	0.005*** (2.87)	0.009*** (4.02)	0.010*** (3.81)	0.006** (2.42)	0.006** (2.27)	0.003 (1.06)	0.002 (0.81)
Book Value of Assets	-0.009 (-0.23)	0.024 (0.61)	-0.068 (-1.42)	-0.090* (-1.70)	-0.093 (-1.54)	-0.061 (-0.88)	-0.013 (-0.20)	-0.063 (-0.80)
Offer Size-to-Assets	0.257 (0.19)	0.745 (0.56)	-34.275** (-2.50)	-27.943** (-2.00)	-44.673** (-2.18)	-50.679 (-1.60)	-27.634* (-1.81)	-43.615 (-1.24)
Sales Growth	0.088 (1.24)	-0.041 (-0.56)	-0.035 (-0.43)	0.053 (0.58)	0.078 (0.78)	0.083 (0.76)	0.026 (0.23)	0.108 (0.87)
Observations	2,041	1,847	1,607	1,391	1,185	1,029	919	820
Industry and Quarter Dummies	yes	yes	yes	Yes	yes	yes	yes	yes
Constant	yes	yes	yes	Yes	yes	yes	yes	yes

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.

Table A.8. 2– Likelihood of Institution Ownership bigger than 5% (Overlapping Firms)

The dependent variable is a dummy variable for a firm that has an institutional block holder, i.e., an institutional investor with more than 5% of the outstanding shares. We run Probit Regressions with White standard errors.

Year	1	2	3	4	5	6	7	8
Venture Capital	0.400*** (4.05)	0.367*** (3.69)	0.388*** (3.73)	0.584*** (5.50)	0.285*** (2.70)	0.208** (2.02)	0.248** (2.38)	0.168 (1.64)
Top Underwriter	0.231** (2.13)	0.293*** (2.64)	0.070* (1.70)	0.084 (0.72)	0.128 (1.08)	0.053 (0.46)	0.131 (1.14)	-0.018 (-0.16)
Big-Four Auditor	0.003 (0.04)	-0.072 (-0.81)	0.183** (1.99)	0.231** (2.47)	0.303*** (3.23)	0.261*** (2.85)	0.366*** (4.00)	0.479*** (5.31)
Technology	-0.000 (-0.00)	-0.168 (-1.62)	-0.264** (-2.47)	-0.329*** (-3.10)	-0.096 (-0.90)	-0.164 (-1.52)	-0.197* (-1.84)	-0.276*** (-2.61)
Price Interval	0.025*** (2.78)	0.021** (2.27)	0.019** (1.98)	0.028*** (2.99)	0.011 (1.14)	0.002 (0.18)	0.005 (0.52)	0.011 (1.25)
Offer Size	0.181** (2.39)	0.176** (2.26)	0.273*** (3.38)	0.202*** (2.75)	0.217*** (2.69)	0.167** (2.18)	0.153* (1.87)	0.244*** (3.19)
Age at IPO	0.005* (1.93)	0.004* (1.70)	0.011*** (3.72)	0.011*** (3.42)	0.009*** (2.75)	0.008** (2.44)	0.006* (1.92)	0.002 (0.63)
Book Value of Assets	-0.061 (-0.99)	-0.046 (-0.71)	-0.089 (-1.33)	-0.066 (-1.07)	-0.126* (-1.90)	-0.029 (-0.45)	0.043 (0.63)	-0.013 (-0.21)
Offer Size-to-Assets	-33.078 (-1.25)	-68.654** (-2.30)	-52.150** (-1.99)	-10.979 (-0.77)	-39.926* (-1.67)	-24.965 (-1.25)	-1.021 (-0.03)	-22.374 (-0.95)
Sales Growth	-0.100 (-1.00)	-0.065 (-0.64)	-0.093 (-0.88)	-0.125 (-1.12)	-0.046 (-0.42)	-0.076 (-0.69)	0.008 (0.07)	0.027 (0.25)
Observations	1,041	1,041	1,041	1,041	1,041	1,041	1,041	1,041
Industry and Quarter Dummies	yes	yes	yes	Yes	Yes	yes	yes	yes
Constant	yes	yes	yes	Yes	Yes	yes	yes	yes

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.

Table A.9.1 - Likelihood of more than 10 Institutional Investors (without bubble sample)

The dependent variable is a dummy variable for a firm that has 10 or more institutional investors. We run Probit Regressions with White standard errors.

Year	1	2	3	4	5	6	7	8
Venture Capital	0.273*** (3.35)	0.339*** (3.88)	0.399*** (4.34)	0.251** (2.57)	0.199* (1.95)	0.310*** (2.91)	0.302*** (2.62)	0.296** (2.44)
Top Underwriter	0.314*** (3.70)	0.189** (2.04)	0.192** (1.99)	0.327*** (3.22)	0.445*** (4.09)	0.513*** (4.55)	0.489*** (4.03)	0.351*** (2.68)
Big-Four Auditor	0.109 (1.39)	0.039 (0.48)	0.203** (2.44)	0.266*** (3.11)	0.376*** (4.25)	0.296*** (3.20)	0.337*** (3.41)	0.592*** (5.53)
Technology	0.106 (1.26)	-0.145 (-1.63)	-0.000 (-0.00)	0.063 (0.62)	0.084 (0.79)	0.047 (0.42)	-0.069 (-0.57)	0.021 (0.16)
Price Interval	0.012 (1.18)	0.015 (1.55)	0.029*** (2.87)	0.018* (1.85)	0.013 (1.27)	0.022** (2.18)	0.030*** (2.77)	0.021* (1.84)
Offer Size	0.558*** (7.24)	0.655*** (7.88)	0.763*** (9.29)	0.596*** (7.28)	0.442*** (5.50)	0.291*** (3.56)	0.253*** (3.17)	0.231*** (2.59)
Age at IPO	0.008*** (2.59)	0.004 (1.53)	0.001 (0.30)	0.001 (0.27)	-0.001 (-0.42)	0.004 (1.46)	0.003 (0.90)	0.002 (0.52)
Book Value of Assets	0.429*** (6.90)	0.319*** (5.24)	0.126** (2.31)	0.080 (1.46)	0.053 (0.85)	0.044 (0.66)	0.099 (1.47)	0.112 (1.51)
Offer Size-to-Assets	9.121 (0.76)	21.252 (1.40)	-11.670*** (-7.45)	-9.964*** (-6.70)	-33.370* (-1.79)	-14.706 (-0.54)	-17.102 (-1.15)	-10.865 (-0.43)
Sales Growth	0.328*** (3.61)	0.291*** (3.17)	0.068 (0.69)	0.063 (0.60)	-0.033 (-0.30)	0.145 (1.24)	0.090 (0.73)	0.116 (0.91)
Observations	2,041	1,847	1,607	1,391	1,185	1,029	916	817
Industry and Quarter Dummies	yes	yes	yes	yes	yes	yes	yes	yes
Constant	yes	yes	yes	yes	yes	yes	yes	yes

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.

