The Dynamics of Earnings Management in IPOs and the Role of Venture Capital

Sabrina P. Ozawa Gioielli*
Banco Central do Brasil

and

Antonio Gledson de Carvalho**
Fundacao Getulio Vargas School of Business at Sao Paulo

This version: April 2008

ABSTRACT

Earnings management at the time of the IPO is an important issue because it can lead investors to pay an unrealistic price for their shares. This paper investigates the dynamics of earnings management in IPOs and the role of venture capitalists in hampering such practice. We study the behavior of earnings management in four two-quarter phases around the IPO: pre-IPO, IPO, lock-up and post-lock-up periods. Our results indicate that earning inflation occurs only in the IPO period (the quarter before the IPO and the immediately following one). We also find that reversal – earnings deflation – starts in the immediately subsequent period. Comparing venture-backed with non-venture-backed IPOs, we find that only marginally venture-backed IPOs present lower earnings management. However, 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 period, exactly when firms inflate earnings. This result is robust across statistical methods and different methodologies used to estimate earnings management. Finally, by splitting the sample between venture-backed IPOs and non-venture-backed IPOs, we observe that venture-backed IPOs do no present any evidence of earnings management in any of the phases around the IPO.

Keywords: earnings management, IPO, venture capital

JEL classification: G24, G30, M41

---

*Banco Central do Brasil, Av. Paulista, 1.804 – 16º andar, São Paulo, SP, Brazil, 01310-922. Email: sabrina.ozawa@bcb.gov.br. Tel: (5511) 3142-9992. The views expressed in this paper are those of the authors and do not reflect those of the Banco Central do Brasil or its members. **FGV-EAESP, R. Itapeva, 474 – 7º andar, São Paulo, SP, Brazil, 01332-000. Email: gledson.carvalho@fgv.br. Tel: (5511) 3281-7767, fax (5511) 3262-3662. We are grateful to Claudio Furtado, Ricardo Leal and Rodrigo De Losso Bueno for valuable comments. Gioielli gratefully acknowledges the financial support from Banco Central do Brasil, GVcepe and CAPES. Errors or omissions are our responsibility.

1 – Introduction

This article has the purpose of studying the dynamics of earnings management around the IPO and the role of venture capital in hampering such practice. Earnings management, a purposeful intervention in the external financial reporting process with any intention other than to represent the reality intrinsic to the business, although not illegal, can distort the information content of the financial statements in a way that can harm shareholders. Because of this, such practice has captured attention from researches. Earnings management at the time of the IPO is an especially important issue. If investors are guided by earnings but are unaware that earnings are inflated by the generous use of accruals, they could pay an unrealistic price for their shares.

Several studies have been concerned with earnings management at the time of public offerings. Teoh et al. (1998b), using annual accounting information, find that earnings management around the IPO are higher for issuing firms as compared to non-issuing firms. However, for using annual data, these authors are unable to capture the dynamics of earnings management. This is so because earnings inflation and subsequent reversal can occur in a same fiscal year. In fact, their article focuses on how earnings management by issuers can explain the poor stock return of IPOs in the three subsequent years detected by Ritter (1991).

Rangan (1998), using quarterly information, studies the effect of earnings management on the subsequent stock performance for SEOs. Contrary to his own prediction that increased earnings should be observed before the announcement of the SEO in order to inflate prices, the author finds that inflated earnings are reported in the quarter around the announcement of the SEO[1] and the subsequent one. In fact, to reach this conclusion, the author limits to compare the median of discretionary accruals in each quarter. In this procedure, there is no control for other variables that could affect the level of discretionary accruals such as size, sales growth and leverage. Therefore, in spite of using quarterly financial data, Rangan (1998) does not present a real concern with the dynamics of earnings management. His main result is that increased earnings around the SEO explain the poor adjusted stock returns in the following year.

Another venue examines the impact of venture capital investors on the corporate governance of their invested companies and their influence on public offerings. Kaplan and

[1] Rangan (1998) reports high discretionary accruals in quarters 0 and 1. In his words, quarter 0 is the quarter that has the first earnings announcement after the offering announcement.

Stromberg (2003) documents that venture capitalists impose complex control rights at the time of their investments, and put in place strong monitoring and advisory mechanisms. Hellmann and Puri (2002) find that the presence of VC is related to a variety of professionalization measures, such as the adoption of stock options plans, the hiring of a marketing or sales vice-president and the formulation of human resources policies. They also find that venture-backed start-ups are more likely and faster to replace the founder with an outsider CEO. Gompers (1995) and Lerner (1995) provide evidence of strong monitoring activity exerted by venture capitalists.

Venture capitalists also have strong incentives to force their invested firms to keep good corporate governance practices even after the IPO: usually the IPO does not represent the exit of venture capital 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)]. Therefore, venture capitalists have incentives to put in place governance systems to ensure preservation of the value of their investment. Furthermore, as they systematically take firms to the IPO market, concerns with their reputation may drive them to oversight managers in order to avoid earnings manipulation. In fact, some evidence of this role has been found: Hochberg (2004), based on a sample of IPOs in the US between years 1983 and 1994 and using annual data, finds evidence that venture backing is associated with reduction in earnings management at the time of IPO. Morsfield and Tan (2006) achieve the same result for a sample of IPOs in the US covering the period 1983-2001. These authors perform many sensitivity tests, such as control for the endogenous choice for venture capital financing, IPO lock-up provisions and venture capital exits subsequent to the IPO. The main results remain unchanged after all tests. Additionally, Morsfield and Tan (2006) also find evidence that the post-issue performance of venture-backed companies exceeds that of the non-venture-backed firms, using both accounting measures of performance and stock returns. However, the results obtained by these authors indicate that the best performance occurs only when the venture capitalists are effective in mitigating earnings management at the IPO period. Even though Hochberg (2004) and Morsfield and Tan (2006) find that venture-backed IPOs present less earnings management than non-venture-backed ones, they do not answer whether this happens because both groups manage earnings and one group manage less than the other, or if venture-backed IPOs do not present earnings management at all. This is so because their methodology is based on cross section analysis using annual observations and, therefore, lacks the dynamics of earnings management.

Finally, Wongsunwai (2007) extends previous studies by investigating whether the reputation of the venture capitalist affects the corporate governance of the companies in their portfolios. The author developed a new metric to measure the venture capitalist quality that is highly correlated with VC funds' financial returns and the likelihood of successful exits through IPOs or trade sales. Concerning earnings quality, Wongsunwai (2007) finds that only venture capital managers of superior quality are effective in hampering the practice of earnings management in their portfolio firms at the time of the IPO.

This article has two purposes. First, we examine the dynamics of earnings management around the IPO. 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 eight quarters. However, differently from Rangan (1998), through regression analysis, we control for factors that could influence the estimated value of earnings management such as size, sales growth and leverage. With this procedure, we are able to determine when earnings are inflated and when reversion begins. Our second goal is to access the role of venture capital in hampering earnings management. By making explicit the dynamics of earnings management we can 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 only in the IPO period (the quarter before the IPO and the immediately subsequent one). However, contrary to Rangan's prediction, we find evidence of reversal (earnings deflation) starting right after the IPO (in the lock-up period). Comparing venture-backed with non-venture-backed IPOs, we find that only marginally venture-backed ones present lower earnings management. But, 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 period (exactly when firms inflate earnings). This result is robust across statistical methods and different methodologies used to estimate earnings management. Finally, by splitting the sample into venture-backed and non-venture-backed IPOs, we observe that venture-backed IPOs do no present any evidence of earnings inflation in any of the phases around the IPO.