Table A.9. 2– Likelihood of more than 10 Institutional Investors (Overlapping Firms)

The dependent variable is a dummy variable for a firm that has 10 or more institutional investors. We run Probit Regressions with White standard errors.

Year	1	2	3	4	5	6	7	8
Venture Capital	0.160 (1.23)	0.246* (1.86)	0.355*** (2.82)	0.319** (2.55)	0.311*** (2.59)	0.402*** (3.44)	0.322*** (2.80)	0.326*** (3.01)
Top Underwriter	0.452*** (3.57)	0.247* (1.90)	0.428*** (3.43)	0.533*** (4.09)	0.485*** (3.99)	0.448*** (3.78)	0.421*** (3.50)	0.308*** (2.63)
Big-Four Auditor	0.159 (1.44)	0.093 (0.82)	0.204* (1.84)	0.200* (1.83)	0.412*** (3.93)	0.340*** (3.38)	0.397*** (4.02)	0.658*** (6.88)
Technology	0.058 (0.43)	-0.074 (-0.57)	-0.187 (-1.46)	-0.142 (-1.10)	-0.202* (-1.65)	-0.150 (-1.25)	-0.198* (-1.66)	-0.048 (-0.42)
Price Interval	0.003 (0.24)	0.016 (1.26)	0.024* (1.78)	-0.001 (-0.04)	-0.011 (-0.94)	0.001 (0.09)	0.020* (1.80)	0.012 (1.16)
Offer Size	0.522*** (4.74)	0.668*** (5.87)	0.652*** (6.22)	0.508*** (5.02)	0.440*** (4.67)	0.261*** (3.25)	0.212** (2.40)	0.239*** (2.97)
Age at IPO	0.007 (1.63)	0.002 (0.51)	0.001 (0.30)	0.003 (0.80)	0.001 (0.44)	0.006* (1.74)	0.005 (1.50)	0.003 (1.11)
Book Value of Assets	0.361*** (3.77)	0.309*** (3.34)	0.087 (1.04)	0.144* (1.71)	0.045 (0.57)	0.105 (1.59)	0.141* (1.86)	0.071 (1.08)
Offer Size-to-Assets	-40.287 (-1.21)	-2.413 (-0.07)	-41.771 (-1.26)	-13.567 (-0.43)	-27.574 (-0.84)	-0.227 (-0.01)	14.403 (0.40)	-8.026 (-0.33)
Sales Growth	0.250* (1.77)	-0.064 (-0.50)	-0.253* (-1.92)	-0.134 (-1.03)	-0.033 (-0.27)	0.086 (0.71)	0.153 (1.29)	0.111 (0.99)
Observations	1,038	1,038	1,038	1,038	1,038	1,038	1,038	1,038
Industry and Quarter Dummies	yes	yes	yes	yes	yes	yes	yes	yes
Constant	yes	yes	yes	yes	yes	yes	yes	yes

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.

Table A.10. 1 - Herfindahl Index (without bubble sample)

The dependent variable is the Herfindahl Index that capture the concentration of institutional ownership in a firm. We run Pooled OLS with White standard errors clustered by firm.

Year	1	2	3	4	5	6	7	8
Venture Capital	-0.037*** (-4.33)	-0.052*** (-4.92)	-0.055*** (-4.46)	-0.034** (-2.24)	-0.064*** (-3.64)	-0.053*** (-2.75)	-0.052** (-2.33)	-0.037*** (-3.59)
Top Underwriter	-0.054*** (-5.51)	-0.033*** (-2.96)	-0.028** (-2.07)	-0.054*** (-3.24)	-0.047** (-2.43)	-0.087*** (-4.02)	-0.104*** (-4.06)	-0.082*** (-2.89)
Big-Four Auditor	-0.015* (-1.85)	-0.019** (-2.10)	-0.029*** (-2.80)	-0.052*** (-4.17)	-0.074*** (-5.18)	-0.083*** (-4.97)	-0.091*** (-4.61)	-0.137*** (-6.45)
Technology	-0.006 (-0.61)	-0.001 (-0.08)	0.000 (0.03)	-0.020 (-1.31)	-0.026 (-1.41)	-0.025 (-1.15)	0.000 (0.00)	-0.014 (-0.57)
Price Interval	-0.004*** (-4.87)	-0.003*** (-3.06)	-0.003*** (-3.01)	-0.002 (-1.51)	-0.001 (-0.56)	-0.004** (-2.16)	-0.004* (-1.74)	-0.002 (-1.06)
Offer Size	-0.059*** (-9.06)	-0.067*** (-9.49)	-0.079*** (-9.78)	-0.067*** (-6.80)	-0.050*** (-4.47)	-0.050*** (-3.60)	-0.049*** (-3.42)	-0.057*** (-3.67)
Age at IPO	-0.000*** (-2.71)	-0.001*** (-3.69)	-0.001** (-2.48)	-0.001*** (-2.87)	-0.001** (-2.24)	-0.001** (-2.40)	-0.001* (-1.85)	-0.001 (-1.18)
Book Value of Assets	-0.019*** (-4.01)	-0.017*** (-3.12)	-0.012** (-2.02)	-0.007** (-2.09)	-0.025*** (-2.77)	-0.008 (-0.76)	-0.011 (-1.02)	-0.012 (-0.97)
Offer Size-to-Assets	0.001*** (6.67)	0.001*** (8.33)	0.001*** (10.06)	0.002*** (10.90)	0.002*** (8.25)	0.001*** (6.83)	0.002*** (8.24)	0.004 (1.14)
Sales Growth	-0.046*** (-4.64)	-0.042*** (-3.60)	-0.020 (-1.39)	-0.011 (-0.66)	-0.003 (-0.15)	-0.033 (-1.44)	-0.032 (-1.26)	-0.053** (-2.00)
Observations	2,041	1,847	1,607	1,391	1,185	1,029	919	820
R-squared	0.2581	0.2352	0.2389	0.2130	0.1958	0.1970	0.1830	0.1952
Industry and Quarter Dummies	yes	yes	yes	yes	yes	yes	yes	yes
Constant	yes	yes	yes	yes	yes	yes	yes	yes

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.

Table A.10. 2 – Herfindahl Index (Overlapping Firms)

The dependent variable is the Herfindhal Index that capture the concentration of institutional ownership in a firm. We run Pooled OLS with White standard errors clustered by firm.

Year	1	2	3	4	5	6	7	8
Venture Capital	-0.035*** (-2.91)	-0.041*** (-2.93)	-0.036** (-2.43)	-0.059*** (-3.60)	-0.065*** (-3.66)	-0.079*** (-4.27)	-0.051*** (-2.70)	-0.041*** (-2.96)
Top Underwriter	-0.064*** (-4.74)	-0.053*** (-3.93)	-0.064*** (-4.01)	-0.072*** (-4.04)	-0.055*** (-2.95)	-0.064*** (-3.16)	-0.089*** (-3.99)	-0.074*** (-3.06)
Big-Four Auditor	-0.021** (-2.04)	-0.024** (-2.17)	-0.039*** (-2.95)	-0.040*** (-2.80)	-0.079*** (-5.19)	-0.086*** (-5.30)	-0.092*** (-5.30)	-0.146*** (-7.61)
Technology	0.014 (1.08)	0.024* (1.68)	0.028* (1.81)	0.014 (0.86)	0.010 (0.60)	0.011 (0.58)	0.018 (0.89)	0.004 (0.21)
Price Interval	-0.004*** (-3.55)	-0.001* (-1.73)	-0.002* (-1.70)	0.000 (0.36)	0.001 (0.68)	-0.001 (-0.41)	-0.002 (-1.04)	-0.002 (-0.87)
Offer Size	-0.055*** (-6.30)	-0.050*** (-4.61)	-0.046*** (-4.39)	-0.047*** (-4.62)	-0.049*** (-4.68)	-0.047*** (-3.96)	-0.035** (-2.37)	-0.050*** (-3.70)
Age at IPO	-0.001** (-2.48)	-0.001*** (-3.13)	-0.000* (-1.66)	-0.001*** (-2.83)	-0.001*** (-2.97)	-0.001*** (-3.19)	-0.001*** (-2.59)	-0.001* (-1.71)
Book Value of Assets	-0.012* (-1.78)	-0.012* (-1.72)	-0.019** (-2.26)	-0.016* (-1.89)	-0.014* (-1.65)	-0.009 (-0.93)	-0.016 (-1.41)	-0.010 (-0.96)
Offer Size-to-Assets	0.006** (2.19)	0.005 (0.97)	-0.001 (-0.24)	0.006** (2.54)	0.006** (2.19)	0.003 (1.12)	-0.004 (-0.62)	0.002 (0.88)
Sales Growth	-0.030** (-2.45)	-0.018 (-1.28)	-0.005 (-0.33)	-0.006 (-0.41)	0.002 (0.10)	-0.017 (-0.85)	-0.029 (-1.43)	-0.038* (-1.74)
Observations	1,041	1,041	1,041	1,041	1,041	1,041	1,041	1,041
R-squared	0.2767	0.2177	0.2163	0.2223	0.2017	0.2102	0.1875	0.1903
Industry and Quarter Dummies	yes	yes	yes	yes	yes	yes	yes	yes
Constant	yes	yes	yes	yes	yes	yes	yes	yes

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.

Table A.11. 1 - Mergers (without bubble sample)

The dependent variable is a dummy variable indicating that the firm was target for M&A between the 3rd and 8th years from the IPO. We run Probit Regressions with White standard errors.

Year	1	2	3	4	5	6	7	8
Venture Capital			0.007 (0.08)	0.094 (1.33)	0.079 (1.10)	0.095 (1.35)	0.090* (1.69)	0.149** (2.18)
Top Underwriter			0.150 (1.58)	0.103 (1.28)	0.147* (1.76)	0.159** (1.96)	0.156** (1.96)	0.163** (2.08)
Big-Four Auditor			-1.270*** (-12.07)	-1.184*** (-13.61)	-1.284*** (-15.35)	-1.264*** (-16.00)	-1.278*** (-16.57)	-1.245*** (-16.73)
Technology			-0.043 (-0.51)	0.114 (1.57)	0.083 (1.10)	0.089 (1.22)	0.098 (1.36)	0.093 (1.31)
Price Interval			0.006 (0.71)	0.013* (1.79)	0.012* (1.66)	0.012* (1.72)	0.016** (2.30)	0.016** (2.30)
Offer Size			-0.015 (-0.19)	-0.093 (-1.42)	-0.125* (-1.85)	-0.108* (-1.68)	-0.127** (-1.98)	-0.111* (-1.82)
Age at IPO			-0.000 (-0.16)	-0.000 (-0.26)	-0.002 (-1.28)	-0.003 (-1.46)	-0.002 (-1.31)	-0.003 (-1.54)
Book Value of Assets			0.054 (0.83)	0.174*** (3.22)	0.143** (2.52)	0.135** (2.52)	0.156*** (2.91)	0.139*** (2.72)
Offer Size-to-Assets			-90.158 (-1.58)	-30.864 (-0.92)	-32.277 (-0.81)	-22.551 (-0.68)	-23.293 (-0.68)	-16.624 (-0.56)
Sales Growth			0.043 (0.53)	0.097 (1.41)	0.052 (0.69)	0.029 (0.40)	0.091 (1.24)	0.080 (1.11)
Observations			2,102	2,102	2,102	2,102	2,102	2,102
Industry and Quarter Dummies	yes	yes	yes	yes	yes	yes	yes	Yes
Constant	yes	yes	yes	yes	yes	yes	yes	Yes

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.

Table A.11. 2 – Mergers (Overlapping Firms)

The dependent variable is a dummy variable indicating that the firm was target for M&A between the 3rd and 8th years from the IPO. We run Probit Regressions with White standard errors.

Year	1	2	3	4	5	6	7	8
Venture Capital			0.080 (1.15)	0.075 (1.12)	0.103 (1.62)	0.114* (1.85)	0.090* (1.77)	0.135** (2.24)
Top Underwriter			0.096 (1.14)	0.164** (2.08)	0.144* (1.92)	0.151** (2.08)	0.181** (2.54)	0.189*** (2.67)
Big-Four Auditor			-1.223*** (-13.92)	-1.294*** (-16.37)	-1.250*** (-17.54)	-1.216*** (-18.10)	-1.211*** (-18.70)	-1.176*** (-18.70)
Technology			-0.013 (-0.18)	0.079 (1.20)	0.060 (0.95)	0.052 (0.85)	0.082 (1.35)	0.077 (1.28)
Price Interval			0.004 (0.61)	0.004 (0.66)	0.005 (0.87)	0.006 (0.95)	0.006 (1.04)	0.006 (0.97)
Offer Size			-0.054 (-0.84)	-0.082 (-1.32)	-0.111** (-2.00)	-0.082 (-1.52)	-0.107* (-1.96)	-0.092* (-1.76)
Age at IPO			0.002 (0.90)	0.001 (0.57)	-0.001 (-0.52)	-0.001 (-0.76)	-0.000 (-0.24)	-0.001 (-0.43)
Book Value of Assets			0.072 (1.35)	0.084* (1.65)	0.122*** (2.67)	0.114*** (2.59)	0.135*** (2.99)	0.115*** (2.71)
Offer Size-to-Assets			-32.082 (-0.83)	-38.663 (-1.08)	-10.319 (-0.37)	-10.961 (-0.44)	-12.143 (-0.46)	-9.379 (-0.42)
Sales Growth			0.165** (2.36)	0.178*** (2.66)	0.122* (1.91)	0.115* (1.85)	0.155** (2.51)	0.149** (2.43)
Observations			2,731	2,731	2,731	2,731	2,731	2,731
Industry and Quarter Dummies	yes	yes	yes	yes	yes	yes	yes	Yes
Constant	yes	yes	yes	yes	yes	yes	yes	Yes

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.