The rest of this paper is organized as follows: Section 2 describes our measures of earnings management, our characterization of the phases of the IPO, and the sample. Section 3 describes our hypotheses, regressions models, treatment for endogenous choice of venture capital investments, and robustness tests. Section 4 presents the empirical results. Finally, Section 5 concludes the paper.

2 – Variables and Sample Description

2.1 – Measures of Earnings Management

Earnings management (or manipulation) is not directly observable. Various models have been developed to gauge it. In general, these models are based on accruals: the difference between reported earnings and cash flow from operations. Total accruals can be decomposed into current (short-term) and non-current (long-term) components. Current accruals involve only short-term assets and liabilities supporting the day-to-day operations of the company, e.g., recognition of sales revenue before cash is received; delayed recognition of expenses through a small provision for bad debts; and deferred recognition of expenses when cash is advanced to suppliers. Non-current accruals adjustments involve long-term net assets, e.g., decelerating depreciation, decreasing deferred taxes, and realizing unusual gains. Because managers have more discretion over current than non-current accruals, current accruals have been frequently used as basis for earnings manipulation [Teoh et al. (1998b)]. In this study, we also use discretionary current accruals as proxy for the level of earnings management. This choice was due 1) to the greater vulnerability of short-term accounts to manipulation; and 2) the fact that most companies in Brazil do not disclose some quarterly data necessary to calculate non-current accruals (e.g., depreciation). When cash flow statements are not available, the alternative to calculate accruals is the balance sheet method [e.g., Hochberg (2004), Teoh et al. (1998a) and (1998b)]. Following this method, current accruals are defined as the variation in current assets minus the variation in current liabilities One should note that to calculate accruals, one needs two consecutive balance sheets.

Even though positive accruals imply reported earnings 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 managing accounting results (earnings manipulation). 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 (i.e., earnings management) are then estimated as the difference between observed and non-discretionary accruals.

To estimate non-discretionary current accruals, we use three different econometric models: *Jones Model* (Jones, 1991), *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)]. Appendix A details these models. Non-discretionary (predicted) accruals can be obtained either through time series (using data of firm i previous to time t to predict the normal accruals of firm i at time t) or cross-section (using information from firms other than firm i at time t to predict the normal accruals of firm i at time t). Due to our focus on IPOs, firms in our sample do not make available accounting data series long enough to apply time series procedure. Furthermore, 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 these facts, we use cross-sectional analysis to estimate non-discretionary current accruals and then calculate discretionary current accruals as the difference between total current accruals and non-discretionary current accruals (Appendix A details this procedure).

2.2 – Phases of the IPO

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

Pre-IPO period: comprises the two quarterly observations that are calculated from the three balance sheets that precede the last one before the IPO. In this period, we expect to find lower levels of earnings manipulation.

IPO period: comprises the two quarterly observations that are calculated from the two balance sheets that immediately precede the IPO and the one immediately after the IPO. According to Rangan (1998), the incentive to manipulate earnings are stronger in the quarter immediately before the IPO, because this is the quarter in which managers want the firm to be best valued. An earnings reversal immediately after the public offering could precipitate lawsuits against the firm and its managers, in addition to other financial and reputation losses. Because of this, we also expect to observe earnings manipulation in the quarter immediately subsequent to the IPO.

Lock-up period: composed of the two quarterly observations which are obtained from the three 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)].[2]

Post-lock-up period: includes the two quarterly observations immediately subsequent to the lock-up period (i.e., calculated from the third, fourth and fifth quarterly balance sheets published after the IPO). In this phase insiders no longer have incentives to manipulate earnings.

2.3 – Sample Description

Our sample initially consisted of all of the 88 IPOs that took place at Bovespa between January/2004 and July/2007 (Table 1 lists these IPOs). As usual, financial firms and real-state investment trusts (19 firms[3]), for presenting accounting practices quite distinct from the other companies, were eliminated from the sample. Three firms with less than three quarterly financial statements available were also eliminated.[4] Therefore, our final sample consists of 66 IPOs, comprising 356 firm-quarter observations (Table 2 presents descriptive statistics of the sample).

[2] In our sample, all but two firms are listed at Bovespa's Novo Mercado or Level 2 [Bovespa (2001)]. The listing requirements for these markets prevent insiders of issuing firms from selling their holdings for 180 days after the IPO date. The other two firms (Dufry South America and Wilson Sons) for not being incorporated in Brazil could not list at Bovespa's Novo Mercado or Level 2. However, their IPO had established a 180 day lock-up period.

[3] These firms are: Porto Seguro, Banco Nossa Caixa, Brasilagro, GP Investments, Shopping Iguatemi, Banco Pine, BR Malls, Banco Sofisa, Tarpon Investment Group, Paraná Banco, Banco Cruzeiro do Sul, Banco Daycoval, Banco Indusval, Redecard, Invest Tur, Banco Patagonia, Banco ABC Brasil, Multiplan and General Shopping.

[4] These firms are Kroton Educacional, Açúcar Guarani and Estácio Participações

This sample is decomposed into 29 venture-backed firms comprising 160 firm-quarter observations and 37 non-venture-backed firms comprising 196 firm-quarter observations. All of the information regarding these IPOs was extracted from the following sources: IPO prospectuses, Economática® dataset, and firms' quarterly financial statements available at the websites of CVM (Brazilian Securities and Exchange Commission) and Bovespa[5]. Data on the subsequent equity offerings (SEO of firms in our IPO sample) were obtained from CVM.

The maximum possible number of observations for a single firm is eight (two for each period). For that it would be necessary nine consecutive quarterly balance sheets: four before the IPO and 5 after the IPO. Not all firms present this whole set of balance sheets. Most companies provide the financial statements for a few quarters preceding the IPO. Other firms had not finished the post-lock-up period at the time of the data collecting. As consequence, we have an unbalanced panel. Table 3 presents the number of firms and firm-quarter observations for each of the periods defined. For the IPO and lock-up periods, which are the most important ones in this study, the number of missing observations is small: for the IPO period there are only 7 observations missing (125 observations of a maximum of 132) and for the lock-up period there are 26 observations missing (106 observations of a maximum of 132). The pre-IPO period is the one with the smallest number of observations: 60 observations from 35 firms. One should note that for the pre-IPO period firms are not required to report quarterly balance sheets.[6]

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. This control sample is composed of all firms listed on Bovespa excluding: 1) financial firms and real-state investment trusts; 2) firms that trade OTC; 3) firms that had conducted either an IPO or SEO and were in the IPO or lock-up periods; 4) firms for which balance sheets were not available in the specific quarter; and 5) firms for which the accruals were in the 1st and 99th percentiles in the specific quarter (in order to minimize the influence of outliers). Table 4 presents the distribution of the control group per quarter. The minimum amount of firms in a particular quarter is 180 (4th quarter of 2003) and the maximum is 230 (2nd quarter of 2004). One can observe that mean accruals also varies considerably over time from a minimum of -2.49% (4th quarter of 2005) to 1.02% (1st quarter of 2004).