Table A.12. 1 - Failure (without bubble sample)

The dependent variable is a dummy variable indicating delisting for bankruptcy or drop between the 3rd and 8th years from the IPO. We run Probit Regressions with White standard errors.

Year	1	2	3	4	5	6	7	8
Venture Capital			-0.058 (-0.54)	0.096 (1.02)	0.089 (1.03)	0.071 (0.87)	0.052 (0.67)	0.013 (0.17)
Top Underwriter			-0.160 (-1.35)	-0.227** (-2.23)	-0.181* (-1.96)	-0.188** (-2.12)	-0.203** (-2.41)	-0.102* (-1.74)
Big-Four Auditor			-0.687*** (-5.90)	-0.568*** (-5.69)	-0.500*** (-5.68)	-0.493*** (-5.92)	-0.352*** (-4.56)	-0.289*** (-3.90)
Technology			-0.277** (-2.49)	-0.396*** (-3.92)	-0.331*** (-3.61)	-0.377*** (-4.32)	-0.322*** (-3.90)	-0.352*** (-4.39)
Price Interval			-0.014 (-1.40)	-0.019** (-2.22)	-0.020** (-2.58)	-0.024*** (-3.22)	-0.021*** (-2.93)	-0.021*** (-2.99)
Offer Size			-0.212*** (-2.86)	-0.197*** (-2.83)	-0.147** (-2.32)	-0.123** (-2.02)	-0.122** (-2.15)	-0.173*** (-3.06)
Age at IPO			-0.012*** (-3.18)	-0.009*** (-2.96)	-0.003* (-1.70)	-0.005** (-2.18)	-0.003 (-1.46)	-0.003 (-1.61)
Book Value of Assets			0.071 (1.19)	0.062 (1.18)	-0.005 (-0.10)	-0.007 (-0.14)	-0.026 (-0.60)	-0.011 (-0.25)
Offer Size-to-Assets			20.026** (2.56)	32.151*** (3.11)	25.109** (2.22)	19.373* (1.67)	15.839 (1.33)	22.049* (1.71)
Sales Growth			0.006 (0.05)	-0.036 (-0.35)	-0.015 (-0.17)	-0.119 (-1.33)	-0.078 (-0.93)	-0.067 (-0.82)
Observations			2,116	2,116	2,116	2,116	2,116	2,116
Industry and Quarter Dummies	yes	yes	yes	yes	yes	yes	yes	Yes
Constant	yes	yes	yes	yes	yes	yes	yes	Yes

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.

Table A.12. 2 – Failure (Overlapping Firms)

The dependent variable is a dummy variable indicating delisting for bankruptcy or drop between the 3rd and 8th years from the IPO. We run Probit Regressions with White standard errors.

Year	1	2	3	4	5	6	7	8
Venture Capital			-0.077 (-0.89)	0.021 (0.26)	0.027 (0.37)	0.010 (0.14)	0.001 (0.02)	-0.032 (-0.49)
Top Underwriter			-0.226** (-2.27)	-0.238*** (-2.70)	-0.195** (-2.39)	-0.213*** (-2.71)	-0.229*** (-3.07)	-0.148** (-2.01)
Big-Four Auditor			-0.606*** (-6.77)	-0.559*** (-6.85)	-0.504*** (-6.82)	-0.502*** (-7.09)	-0.390*** (-5.87)	-0.331*** (-5.17)
Technology			-0.212** (-2.47)	-0.284*** (-3.60)	-0.249*** (-3.37)	-0.263*** (-3.72)	-0.209*** (-3.09)	-0.233*** (-3.53)
Price Interval			-0.011 (-1.43)	-0.015** (-2.05)	-0.018*** (-2.74)	-0.022*** (-3.32)	-0.018*** (-2.89)	-0.018*** (-2.91)
Offer Size			-0.195*** (-3.24)	-0.197*** (-3.39)	-0.158*** (-2.87)	-0.134** (-2.51)	-0.135*** (-2.67)	-0.161*** (-3.25)
Age at IPO			-0.015*** (-3.87)	-0.012*** (-3.89)	-0.006*** (-2.60)	-0.008*** (-3.24)	-0.005** (-2.52)	-0.006*** (-2.69)
Book Value of Assets			0.100** (2.06)	0.101** (2.26)	0.047 (1.09)	0.045 (1.08)	0.022 (0.55)	0.019 (0.49)
Offer Size-to-Assets			17.729** (2.51)	29.891*** (2.84)	26.971** (2.27)	21.326* (1.78)	17.035 (1.39)	20.739 (1.64)
Sales Growth			0.048 (0.54)	-0.002 (-0.03)	0.021 (0.29)	-0.041 (-0.57)	-0.025 (-0.37)	-0.030 (-0.45)
Observations			2,677	2,677	2,677	2,677	2,677	2,677
Industry and Quarter Dummies	yes	yes	yes	yes	yes	yes	yes	Yes
Constant	yes	yes	yes	yes	yes	yes	yes	Yes

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.

Table A.4.3. 1- Cash Holdings (without bubble sample)

The dependent variable is the cash holdings from year 1 to year 8 after IPO. We run Pooled OLS with White standard errors clustered by firm.

Year	1	2	3	4	5	6	7	8
Venture Capital	1.070*** (8.26)	0.801*** (8.07)	0.667*** (7.89)	0.588*** (5.81)	0.706*** (6.07)	0.757*** (7.06)	0.722*** (5.42)	0.745*** (4.97)
Top Underwriter	0.422*** (2.96)	0.179 (1.56)	0.152 (1.57)	0.169 (1.48)	0.234 (1.59)	0.088 (0.72)	0.181 (1.24)	0.085 (0.51)
Big-Four Auditor	0.008 (0.07)	0.044 (0.50)	0.159** (2.22)	0.153** (2.00)	0.213** (2.34)	0.079 (0.91)	0.106 (1.06)	0.013 (0.11)
Cash Flow	-0.177 (-1.41)	-0.022 (-0.44)	-0.034 (-0.79)	0.025* (1.82)	-0.011 (-0.57)	0.018 (0.86)	0.006 (0.23)	-0.035 (-1.15)
Net PPE	-3.153*** (-13.22)	-1.992*** (-11.58)	-1.566*** (-10.38)	-1.486*** (-8.73)	-1.774*** (-8.79)	-1.615*** (-8.24)	-1.957*** (-7.67)	-1.994*** (-7.24)
Book Value of Assets	-0.421*** (-7.27)	-0.369*** (-7.36)	-0.292*** (-7.06)	-0.276*** (-5.74)	-0.251*** (-4.66)	-0.128** (-2.54)	-0.186*** (-4.57)	-0.168*** (-2.99)
Tobin's q	0.004 (0.62)	0.037** (2.55)	-0.001 (-0.15)	-0.001 (-0.30)	0.002 (0.21)	0.001 (0.23)	0.004 (0.46)	0.014 (1.12)
Sales Growth	-0.723*** (-4.07)	-0.348** (-2.55)	-0.140 (-1.41)	0.035 (0.31)	0.096 (0.52)	0.176 (0.91)	-0.107 (-0.52)	-0.166 (-0.70)
Technology	-0.232* (-1.78)	-0.349*** (-3.21)	-0.218*** (-2.64)	-0.271*** (-2.86)	-0.317** (-2.54)	-0.297** (-2.55)	-0.438*** (-3.02)	-0.603*** (-3.77)
Age at IPO	-0.013*** (-7.58)	-0.007*** (-6.31)	-0.006*** (-6.04)	-0.006*** (-5.46)	-0.007*** (-5.62)	-0.005*** (-4.02)	-0.007*** (-5.15)	-0.008*** (-4.84)
Offer Size	0.273*** (3.37)	0.343*** (4.57)	0.333*** (4.76)	0.287*** (4.40)	0.260*** (3.32)	0.220*** (2.88)	0.277*** (3.61)	0.222*** (2.80)
Offer Size-to-Assets	-6.056*** (-4.32)	-5.436*** (-6.52)	-1.359*** (-6.32)	-0.848*** (-6.04)	-0.185*** (-5.53)	-0.121*** (-4.55)	-0.039*** (-5.18)	-0.033*** (-3.80)
Observations	2,194	2,100	1,896	1,681	1,463	1,268	1,139	1,009
R-squared	0.2044	0.2049	0.1916	0.1584	0.1593	0.1478	0.1552	0.1577
Industry and Quarter Dummies	yes	yes	Yes	yes	Yes	yes	yes	yes
Constant	yes	yes	Yes	yes	Yes	yes	yes	yes

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.

Table A.4.3. 2- Cash Holdings (Overlapping Firms)

The dependent variable is the cash holdings from year 1 to year 8 after IPO. We run Pooled OLS with White standard errors clustered by firm.

Year	1	2	3	4	5	6	7	8
Venture Capital	1.196*** (6.47)	0.826*** (5.62)	0.774*** (6.40)	0.763*** (6.40)	0.843*** (7.09)	0.820*** (7.36)	0.733*** (5.84)	0.781*** (5.83)
Top Underwriter	0.572*** (2.95)	0.244 (1.39)	0.177 (1.23)	0.099 (0.74)	0.252 (1.53)	0.198 (1.49)	0.168 (1.11)	0.150 (0.97)
Big-Four Auditor	0.047 (0.31)	0.103 (0.91)	0.130 (1.39)	0.086 (0.95)	0.122 (1.28)	0.155 (1.54)	0.065 (0.65)	0.029 (0.26)
Bubble Dummy	1.312*** (4.95)	0.513** (2.24)	0.405** (1.99)	0.378** (1.99)	0.156 (0.85)	0.278 (1.51)	0.158 (0.86)	0.063 (0.35)
Cash Flow	-0.193 (-1.12)	-0.060 (-0.78)	-0.010 (-0.27)	0.012 (0.57)	-0.049 (-1.20)	0.014 (0.59)	-0.024 (-0.70)	-0.020 (-0.63)
Net PPE	-4.219*** (-12.43)	-2.614*** (-10.00)	-2.234*** (-9.62)	-1.896*** (-8.79)	-2.072*** (-9.11)	-1.897*** (-8.79)	-2.123*** (-8.49)	-2.165*** (-8.35)
Book Value of Assets	-0.321*** (-4.04)	-0.470*** (-7.41)	-0.321*** (-5.90)	-0.221*** (-5.05)	-0.254*** (-5.32)	-0.197*** (-3.79)	-0.173*** (-3.74)	-0.186*** (-3.85)
Tobin's q	0.002 (0.23)	0.005 (0.82)	-0.003 (-0.37)	-0.003 (-0.60)	0.003 (0.32)	-0.000 (-0.01)	0.012 (1.39)	0.012 (1.42)
Sales Growth	-0.766*** (-2.94)	-0.435** (-2.24)	-0.382** (-2.27)	-0.192 (-1.10)	-0.087 (-0.46)	0.154 (0.69)	-0.067 (-0.31)	-0.277 (-1.20)
Technology	-0.658*** (-3.46)	-0.578*** (-3.60)	-0.414*** (-3.04)	-0.349*** (-2.68)	-0.522*** (-3.73)	-0.525*** (-3.83)	-0.565*** (-3.97)	-0.758*** (-5.06)
Age at IPO	-0.017*** (-6.13)	-0.009*** (-5.13)	-0.008*** (-5.07)	-0.007*** (-5.29)	-0.007*** (-4.89)	-0.007*** (-5.29)	-0.008*** (-5.05)	-0.008*** (-5.39)
Offer Size	0.099 (0.95)	0.414*** (3.99)	0.388*** (4.06)	0.276*** (3.50)	0.247*** (3.02)	0.237*** (3.04)	0.290*** (3.52)	0.220*** (3.11)
Offer Size-to-Assets	-4.591*** (-2.88)	-6.812*** (-5.86)	-1.585*** (-5.63)	-0.833*** (-5.34)	-0.189*** (-5.70)	-0.143*** (-5.06)	-0.044*** (-5.50)	-0.034*** (-4.53)
Observations	1,259	1,259	1,259	1,259	1,259	1,259	1,259	1,259
R-squared	0.2571	0.2158	0.2194	0.1865	0.1917	0.1834	0.1785	0.1718
Industry and Quarter Dummies	yes	yes	Yes	yes	Yes	yes	yes	yes
Constant	yes	yes	Yes	yes	Yes	yes	yes	yes

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.

Table A.4.4. 1 - Leverage (without bubble sample)

The dependent variable is the leverage from year 1 to year 8 after IPO. We run Pooled OLS with White standard errors clustered by firm.