[5] These sites are cvm.gov.br and bovespa.com.br.
[6] Bovespa's requirements to list on Novo Mercado or Level 2 include the obligation to present annual financial statements for the previous three years.

3 – Methodology

3.1 – Hypotheses

As pointed out by Teoh et al. (1998b), the IPO process gives entrepreneurs both motivation and opportunities to engage into earnings manipulation. There is high information asymmetry between investors and issuers at the time of the IPO (Rao (1993) reports the lack of news media coverage of firms before their IPO). Consequently, the IPO prospectus is the main source of information. However, it may contain only annual financial statement for the three preceding years. As consequence, investors cannot rely on historical data to estimate the extent to which firms engage into earnings management at the time of the IPO. In view of this, managers of issuing firms have both the opportunity and the motivation to manipulate earnings in order to inflate offering price. Consistent with this conjecture, Teoh et al. (1998b), using annual financial statements, find inflated earnings in the year immediately before the IPO and reversal in the following year. However, annual data may underestimate earnings management because earnings inflation and posterior reversal could occur inside a same fiscal year. By using quarterly data, we expect to make more precise when earnings inflation and reversal occurs.

Rangan (1998) points out that inflated earnings are likely to be observed right before a public offering as an effort to increase offering price. However, inflated earnings can last longer: insiders usually have their shares blocked during the lock-up period (usually 180 days) 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 earnings management not only immediately before the IPO, but also for some period after it, extending possibly until the end of the lock-up period. This reasoning motivates our first hypothesis:

H_1: *In the IPO and lock-up periods, firms present higher level of earnings management than in the pre-IPO and post-lock-up periods*

Some studies have analyzed the influence of venture capital in the practice of earnings manipulation. Hochberg (2004), based on a sample of IPOs in the US between years 1983 and 1994, finds evidence that venture-backing is associated with decreased level of earnings

management at the time of IPO. Morsfield and Tan (2006), using another measure for earnings management, achieve the same result for a sample of US IPOs between 1983 and 2001. 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 Hochberg (2004) as Morsfield and Tan (2006) are based on cross-section analysis using data from the annual financial statements of the companies in the year of the IPO. Finally, Wongsunwai (2007) 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). Concerning earnings quality, the results found by Wongsunwai (2007) indicate that only VC managers of superior quality are effective in mitigating earnings management at the time of the IPO. Our second hypothesis aims at confirming that these same results are observed in Brazil:

H_2: *Venture-backed firms present lower level of earnings management at the time of the IPO than non-ventur- backed firms*

Our third hypothesis complements the second one in terms of determining exactly when the effect of venture capital in constraining earnings management occurs:

H_3: *In the IPO and lock-up periods, venture-backed firms present lower level of earnings management than non-venture-backed firms*

Finally, we take advantage of the use of quarterly data on a panel setting to disentangle the effect of comparatively lower earnings management reported for venture-backed issuers. It can be that venture backed firms inflate earnings but in a lower degree than their non-venture counterpart. It also can be that venture-backed issuers do not manipulate earnings at all. Our fourth hypothesis is formulated in the following terms:

H_4: *Venture-backed firms do not present higher level of earnings management in the IPO and lock-up periods as compared to the pre-IPO and post-lock-up periods*

3.2 – Regression Models

To test hypothesis H_1, we use panel regressions where the dependent variable is the level of earnings management for firm i at time t (discretionary current accruals, $DCA_{i,t}$, are used as proxy for earnings management). The variables of interest are $IPO_{i,t}$ and $Lockup_{i,t}$, two dummy variables indicating observations in the IPO and lock-up periods, respectively. To confirm H_1, the coefficient of these two dummy variables must be positive. The model also includes a number of control variables that can influence the incentives for earnings manipulation:

$$\begin{aligned} DCA_{i,t} = \quad & \beta_0 + \beta_1 IPO_{i,t} + \beta_2 Lockup_{i,t} + \beta_3 Auditor_i + \beta_4 Underwrite\ r_i \\ & + \beta_5 Size_{i,t} + \beta_6 Growth_{i,t} + \beta_7 Leverage_{i,t} + \beta_8 ROA_{i,t} + \beta_9 SEO_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (1)$$

where

$Auditor_i$ is a dummy variable assuming value one when firm i had their financial statements audited by one of the Big Four auditing companies (KPMG, PriceWaterhouseCoopers, Deloitte Touche Tohmatsu and Ernst & Young), and zero otherwise;

$Underwriter_i$ is the Carter-Manaster index[7] (updated for the period 2001-2004 by Loughran and Ritter (2004)) of the member of the underwriting syndicate with the highest score;

$Size_{i,t}$ is the natural logarithm of total assets of firm i at quarter t (in millions of reais);

$Growth_{i,t}$ is the change in net operating revenues between quarters $t-1$ and t for firm i, scaled by the net operating revenues in quarter $t-1$;

$Leverage_{i,t}$ is the firm i's leverage ratio at quarter t, calculated as $1 - \frac{book\ value\ of\ equity}{total\ assets}$;

$ROA_{i,t}$ is the return on assets between quarters $t-1$ and t for firm i, calculated as the ratio of net income to total assets; and

[7] This ranking varies from 1.1 to 9.1. When none of the IPO underwriters in the syndicate was included in the international ranking, we attributed value 1.1.

$SEO_{i,t}$ is a 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.

Variables $Auditor_i$ and $Underwriter_i$ control for the effect that key external monitors can have on constraining earnings management. According to Morsfield and Tan (2006), the reputation of the external auditor could be harmed if it failed to identify or prevent accounting misstatements. Because of this, we expect a negative sign for variable $Auditor_i$. 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 anticipate a negative coefficient for variable $Underwriter_i$.

Regarding the financial variables, Hochberg (2004) argues that 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. Thus, there is no clear expectation for the sign associated to variable $Size_{i,t}$. 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. For this reason, we expect a positive sign for $Growth_{i,t}$. Morsfield and Tan (2006) argue that highly leveraged companies have incentives to manipulate earnings upwards in order to avoid covenant default, but also faces greater monitoring from debt holders. Thus, there is no well-defined expectation regarding the sign of $Leverage_{i,t}$. Dechow et al. (1995) suggest that tests of earnings management may be incorrectly specified if discretionary accruals are correlated with firm performance. The variable $ROA_{i\ t}$ controls this potential bias and there is no specific expectation for the sign of its coefficient. Finally, the inclusion of variable $SEO_{i,t}$ 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)]. We expect a positive sign for this variable.