Year	1	2	3	4	5	6	7	8
Venture Capital	-0.063*** (-4.12)	-0.061*** (-5.11)	-0.124*** (-3.77)	-0.064*** (-3.52)	-0.063 (-1.53)	-0.090** (-2.29)	-0.108** (-2.14)	-0.048 (-1.07)
Top Underwriter	-0.039** (-2.24)	-0.028** (-1.97)	0.001* (1.75)	-0.035* (-1.83)	-0.064* (-1.72)	-0.107*** (-2.63)	-0.055 (-1.53)	-0.060 (-1.40)
Big-Four Auditor	0.004 (0.25)	-0.019 (-1.59)	-0.060*** (-3.53)	-0.079*** (-5.32)	-0.100*** (-4.08)	-0.111*** (-3.55)	-0.054 (-1.59)	-0.020 (-0.62)
Cash Flow	-0.006 (-0.60)	-0.097*** (-8.78)	-0.100*** (-7.44)	-0.057*** (-2.58)	-0.087*** (-2.67)	-0.046*** (-2.60)	-0.073*** (-3.95)	-0.055*** (-2.70)
Net PPE	0.366*** (4.73)	0.251*** (5.48)	0.211*** (6.25)	0.257*** (7.00)	0.375*** (3.97)	0.213*** (3.55)	0.217*** (3.35)	0.253*** (4.16)
Book Value of Assets	0.068*** (4.25)	0.078*** (7.26)	0.070*** (2.88)	0.033*** (3.36)	0.042** (2.02)	0.036** (2.15)	0.029 (0.90)	0.001 (0.04)
Tobin's q	0.008* (1.91)	0.002 (0.56)	0.018* (1.77)	0.009*** (4.21)	0.020*** (3.21)	0.031*** (4.30)	0.026*** (3.58)	0.017*** (3.20)
Sales Growth	-0.007 (-0.34)	0.002 (0.08)	0.006 (0.26)	-0.050** (-2.22)	-0.027 (-0.86)	-0.052 (-1.11)	-0.093*** (-2.74)	-0.019 (-0.42)
Technology	-0.046*** (-3.70)	-0.024* (-1.84)	-0.017 (-0.69)	-0.089*** (-5.07)	-0.090*** (-3.06)	-0.099** (-2.49)	-0.085** (-1.99)	-0.106*** (-2.80)
Age at IPO	0.002*** (5.10)	0.002*** (4.82)	0.001*** (3.71)	0.001* (1.86)	0.001 (1.55)	0.002** (2.06)	0.002 (1.56)	0.001 (1.15)
Offer Size	-0.013 (-0.85)	-0.025** (-2.41)	-0.032* (-1.78)	0.003 (0.21)	-0.018 (-0.86)	0.034 (1.24)	0.036 (0.80)	0.077* (1.81)
Offer Size-to-Assets	0.591 (0.93)	0.132 (0.75)	0.071 (1.62)	-0.015 (-0.59)	-0.027** (-2.09)	-0.065*** (-3.47)	0.012** (2.17)	0.012** (2.07)
Observations	2,194	2,100	1,896	1,681	1,463	1,268	1,139	1,009
R-squared	0.1530	0.2500	0.1308	0.1832	0.1567	0.1904	0.2242	0.1854
Industry and Quarter Dummies	yes	yes	Yes	yes	Yes	yes	yes	yes
Constant	yes	yes	Yes	yes	Yes	yes	yes	yes

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.

Table A.4.4. 2 - Leverage (Overlapping Firms)

The dependent variable is the leverage from year 1 to year 8 after IPO. We run Pooled OLS with White standard errors clustered by firm.

Year	1	2	3	4	5	6	7	8
Venture Capital	-0.068*** (-3.45)	-0.047*** (-2.80)	-0.061*** (-3.46)	-0.065*** (-3.57)	-0.080*** (-2.92)	-0.049* (-1.69)	-0.104** (-2.43)	-0.068* (-1.71)
Top Underwriter	-0.037 (-1.25)	-0.026 (-1.29)	-0.013 (-0.81)	-0.014 (-0.66)	-0.018 (-0.64)	-0.067 (-1.55)	-0.024 (-0.76)	-0.024 (-0.66)
Big-Four Auditor	0.011 (0.60)	-0.020 (-1.26)	-0.036** (-2.58)	-0.040** (-2.38)	-0.051** (-2.25)	-0.058** (-2.07)	-0.032 (-1.10)	-0.034 (-1.14)
Bubble Dummy	-0.117*** (-4.68)	-0.108*** (-4.99)	-0.047** (-2.01)	-0.039 (-1.33)	-0.074* (-1.79)	-0.137*** (-2.59)	-0.114** (-2.03)	-0.082 (-1.45)
Cash Flow	0.009 (1.39)	-0.046** (-2.29)	-0.051** (-2.23)	-0.034 (-1.52)	-0.055*** (-3.47)	-0.033** (-2.00)	-0.053*** (-3.88)	-0.059*** (-2.89)
Net PPE	0.417*** (3.97)	0.337*** (4.39)	0.289*** (7.96)	0.269*** (6.91)	0.296*** (5.64)	0.276*** (4.51)	0.234*** (4.24)	0.246*** (4.36)
Book Value of Assets	0.032 (1.40)	0.054*** (3.26)	0.043*** (4.56)	0.017 (0.97)	0.004 (0.16)	0.001 (0.10)	-0.012 (-0.48)	-0.022 (-0.92)
Tobin's q	0.006 (1.37)	0.003 (0.83)	0.002* (1.69)	0.005*** (3.48)	0.010*** (3.46)	0.014*** (3.71)	0.012*** (3.43)	0.010*** (3.17)
Sales Growth	-0.043 (-1.57)	0.003 (0.07)	0.018 (0.84)	-0.001 (-0.05)	-0.011 (-0.26)	-0.003 (-0.06)	-0.041 (-1.49)	-0.024 (-0.58)
Technology	-0.033* (-1.92)	-0.028* (-1.71)	-0.021 (-1.34)	-0.032* (-1.68)	-0.053** (-2.03)	-0.077** (-2.47)	-0.096*** (-3.03)	-0.083** (-2.57)
Age at IPO	0.002*** (3.28)	0.001*** (3.15)	0.001** (2.50)	0.001** (2.35)	0.001** (2.31)	0.001** (1.98)	0.000 (0.85)	0.000 (0.33)
Offer Size	0.010 (0.54)	-0.010 (-0.73)	0.001 (0.10)	0.018 (1.06)	0.027 (1.27)	0.036 (1.53)	0.052 (1.32)	0.084** (2.22)
Offer Size-to-Assets	0.350 (0.66)	0.083 (0.45)	0.060 (1.54)	-0.018 (-0.51)	-0.022* (-1.65)	-0.032** (-2.23)	0.016*** (3.30)	0.014*** (3.02)
Observations	1,259	1,259	1,259	1,259	1,259	1,259	1,259	1,259
R-squared	0.1661	0.2031	0.2000	0.1039	0.1020	0.1352	0.1532	0.1400
Industry and Quarter Dummies	yes	yes	Yes	yes	Yes	yes	yes	yes
Constant	yes	yes	Yes	yes	Yes	yes	yes	yes

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.

Table A.4.5. 1 - Dividend to Earnings (without bubble sample)

The dependent variable is the dividend to earnings ratio from year 1 to year 8 after IPO. We run Pooled OLS with White standard errors clustered by firm.