To test hypothesis H_2, we have the same basic equation of Model 1, with the variable of interest being replaced by VC_i, a dummy variable assuming value one when the observation comes from a firm with venture backing:

$$DCA_{i,t} = \beta_0 + \beta_1 VC_i + \beta_2 Auditor_i + \beta_3 Underwrite\ r_i + \beta_4 Size_{i,t} + \beta_6 Growth_{i,t} + \beta_7 Leverage_{i,t} + \beta_8 ROA_{i,t} + \beta_9 SEO_{i,t} + \varepsilon_{i,t} \quad (2)$$

To test hypotheses H_3, which takes into account possible differences in the level of earnings management over time, we use the same basic equation of Model 2 with the addition of dummy variables for all the phases of the IPO and interactive terms of those dummy variables with variable VC_i:

$$\begin{aligned} DCA_{i,t} = {} & \beta_0 + \beta_1 \text{PreIPO}_{i,t} + \beta_2 Lockup_{i,t} + \beta_3 PostLockup_{i,t} \\ & + \beta_4 VC_i \times \text{Pr}eIPO_{i,t} + \beta_5 VC_i \times IPO_{i,t} \\ & + \beta_6 VC_i \times Lockup + \beta_7 VC_i \times PostLockup_{i,t} \\ & + \beta_8 Auditor_i + \beta_9 Underwrite\ r_i + \beta_{10} Size_{i,t} + \beta_{11} Growth_{i,t} \\ & + \beta_{12} Leverage_{i,t} + \beta_{13} ROA_{i,t} + \beta_{14} SEO_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (3)$$

In Model 3, the dummy variable $IPO_{i,t}$ is the omitted variable in order to avoid perfect colinearity. Therefore, the coefficients on $PreIPO_{i,t}$, $Lockup_{i,t}$ and $PostLockup_{i,t}$ should be interpreted as differences with respect to variable $IPO_{i,t}$. To confirm hypothesis H_3, the sign associated with variables $VC_i \times IPO_{i,t}$ and $VC_i \times Lockup$ must be negative.

Finally, to test hypothesis H_4, we use Model 1, but restraining the sample only to firms with venture backing.

The regressions specified in Models 1-3 are estimated using pooled OLS, random effects and fixed effects (the last one only when the variable of interest varies along the time). We also employ the White (1980) procedure to ensure that standard errors are heteroskedastic-consistent.

3.3 – Treatment for Endogenous Choice of Venture Capital Investments

Many studies on venture capital highlight the fact that the decision by a firm to raise venture capital funds, and also the decision of a venture capitalist to provide financing to a particular firm, are endogenous. Firm characteristics may determine which firms are venture-

backed in the first place. Hochberg (2004) argues that even if venture-backing had no effect on the level of discretionary accruals, the inclusion of control for it in the regression models of earnings management would still make sense, because the firms that receive venture capital funds are possibly those that were *ex ante* less likely to engage in income-increasing earnings manipulation.

We address the endogeneity issue by using instrumental-variables in the estimation of Model 2. The ideal instruments are variables that increase the probability of receiving venture capital funds, but are not correlated with the practice of earnings management. We use as instruments variables indicating 1) firm industry;[8] 2) the state where the company's headquarters is located;[9] and 3) the chronological quarter. Additionally, all the other independent variables used as controls are also included as instruments.

It is important to highlight that the possible difference between the results obtained with and without the treatment of the endogenous choice of venture capital does not necessarily imply that venture capitalists do not play a role in constraining earnings manipulation. For example, suppose we find that the effect of venture capital is statistically significant when we estimate Model 2 without the control for endogeneity, and that the statistical significance vanishes with the use of instrumental variables. The most appropriate conclusion would be that the venture capitalists are efficient in selecting companies with better financial reporting quality *ex ante*, or, in other words, it could mean that the selection process has a greater role in reducing the likelihood of earnings manipulation by IPO firms than the pos-investment monitoring.

3.4 – Robustness Test

To increase the reliability of our results, we employ a robustness test. This is accomplished by using another proxy for earnings management that 1) is less sensitive to imprecision in forecasting discretionary accruals, 2) mitigates the impact of any outliers.

Hochberg (2004) points out that tests of a particular hypothesis that uses discretionary accruals as proxy for earnings management, in fact, jointly test the model for estimating

[8] Following Economática® dataset classification.
[9] The VC industry is notorious for being geographically concentrated. Carvalho et al. (2006) that conducted a full census of the Brazilian private equity and venture capital industry found that the PE/VC organizations are heavily concentrated in the states of São Paulo and Rio de Janeiro.

discretionary accruals and the hypothesis in focus. While the models for estimating discretionary accruals (described in Appendix A) may be imprecise in terms of providing cardinal measures, they are more precise in providing ordinal measures. Following the methodology proposed in Hochberg (2004), for each quarter, firms are ranked according to their level of discretionary accruals. Next we define a dummy variable, $Aggressive_{i,t}$, that takes value one if firm i is in the first decile (with highest estimated discretionary accruals) in quarter t and value zero otherwise. Similarly, we create the dummy variable $Conservative_{i,t}$ to indicate firms that are in the last decile (with lowest estimated discretionary accruals). Then, we re-estimate Models 2 and 3, using variables $Aggressive_{i,t}$ and $Conservative_{i,t}$ as proxies for earnings management in a probit framework. Finally, we also use the instrumental variables approach detailed in the previous section to deal with the endogeneity problem in this context.

4 – Empirical Results

4.1 – Preliminary Results

Table 5 presents descriptive statistics of the level of earnings management in Brazilian IPOs based on three different proxies: discretionary current accruals calculated using Jones, Modified Jones and Modified Jones with ROA models. Panel A shows the pooled level of earnings management 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. As expected, the lowest means are obtained using the Modified Jones model with ROA, which uses more controls in the estimation of non-discretionary accruals.

For the full sample (Table 5, Panel A), the mean level of discretionary current accruals as percentage of lagged total assets varies from 4.26% to 4.78% depending on the model used. When we break the sample into venture-backed and non-venture-backed firms, a big difference emerges: earnings management for venture-backed firms varies from 2.44% to 2.93%, while for non-venture-backed firms the mean is more than the double – ranging from 5.75% to 6.31%. The difference is statistically significant at the 5% level, regardless of the model used to calculate accruals. This result is consistent with our research hypothesis H_2, i.e., the presence of venture capitalists hampers the practice of earnings manipulation in IPOs.

Panel B of Table 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. However, contrary to Rangan (1998), in the lock-up period the level of discretionary current accruals, although positive, is not very different from the levels identified in the pre-IPO and post-lock-up periods. This last result suggests that inflating earnings to benefit insiders who wish to sell their shares after the expiration of the lock-up agreement is not a pervasive practice. More than that, there is a reversal because the level of earnings management drops considerably in the lock-up period. Mean comparisons also suggest that for venture-backed firms the level of earnings management do not change considerably across the IPO phases. Moreover, the mean level of discretionary current accruals in the IPO period are much lower for venture-backed companies, ranging from 3.00% to 3.50% of lagged total assets, while for non-venture-backed firms that figure ranges from 11.32% to 11.86%. The difference between the means of the two groups is expressive, between 8.18% and 8.35%, and always statistically significant at the 5% level. This result only partially supports Hypothesis H_3, because in the lock-up period the difference is not statistically significant.

Figure 1 illustrates our mean results using discretionary accruals calculated from the Modified Jones Model with ROA. In the four phases of the IPO process, one can note that the mean level of earnings management of venture-backed firms is almost constant, staying on levels equal to or lower than 3% of lagged total assets along the whole period. This can be interpreted as a preliminary evidence supporting hypothesis H_4. On the other hand, for non-venture-backed firms, discretionary accruals increase dramatically in the IPO period.

Table 6 presents t-statistics of univariate comparisons of the mean discretionary current accruals between each pair of IPO phases for the venture-backed sub-sample. The p-values shown in brackets reveal that there is no significant difference in the mean level of earnings management in the IPO and lock-up periods compared to the pre-IPO and post-lock-up periods. In fact, the difference is not significant for any pair of phases, which supports the idea that venture-backed issuers do not manipulate earnings at all during the IPO process.

4.2 – Regression Analysis

Table 7 reports the correlation among the exogenous variables in our regressions. One can note that, in general, the correlation between the independent variables is quite low, although the

p-values indicate statistical significance at the 10%, 5% and 1% levels for some pairs. It is interesting to note that, as found in Barry et al. (1990), venture-backed IPOs are associated with auditors and underwriters of superior quality. The correlation also suggests that companies with better audit quality tend to perform their IPO with more reputable underwriters.

Table 8 presents the estimation results for Model 1, which aims at unveiling the phases of the IPO in which firms manipulate earning. Partially supporting hypothesis H_1, variable $IPO_{i,t}$ is positive and statistically significant at the 1% or 5% levels, depending on the statistical procedure. However, contrary to the same hypothesis, the coefficient of $Lock\text{-}up_{i,t}$ is negative in all regression, although significant only when we use fixed effects. These results indicate that firms manage earnings with the intention of increasing offering price of their shares, but the reversal begins just a couple of quarters after the IPO. Contrary to Rangan (1998) conjecture, insiders do not keep earnings inflated to profit with the sales of shares after the expiration of the lock-up agreement. These results are robust to the use of different models to calculate discretionary current accruals and different statistical methods.

Some of the control variables failed to present statistical significance. This is the case of variables $Auditor_i$, $ROA_{i,t}$ and $SEO_{i,t}$, even though their signs are as expected. Strangely, variable $Underwriter_{i,t}$, present a sign negative and significant at the 5% level in all regressions. This result is challenging, because it indicates that more prestigious underwriters are associated with higher levels of earnings management. One fact that may have contributed to this apparent contradiction is the a high concentration of values in the upper limit of variable $Underwriter_{i,t}$ (in approximately 80% of the observations the underwriter is at the top of the ranking – the value assigned is 9.1).

The coefficient of the variable $Size_{i,t}$, in turn, is negative and significant at the 5% or 10% level (depending on the regression), indicating an inverse relationship between the size of the company and the level of discretionary current accruals. This result is consistent with Hochberg (2004), which argues that the intense scrutiny from securities analysts limits the chances to exercise discretion. For variable $Growth_{i,t}$, the sign is as expected (positive) and significant at the 5% level in all regressions (except in the fixed effects one). This result brings evidence that higher growth firms have increased levels of discretionary current accruals, which can be a symptom of some degree of imprecision in the models of accruals decomposition [Hochberg

(2004)]. Finally, the negative coefficient of the variable $Leverage_{i,t}$ (statistically significant at the 5% or 10% level in all fixed or random effects regressions) indicates that high levered firms are associated with less earnings management, which may be a reflex of a greater monitoring from debt holders [Morsfield and Tan (2006)].

Table 9 presents estimations of Model 2. Contrary to what was suggested in the mean comparison, we find no strong evidence of venture-backing on hampering earnings management. The coefficient of this variable varies from -0.0302 to -0.0329 (in the random effects estimates), suggesting that discretionary current accruals for venture-backed firms are 3.02% to 3.29% of lagged total assets lower than the level presented by firms without such backing. However, variable VC_i is statistically significant at the 10% level only for polled OLS estimates. The Breusch and Pagan LM test for random effects indicate that GLS with random effects estimation is the most appropriate for this case. In other words, considering the whole period around the IPO, without separation into phases, there is no evidence that venture-backed firms presents levels of earnings management lower than non-venture-backed ones. The inclusion of several control variables in a regression framework modified the preliminary inferences of the mean comparison presented previously.

Next we move to the estimation of Model 3, which has the purpose of investigating the impact of venture-backing on a time perspective. The objective of this analysis is to examine exactly when the effect of venture capital on constraining earnings manipulation occurs (if it occurs at all). Table 10 presents the results. The omitted phase dummy is the one for the IPO period. The dynamics of earnings management is consistent with that presented on Table 8. The coefficients of the dummy variables $Pre\text{-}IPO_{i,t}$, $Lock\text{-}up_{i,t}$ and $Post\text{-}lock\text{-}up_{i,t}$ are negative and statistically significant. This means that, in these phases, the level of earnings management is significantly lower than that identified in the IPO period.[10] With respect to the interactive terms of the dummies for phases and variable VC_i, we find a quite interesting situation. The coefficients of the interactions of VC_i with $PreIPO_{i,t}$, $Lockup_{i,t}$ and $PostLockup_{i,t}$, although negative in most regressions, are not statistically significant. Thus, we can not state that venture-backed firms present lower levels of earnings management in the Pre-IPO, Lock-up and Post-lock-up phases.

[10] In non-reported results, we omit the variable $Lock\text{-}up_{i,t}$ instead of the dummy indicative of the IPO phase. In this case, as in the univariate analysis, there is no evidence that discretionary current accruals in the lock-up period are higher than in the Pre-IPO or Post-lock-up periods.

However, the interactive term $VC_i \, x \, IPO_{i,t}$ is negative and significant and at the 10% or 5% levels in all regressions. Our estimates indicate that the difference in the level of discretionary current accruals between venture-backed and non-venture-backed firms at the IPO period is substantial, ranging from 7.55% to 7.75% of lagged total assets. These results show that the contribution of venture capitalists in improving the earnings reporting quality of their portfolio firms is more important precisely at the most critical period: at the time of the IPO, when firms manage earnings more intensely in order to inflate stock price. Finally, one should note that this result is robust with respect to the insertion of several controls, measures of earnings manipulation and statistical methods.

In order to test whether venture-backed firms manage earnings at all (hypothesis H_4), we estimate Model 1 restricting our sample only to firms with venture-backing. The results are in Table 11. The coefficient of variable $IPO_{i,t}$ and $Lockup_{i,t}$ are not significant in any regression. This means that even in the phases where there are strong incentives to manipulate earnings, venture-backed firms do not present higher levels of discretionary current accruals, comparing to the phases without such motivation (Pre-IPO and Post-lock-up periods). Thus, our results suggest that firms with venture backing not only present lower levels of earnings manipulation in the IPO process, they do not manage earnings at all. For non-venture-backed firms, we find a great increase in earnings management in the period around the IPO date. Thus, the use of quarterly data on a panel setting enabled us to take these conclusions, which are innovative comparing to previous studies that addressed this issue but use annual accounting data [(Hochberg (2004); Morsfield and Tan (2006)].

4.3 – Treatment for Endogenous Choice of Venture Capital Investments

Table 12 shows the results obtained with treatment for the endogenous choice of venture capital investments. We estimate Model 2 using an instrumental variable approach by Pooled 2SLS (or Pooled OLS in two stages) and G2SLS (or GLS in two stages) with random effects models. Our instruments are indicator variables for (1) firm industry, 2) state where the company's headquarters is located and 3) chronological quarters. Additionally, all other independent variables used as control are also used as instruments. Only the results using the Modified Jones Model with ROA for calculating the dependent variable are reported. Initially, the statistics presented at the bottom of Table 12 (F for Pooled 2SLS and $\chi 2$ for G2SLS) indicate

that the instruments are valid: in both regressions, the significance test of the joint instruments indicates that they have high explanatory power in the regressions of the first stage, helping to explain the venture capital investment choice (significant at the 1% level in both cases).