Year	1	2	3	4	5	6	7	8
Venture Capital	0.000 (0.03)	0.036 (1.33)	0.009 (0.44)	-0.112 (-0.95)	0.002 (0.17)	-0.016 (-0.83)	-0.015 (-0.36)	-0.016 (-0.71)
Top Underwriter	-0.021 (-1.64)	-0.014 (-1.17)	0.010 (0.50)	0.151 (1.00)	-0.016 (-0.85)	0.000 (0.02)	0.093** (2.00)	0.027 (1.16)
Big-Four Auditor	0.021* (1.69)	0.020 (0.89)	0.021* (1.72)	-0.106 (-1.05)	-0.013 (-1.12)	0.002 (0.14)	0.030 (1.10)	0.037* (1.80)
Cash Flow	0.011 (0.65)	-0.011 (-0.93)	0.011 (1.16)	-0.054 (-0.64)	0.005*** (2.61)	0.012* (1.91)	0.015 (0.83)	-0.012 (-1.21)
Net PPE	0.041 (1.03)	-0.063 (-1.36)	-0.049* (-1.94)	0.015 (0.46)	-0.024 (-1.11)	0.021 (0.52)	-0.111 (-1.28)	-0.035 (-0.66)
Book Value of Assets	-0.003 (-0.61)	0.030 (1.23)	0.002 (0.23)	0.042 (1.27)	-0.005 (-0.70)	0.005 (0.54)	-0.049 (-1.48)	-0.003 (-0.46)
Tobin's q	0.000 (0.74)	0.000 (0.57)	0.000 (0.32)	-0.001 (-0.45)	-0.004 (-1.30)	0.002 (0.76)	-0.008*** (-2.65)	-0.001 (-1.13)
Sales Growth	0.013 (0.88)	-0.016 (-0.73)	0.005 (0.26)	-0.192 (-1.06)	-0.006 (-0.36)	-0.015 (-1.28)	-0.045 (-0.83)	-0.002 (-0.12)
Technology	0.008 (0.50)	-0.014 (-0.95)	-0.038 (-1.52)	-0.075 (-1.18)	0.029 (1.49)	0.003 (0.12)	-0.037 (-0.62)	-0.004 (-0.19)
Age at IPO	0.000 (1.50)	0.000 (0.55)	0.001 (1.12)	-0.002 (-1.00)	0.000 (0.64)	-0.000 (-1.26)	0.001 (1.16)	0.000 (0.89)
Offer Size	0.008 (0.91)	-0.010 (-0.90)	-0.001 (-0.06)	-0.054 (-1.10)	0.009 (1.09)	0.010* (1.95)	-0.001 (-0.08)	0.009 (1.45)
Offer Size-to-Assets	-0.082 (-0.68)	0.077 (0.74)	0.001 (0.06)	0.068 (1.17)	0.007 (1.17)	-0.007 (-0.96)	0.001 (0.75)	-0.000 (-0.40)
Observations	1,894	1,850	1,654	1,460	1,298	1,132	1,028	923
R-squared	0.0053	0.0107	0.0092	0.0043	0.0246	0.0132	0.0236	0.0112
Industry and Quarter Dummies	yes	yes	Yes	Yes	Yes	yes	yes	yes
Constant	yes	yes	Yes	Yes	Yes	yes	yes	yes

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.

Table A.4.5. 2 - Dividend to Earnings (Overlapping Firms)

The dependent variable is the dividend to earnings ratio from year 1 to year 8 after IPO. We run Pooled OLS with White standard errors clustered by firm.

Year	1	2	3	4	5	6	7	8
Venture Capital	0.022 (1.42)	0.023 (0.88)	0.005 (0.17)	-0.023 (-0.88)	0.004 (0.15)	-0.027 (-1.24)	-0.020 (-0.53)	0.108 (0.89)
Top Underwriter	-0.002 (-0.25)	-0.006 (-1.15)	0.014 (0.49)	-0.007 (-0.35)	-0.014 (-0.56)	-0.008 (-0.51)	0.084** (2.14)	-0.044 (-0.62)
Big-Four Auditor	0.007 (0.97)	0.006 (0.68)	0.026 (1.42)	0.031 (0.91)	-0.053* (-1.88)	-0.004 (-0.25)	0.035 (1.48)	0.111 (1.36)
Bubble Dummy	-0.017 (-1.08)	-0.022 (-1.16)	-0.023 (-0.96)	0.001 (0.02)	-0.033 (-1.12)	-0.036 (-1.19)	0.055 (1.28)	-0.180 (-1.07)
Cash Flow	0.004 (0.50)	-0.008 (-0.77)	0.006 (0.88)	0.027* (1.76)	0.009 (1.53)	0.011 (1.36)	0.014 (0.67)	0.029 (0.68)
Net PPE	0.051 (0.94)	-0.048 (-1.48)	-0.063* (-1.86)	-0.004 (-0.16)	0.018 (0.58)	0.006 (0.14)	-0.081 (-1.04)	0.034 (0.42)
Book Value of Assets	-0.004 (-0.78)	0.010 (1.12)	0.022** (2.39)	0.012 (1.30)	0.001 (0.07)	0.008 (0.70)	-0.040 (-1.42)	0.046 (0.96)
Tobin's q	-0.000 (-0.56)	-0.000 (-0.83)	0.001 (1.17)	-0.001 (-1.31)	-0.016 (-1.23)	0.001 (0.73)	-0.006*** (-2.69)	0.005 (0.86)
Sales Growth	0.001 (0.32)	0.012 (1.10)	-0.018 (-0.85)	0.001 (0.06)	-0.056 (-0.93)	-0.001 (-0.08)	-0.053 (-1.01)	-0.016 (-0.66)
Technology	-0.010 (-1.12)	-0.008 (-0.87)	-0.027 (-1.19)	0.017 (0.46)	0.137 (1.19)	0.002 (0.07)	-0.030 (-0.60)	-0.103 (-1.03)
Age at IPO	0.000 (1.10)	0.001 (1.07)	0.001 (0.97)	-0.000 (-0.29)	-0.000 (-0.34)	-0.000 (-1.23)	0.001 (1.25)	0.001 (1.19)
Offer Size	0.005 (0.99)	0.001 (0.44)	-0.015 (-1.43)	-0.010 (-1.09)	-0.006 (-0.35)	0.014** (1.97)	-0.003 (-0.32)	-0.036 (-0.83)
Offer Size-to-Assets	-0.051 (-1.09)	-0.020 (-0.63)	0.039* (1.82)	0.026 (1.34)	0.045 (1.16)	-0.006 (-0.92)	0.000 (0.22)	0.002 (0.75)
Observations	1,152	1,152	1,152	1,152	1,152	1,152	1,152	1,152
R-squared	0.0133	0.0147	0.0159	0.0122	0.0364	0.0112	0.0193	0.0133
Industry and Quarter Dummies	yes	yes	Yes	yes	Yes	yes	yes	yes
Constant	yes	yes	Yes	yes	Yes	yes	yes	yes

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.

Table A.4.6. 1 - Interest Coverage (without bubble sample)

The dependent variable is the interest coverage from year 1 to year 8 after IPO. We run Pooled OLS with White standard errors clustered by firm.