Concerning the variable of interest, if the results previously found were be attributed to selection (i.e., firms that receive venture capital were *ex-ante* less likely to manage earnings upwards), the estimated coefficient of the variable VC_i should have its magnitude reduced with the use of instrumental variable. However, as can be seen in columns 1 and 2 of Table 12, it does not happen so. In fact, the coefficient of the variable VC_i increased considerably in absolute terms and its significance was also improved.

The results obtained by G2SLS with random effects indicate that venture-backed firms present levels of earnings management 5.22% of lagged total assets lower than companies without such backing (with significance at the 10% level). Without the treatment of the endogenous choice of VC financing, this difference is 3.02% of lagged total assets and not significant (as reported in Table 9). This suggests that, contrary to the suspicion, firms selected by VC investors are those more likely to engage in earnings manipulation in the IPO process. Therefore, the evidence is that the influence of venture capitalists in reducing earnings management is even more important, since apparently they are able to revert the initial propensity to earnings manipulation of their portfolio firms.

4.4 – Robustness Test

Table 13 presents the results of the robustness test described in Section 3.4. Panel A shows the *aggressive accounting* regressions. First, the signs of the dummy variables representative of the Pre-IPO, Lock-up and Post-lock-up phases remain negative (regressions 2 and 4), indicating that in these periods firms are less likely to be aggressive in reporting earnings than in the IPO phase. However, only the coefficient of lock-up period is statistically significant, confirming the reversion previously reported in Table 8.

Regarding the effect of venture backing, the results once again indicate that venture-backed companies are less likely to practice aggressive accounting in the period immediately around the IPO date (in Regressions 2 and 4, the sign of the interactive term $VC_i \; x \; IPO_{i,t}$ is negative and statistically significant at the 10% or 5% levels). In addition, the coefficient of

interaction VC_i *x Post-Lockup*$_{i,t}$ is also negative with 10% of significance, which shows that, also in the Post-lock-up phase, when there is no incentives to manipulate earnings, venture-backed firms are also less likely to be part of the group of aggressive accounting practices.

Applying an instrumental variables approach (regression 5), one can note that the instruments chosen help to explain venture capital investments (the regression of the first stage is significant at the 5% level in the Wald exogeneity test for the variable VC_i). However, once again the magnitude and significance of the coefficient on the variable indicative of venture backing are even greater. This finding suggests that, contrary to expectations, the companies selected by venture capitalists are, *ex ante*, more likely to be part of the group of aggressive accounting. That is, such result highlights the idea that post-investment monitoring by venture capitalists has even greater importance, being capable of reversing the initial tendency of venture capital invested firms to adopt aggressive accounting practices in periods close to the IPO.

In the *conservative accounting* regressions, presented in Panel B of Table 13, almost no variable presents explanatory power. In fact, there is only an indication that high-levered companies are more likely to be part of this group. Furthermore, the result of the Wald exogeneity test at the bottom of Panel B indicates that the choice of venture capital investments is exogenous in the analysis of the conservative accounting profile.

5 – Conclusions

Several studies have been concerned with earnings management at the time of public offerings and its effects on subsequent performance of stock prices. 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?

This article investigates the dynamics of earnings management in IPOs and the role of venture capitalists in hampering such practice. 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 eight quarters. Through regression analysis, we control for factors that could influence the estimated value of earnings management, such as size, sales growth and leverage. 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 only in the IPO period. Contrary to Rangan's (1998) prediction, we find evidence of reversal (earnings deflation) starting right after the IPO (in the lock-up period). Comparing venture with non-venture-backed IPOs, we find that only marginally venture-backed ones present lower earnings management. However, 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 period (exactly when firms inflate earnings). This result is robust across statistical methods and different methodologies used to estimate earnings management. Finally, by splitting the sample into venture and non-venture-backed IPOs, we observe that venture-backed firms do no present any evidence of earnings inflation in any of the phases around the IPO.

6 – References

BARRY, Christopher B.; MUSCARELLA, Chris J.; PEAVY III, John W.; VETSUYPENS, Michael R. The role of venture capital in the creation of public companies. *Journal of Financial Economics*, v. 27, n. 2, p. 447-471, Oct. 1990.

BARTOV, Eli; GUL, Ferdinand A.; TSUI, Judy S. L. Discretionary accruals models and audit qualifications. *Journal of Accounting and Economics*, v. 30, n. 3, p. 421-452, Dec. 2000.

BOLSA DE VALORES DE SÃO PAULO (BOVESPA). *Regulamento de práticas diferenciadas de governança corporativa*: Novo Mercado, Nível 2 e Nível 1, 2001. Disponível em: <http://www.bovespa.com.br>. Acesso em: 22 jan. 2007.

CARTER, Richard; MANASTER, Steven. Initial public offerings and underwriter reputation. *Journal of Finance*, v. 45, n. 4, p. 1045-1067, Sep. 1990.

CARVALHO, Antonio G.; RIBEIRO, Leonardo de L.; FURTADO, Cláudio V. *A indústria de private equity e venture capital*: primeiro censo brasileiro. São Paulo: Saraiva, 2006. 135 p.

DeANGELO, Linda E. Accounting numbers as market valuation substitute: a study of management buyouts of public stockholders. *Accounting Review*, v. 61, n. 3, p. 400-420, Jul. 1986.

DECHOW, Patricia M.; SLOAN, Richard G.; SWEENEY, Amy P. Detecting earnings management. Accounting Review, v. 70, n. 2, p. 193-225, Apr. 1995.

GOMPERS, Paul A. Optimal investment, monitoring, and the staging of venture capital. Journal of Finance, v. 50, n. 5, p. 1461-1489, Dec. 1995.

HEALY, Paul M. The effect of bonus schemes on accounting decisions. *Journal of Accounting and Economics*, v. 7, n. 1-3, p. 85-107, Apr. 1985.

HELLMANN, Thomas; PURI, Manju. Venture capital and the professionalization of start-up firms: empirical evidence. *Journal of Finance,* v. 57, n. 1, p. 169-197, Feb. 2002.

HOCHBERG, Yael V. Venture capital and corporate governance in the newly public firm. In: AFA - AMERICAN FINANCE ASSOCIATION MEETINGS, 2004. San Diego. Disponível em: <http://ssrn.com/abstract=474542>. Acesso em: 10 jan. 2007.

JONES, Jeniffer J. Earnings management during import relief investigations. *Journal of Accounting Research,* v. 29, n. 2, p. 193-228, Autumn 1991.

KANG, Sok-Hyon; SIVARAMAKRISHANAN, K. Issues in testing earnings management: an instrumental variable approach. *Journal of Accounting Research***,** v. 33, n. 2, p. 353-367, Autumn 1995.

KAPLAN, Steven N.; STRÖMBERG, Per. Financial contracting theory meets the real world: an empirical analysis of venture capital contracts. *Review of Economic Studies*, v. 70, n. 243, p. 281-315, Apr. 2003.

KOTHARI, S. P.; LEONE, Andrew J.; WASLEY, Charles E. Performance matched discretionary accrual measures. *Journal of Accounting and Economics,* v. 39, n. 1, p. 163-197, Feb. 2005.

LERNER, Josh. Venture capitalists and the oversight of private firms. *Journal of Finance*, v. 50, n. 1, p. 301-318, Mar. 1995.

LOUGHRAN, Tim; RITTER, Jay. Why has IPO underpricing changed over time? *Financial Management*, v. 33, n. 3, p. 5-37, Autumn 2004.

MORSFIELD, Suzanne G.; TAN, Christine E. L. Do venture capitalists influence the decision to manage earnings in initial public offerings? *Accounting Review*, v. 81, n. 5, p. 1119-1150, Oct. 2006.

RANGAN, Srinivasan. Earnings management and the performance of seasoned equity offerings. *Journal of Financial Economics*, v. 50, n. 1, p. 101-122, Oct. 1998.

RAO, Gita R. The relation between stock returns and earnings: a study of newly-public firms. Working paper, Kidder Peabody and Co., New York. 1993.

RITTER, J. The long-run performance of initial public offerings. *Journal of Finance*, v. 46, n. 1, p. 3-27, Mar. 1991.

SUBRAMANYAN, K. R. The pricing of discretionary accruals. *Journal of Accounting and Economics*, v. 22, n. 1-3, p. 249-281, Aug./Dec. 1996.

TEOH, Siew H.; WELCH, Ivo; WONG, T. J. Earnings management and the underperformance of seasoned equity offerings. *Journal of Financial Economics*, v. 50, n. 1, p. 101-122, Oct. 1998.

TEOH, Siew H.; WELCH, Ivo; WONG, T. J. Earnings management and the long-run market performance of initial public offerings. *Journal of Finance,* v. 53, n. 6, p. 1935–1974, Dec. 1998.

WHITE, Halbert. A heteroskedasticity-consistent covariance matrix estimator and a direct test of heteroskedasticity. *Econometrica*, v. 48, n. 4, p. 817-838, May 1980.

WONGSUNWAI, Wan. Does venture capitalist quality affect corporate governance? *Working Paper*, Stanford Graduate School of Business, Feb. 2007. Available at <www.gsb.stanford.edu/facseminars/events/accounting/index.html>. Acesso em: 20 jan. 2007.

Appendix A: Methodology for Estimating Discretionary Current Accruals

Following Teoh et al. (1998b), we define current accruals for firm i at time t, $CAcc_{i,t}$, as:

$$CAcc_{i,t} = \left(CA_{i,t} - CA_{i,t-1}\right) - \left(CL_{i,t} - CL_{i,t-1}\right), \tag{A1}$$

where

$CA_{i,t}$ is the current assets of firm i at time t, excluding cash; and

$CL_{i,t}$ is the current liabilities of firm i at time t, excluding short-term debt.

We use three different econometric models to obtain normal (non-discretionary) accruals: *Jones Model* [Jones (1991)], *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)].

For the *Jones Model*, current accruals are specified according to the following model:

$$\frac{CAcc_{i,t}}{TA_{i,t-1}} = \beta_1\left(\frac{1}{TA_{i,t-1}}\right) + \beta_2\left(\frac{NR_{i,t} - NR_{i,t-1}}{TA_{i,t-1}}\right) + \varepsilon_{i,t}, \tag{A2}$$

where

$TA_{i,t-1}$ is the total assets of firm i at time $t-1$; and

$NR_{i,t}$ is the net operating revenues of firm i at time t.

For the *Modified Jones Model*, current accruals are *specified* according to the following model:

$$\frac{CAcc_{i,t}}{TA_{i,t-1}} = \beta_1\left(\frac{1}{TA_{i,t-1}}\right) + \beta_2\left(\frac{\left(NR_{i,t} - NR_{i,t-1}\right) - \left(TR_{i,t} - TR_{i,t-1}\right)}{TA_{i,t-1}}\right) + \varepsilon_{i,t}, \tag{A3}$$

where

$TR_{i,t}$ is the trade accounting receivables of firm i at time t.

Finally, for the *Modified Jones Model with ROA*, current accruals are specified according to the following model:

$$\frac{CAcc_{i,t}}{TA_{i,t-1}} = \beta_1\left(\frac{1}{TA_{i,t-1}}\right) + \beta_2\left(\frac{\left(NR_{i,t} - NR_{i,t-1}\right) - \left(TR_{i,t} - TR_{i,t-1}\right)}{TA_{i,t-1}}\right) + \beta_3\left(ROA_{i,t}\right) + \varepsilon_{i,t}, \quad \text{(A4)}$$

where

$ROA_{i,t}$ is the return on assets of firm i at time t.

To compute non-discretionary current accruals for IPO firm i at time t, $NDCA_{i,t}$, we estimate the regressions above cross-sectionally for a sample (control group) of firms at quarter t. The control group for each quarter is formed of all firms listed on Bovespa excluding: 1) financial firms and real-state investment trusts; 2) firms that trade OTC; 3) firms that had conducted either an IPO or SEO and were in the IPO or lock-up periods; 4) firms for which balance sheets were not available in the specific quarter; and 5) firms for which the accruals were in the 1st and 99th percentiles in the specific quarter (in order to minimize the influence of outliers). For instance, using the *Jones Model*, non-discretionary current accruals ($NDCA_{i,t}$) are calculated as:

$$NDCA_{i,t} = \hat{\beta}_1\left(\frac{1}{TA_{i,t-1}}\right) + \hat{\beta}_2\left(\frac{NR_{i,t} - NR_{i,t-1}}{TA_{i,t-1}}\right), \quad \text{(A5)}$$

where

$\hat{\beta}_1$ and $\hat{\beta}_2$ are the estimated parameters from Regression (A2).

Finally, discretionary current accruals for IPO firm i at time t ($DCA_{i,t}$) are calculated as the difference between $CAcc_{i,t}$ (scaled by lagged total assets) and $NDCA_{i,t}$:

$$DCA_{i,t} = \frac{CAcc_{i,t}}{TA_{i,t-1}} - NDCA_{i,t}, \quad \text{(A6)}$$

Table 1
IPOs at Bovespa from January/2004 to July/2007

This table presents the IPOs taking place at Bovespa from January/2004 to July/2007. The IPO proceeds refer to the total amount of the equity offering and the foreign investors participation is measured as % of the total proceeds. The industry segment is according to the Bovespa's classification.