Year	1	2	3	4	5	6	7	8
Venture Capital	-0.168*** (-6.37)	-0.083*** (-3.17)	-0.085*** (-4.24)	-0.084*** (-4.13)	-0.102*** (-4.59)	-0.109*** (-4.24)	-0.071* (-1.89)	-0.111*** (-3.59)
Top Underwriter	-0.059** (-2.05)	-0.043 (-1.61)	-0.015 (-0.69)	-0.008 (-0.35)	-0.018 (-0.65)	-0.065 (-1.36)	0.001 (0.01)	-0.010 (-0.29)
Big-Four Auditor	0.036 (1.60)	-0.024 (-1.04)	-0.012 (-0.64)	-0.008 (-0.41)	0.028 (1.34)	-0.004 (-0.14)	-0.006 (-0.18)	0.041 (1.57)
Cash Flow	0.086 (1.56)	0.163*** (4.68)	0.089*** (5.78)	0.046*** (2.90)	0.042*** (4.13)	0.085*** (4.44)	0.056*** (3.98)	0.065*** (3.27)
Net PPE	0.205*** (4.65)	0.092** (2.08)	0.084** (2.37)	0.083*** (2.62)	0.091*** (2.82)	0.123*** (2.66)	0.180** (2.36)	0.092* (1.90)
Book Value of Assets	0.087*** (5.49)	0.141*** (8.20)	0.099*** (7.25)	0.106*** (5.48)	0.090*** (5.11)	0.095*** (3.46)	0.038 (1.44)	0.070*** (3.02)
Tobin's q	0.002 (0.87)	-0.005* (-1.90)	-0.010*** (-3.57)	-0.007*** (-3.24)	-0.003 (-1.42)	-0.006** (-2.27)	-0.015* (-1.74)	-0.004 (-1.33)
Sales Growth	0.202*** (5.22)	0.108*** (2.61)	0.122*** (4.36)	0.109*** (4.04)	0.115*** (3.29)	0.128*** (2.61)	0.156** (2.33)	0.167*** (2.71)
Technology	0.121*** (4.32)	0.105*** (3.65)	0.098*** (4.05)	0.105*** (3.76)	0.082** (2.56)	0.062 (1.38)	0.082 (1.54)	0.066* (1.83)
Age at IPO	0.001*** (3.22)	0.001 (1.51)	0.001* (1.90)	0.001 (1.59)	0.000 (1.16)	-0.000 (-0.63)	-0.001 (-1.24)	-0.000 (-0.66)
Offer Size	-0.039* (-1.86)	-0.093*** (-5.38)	-0.067*** (-4.55)	-0.065*** (-4.37)	-0.039** (-2.38)	-0.018 (-0.98)	-0.008 (-0.37)	-0.002 (-0.06)
Offer Size-to-Assets	-0.073 (-0.21)	1.169*** (5.78)	0.264*** (5.68)	0.186*** (5.69)	0.033*** (4.18)	0.035*** (4.37)	0.010** (2.23)	0.005** (2.31)
Observations	1,895	1,851	1,655	1,460	1,299	1,133	1,028	923
R-squared	0.1505	0.1964	0.2433	0.2506	0.1852	0.1508	0.1492	0.1969
Industry and Quarter Dummies	yes	yes	Yes	Yes	Yes	yes	yes	yes
Constant	yes	yes	Yes	Yes	Yes	yes	yes	yes

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.

Table A.4.6. 2 - Interest Coverage (Overlapping Firms)

The dependent variable is the interest coverage from year 1 to year 8 after IPO. We run Pooled OLS with White standard errors clustered by firm.

Year	1	2	3	4	5	6	7	8
Venture Capital	-0.250*** (-6.88)	-0.130*** (-4.00)	-0.138*** (-5.26)	-0.081*** (-3.37)	-0.082*** (-3.71)	-0.108*** (-4.21)	-0.054** (-2.58)	-0.097*** (-3.83)
Top Underwriter	-0.089** (-2.09)	-0.042 (-1.16)	-0.033 (-1.06)	-0.033 (-1.14)	-0.029 (-0.90)	-0.098 (-1.56)	0.006 (0.10)	-0.017 (-0.58)
Big-Four Auditor	0.007 (0.22)	-0.024 (-0.86)	-0.026 (-1.15)	-0.007 (-0.30)	0.010 (0.40)	0.021 (0.61)	0.006 (0.17)	0.025 (1.02)
Bubble Dummy	-0.307*** (-6.15)	-0.120*** (-2.73)	-0.025 (-0.63)	0.062 (1.55)	0.057 (1.53)	0.089 (1.18)	0.105 (1.55)	0.035 (0.80)
Cash Flow	0.067 (1.27)	0.197*** (4.82)	0.072** (2.07)	0.031** (2.03)	0.073*** (2.59)	0.089*** (3.74)	0.067*** (3.55)	0.074*** (3.36)
Net PPE	0.269*** (4.12)	0.143** (2.30)	0.117** (2.16)	0.092* (1.92)	0.068* (1.79)	0.084 (1.60)	0.148** (2.01)	0.116** (2.38)
Book Value of Assets	0.105*** (4.14)	0.164*** (6.81)	0.132*** (6.75)	0.133*** (5.64)	0.104*** (4.81)	0.103*** (3.69)	0.065*** (2.87)	0.086*** (4.09)
Tobin's q	0.002 (0.87)	-0.003 (-1.35)	-0.006*** (-2.82)	-0.005*** (-2.64)	-0.003 (-1.37)	-0.003* (-1.89)	-0.010* (-1.77)	-0.002 (-1.01)
Sales Growth	0.177*** (3.46)	0.135*** (2.74)	0.211*** (5.83)	0.174*** (5.55)	0.107*** (2.74)	0.135** (2.58)	0.156*** (2.63)	0.169*** (3.09)
Technology	0.178*** (4.56)	0.158*** (4.29)	0.137*** (4.17)	0.126*** (3.80)	0.071** (2.24)	0.049 (1.20)	0.068 (1.63)	0.082*** (2.91)
Age at IPO	0.002*** (3.04)	0.001** (2.00)	0.001 (1.60)	0.001* (1.70)	0.001 (1.25)	0.000 (0.24)	-0.000 (-0.04)	0.001 (0.79)
Offer Size	-0.033 (-1.08)	-0.101*** (-4.01)	-0.085*** (-3.98)	-0.076*** (-3.88)	-0.052** (-2.54)	-0.022 (-1.06)	-0.028 (-1.03)	-0.017 (-0.60)
Offer Size-to-Assets	0.002 (0.00)	1.405*** (4.85)	0.327*** (4.67)	0.223*** (5.09)	0.038*** (4.16)	0.032*** (3.74)	0.011** (2.47)	0.006*** (2.82)
Observations	1,152	1,152	1,152	1,152	1,152	1,152	1,152	1,152
R-squared	0.2318	0.2759	0.2980	0.2688	0.2043	0.1502	0.1484	0.2081
Industry and Quarter Dummies	yes	yes	Yes	yes	Yes	yes	yes	yes
Constant	yes	yes	Yes	yes	Yes	yes	yes	yes

*, **, and *** respectively indicate significance levels at 10%, 5%, and 1% levels.