Panel A: Venture-backed firms

IPO Year	Firm	IPO Proceeds (R$ MM)	Bovespa's Listing	Foreign Investors	Industry Segment
2004	Natura Cométicos	768	Novo Mercado	67%	Personal Care Products
	Gol Linhas Aéreas Inteligentes	878	Level 2	75%	Airlines
	ALL - América Latina Logística	588	Level 2	71%	Railroads
	CPFL Energia	821	Novo Mercado	69%	Electric Utilities
	DASA - Diagnósticos da América	437	Novo Mercado	68%	Medical & Hosp. Services, Analysis and Diagnostics
2005	Submarino (now B2W Varejo)	473	Novo Mercado	73%	Diversified Retailers
	Localiza Rent a Car	265	Novo Mercado	87%	Car Rental
	TAM	548	Level 2	74%	Airlines
	UOL - Universo Online	625	Level 2	71%	Software and Services
2006	Vivax	529	Level 2	69%	Cable TV
	Gafisa	927	Novo Mercado	72%	Residential Building Construction
	Totvs	460	Novo Mercado	69%	Software and Services
	Equatorial Energia	540	Level 2	77%	Electric Utilities
	CSU Cardsystem	341	Novo Mercado	98%	Diversified Services
	Brasilagro	583	Novo Mercado	82%	Real Estate
	Lupatech	453	Novo Mercado	73%	Motors, Compressors and Others
	Datasul	317	Novo Mercado	72%	Software and Services
	Santos-Brasil	933	Level 2	77%	Warehousing and Storage
	Odontoprev	522	Novo Mercado	63%	Medical & Hosp. Services, Analysis and Diagnostics
	Dufry South America	850	BDR	69%	Diversified Retailers
2007†	PDG Realty Empreend. e Part.	648	Novo Mercado	84%	Residential Building Construction
	Anhanguera Educacional	512	Level 2	76%	Educational Services
	Even Const. e Incorporadora	460	Novo Mercado	53%	Residential Building Construction
	BR Malls Participações	657	Novo Mercado	69%	Real Estate
	Fertilizantes Heringer	350	Novo Mercado	65%	Fertilizers
	Bematech	407	Novo Mercado	70%	Hardware and Equipments
	Cremer	552	Novo Mercado	76%	Pharmaceutical and Others Products
	Inpar	756	Novo Mercado	70%	Residential Building Construction
	MRV Engenharia e Part.	1.193	Novo Mercado	73%	Residential Building Construction
	Springs Global Participações	656	Novo Mercado	37%	Fabric, Thread and Fibers
	Cia Providência	469	Novo Mercado	67%	Other Materials
Total	**31 firms**	**18.519**			

Table 1 (cont.)
IPOs at Bovespa from January/2004 to July/2007

Panel B: Non-Venture-backed firms

IPO Year	Firm	IPO Proceeds (R$ MM)	Bovespa's Listing	Foreign Investors	Industry Segment
2004	Grendene	617	Novo Mercado	64%	Footwear
	Porto Seguro	377	Novo Mercado	71%	Insurance
2005	Renar Maçãs	16	Novo Mercado	5%	Agriculture
	EDP - Energias do Brasil	1.185	Novo Mercado	26%	Electric Utilities
	OHL Brasil	496	Novo Mercado	70%	Toll Roads and Highways
	Banco Nossa Caixa	954	Novo Mercado	71%	Banks
	Cosan	886	Novo Mercado	72%	Sugar and Alcohol
2006	Copasa	813	Novo Mercado	74%	Water Utilities
	Company	282	Novo Mercado	64%	Residential Building Construction
	American Banknote	480	Novo Mercado	70%	Diversified Services
	GP Investments	706	BDR	74%	Asset Management and Investments
	MMX Mineração e Metálicos	1.119	Novo Mercado	76%	Metalic Minerals
	Abyara Planej. Imobiliário	164	Novo Mercado	83%	Residential Building Construction
	Medial Saúde	742	Novo Mercado	76%	Medical & Hosp. Services, Analysis and Diagnostics
	Klabin Segall	527	Novo Mercado	65%	Residential Building Construction
	M. Dias Branco	411	Novo Mercado	71%	Other Food Manufacturing
	Brascan Residential Properties	1.188	Novo Mercado	87%	Residential Building Construction
	Profarma	401	Novo Mercado	70%	Drugstores
	Terna Participações	627	Level 2	65%	Electric Utilities
	Brasil Ecodiesel	379	Novo Mercado	60%	Exploration and Refining (Biofuels)
	Positivo Informática	604	Novo Mercado	64%	Hardware and Equipments
	Lopes Brasil Cons. de Imóveis	475	Novo Mercado	71%	Property Agency
2007†	Rodobens Neg. Imobiliários	449	Novo Mercado	67%	Residential Building Construction
	Camargo Correa Des. Imob.	522	Novo Mercado	48%	Residential Building Construction
	Tecnisa	791	Novo Mercado	62%	Residential Building Construction
	Iguatemi Shopping	549	Novo Mercado	72%	Real Estate
	São Martinho	424	Novo Mercado	53%	Sugar and Alcohol
	GVT Holding	1.076	Novo Mercado	76%	Fixed Line Communications
	JBS	1.617	Novo Mercado	74%	Meat, Poultry and Others
	Banco Pine	517	Level 1	78%	Banks
	JHSF Participações	432	Novo Mercado	89%	Residential Building Construction
	Metalfrio Solutions	453	Novo Mercado	57%	Electric Equipment
	CR2 Empreend. Imobiliários	308	Novo Mercado	0%	Residential Building Construction
	Agra Empreend. Imobiliários	786	Novo Mercado	67%	Residential Building Construction
	Wilson Sons	706	BDR	74%	Warehousing and Storage
	Banco Sofisa	505	Level 1	76%	Banks
	Tarpon Investment Group	444	BDR	87%	Asset Management and Investments
	Paraná Banco	529	Level 1	78%	Banks
	SLC Agrícola	490	Novo Mercado	70%	Agriculture
	Log-In Logística Intermodal	848	Novo Mercado	75%	Marine and Water Transport
	EZ Tec Empreend. e Part.	542	Novo Mercado	68%	Residential Building Construction
	Banco Cruzeiro do Sul	574	Level 1	59%	Banks
	Marfrig Frigoríficos	1.021	Novo Mercado	68%	Meat, Poultry and Others
	Banco Daycoval	1.092	Level 1	70%	Banks
	Tegma Gestão Logística	604	Novo Mercado	59%	Trucking
	Banco Indusval	253	Level 1	88%	Banks
	Redecard	4.643	Novo Mercado	72%	Diversified Financial Services
	Invest Tur	945	Novo Mercado	87%	Hotels
	Minerva	444	Novo Mercado	62%	Meat, Poultry and Others
	Banco Patagonia‡	76	BDR	84%	Banks
	Kroton Educacional	479	Level 2	70%	Educational Services
	Açúcar Guarani	666	Novo Mercado	45%	Sugar and Alcohol
	TPI - Triunfo Part. e Investimentos	513	Novo Mercado	72%	Toll Roads and Highways
	Banco ABC Brasil	609	Level 2	65%	Banks
	Multiplan Empreend. Imobiliários	925	Level 2	64%	Real Estate
	General Shopping Brasil	287	Novo Mercado	66%	Real Estate
	Estácio Participações	447	Level 2	64%	Educational Services
Total	**57 firms**	**39.011**			

‡ The data refers only to the Brazilian offering; † Until July/2007

Source: Bovespa and IPO prospectuses

Table 2
(Panel A)
Descriptive Statistics for the Sample of Brazilian IPO firms - General Characteristics

This table presents descriptive statistics for a sample of 66 IPO firms going public at Bovespa in the period from January/2004 to July/2007, excluding financial firms and real state investment trusts. All the information refers to the IPO date and was extracted from the following sources: IPO prospectuses, Economática® dataset and firms' quarterly financial statements available at the websites of CVM (Brazilian Securities Commission) and Bovespa. Panel A presents general characteristics of the IPO firms, including location, industry sector and age. Panel B presents firm financial characteristics. The values of total assets, book value of equity, net sales and net income were extracted from the firm's annual financial statement of the year prior to the IPO. The IPO proceeds were obtained from the Bovespa site. The market capitalization refers to the first day of listing and was calculated by the product of the total number of shares by the stock price at the closing.

	All firms		**VC-backed firms**		**Non-VC-backed firms**	
	# firms	**% of the total**	**# firms**	**% of the total**	**# firms**	**% of the total**
Location (State)						
São Paulo	38	57,58	17	58,62	21	56,76
Rio de Janeiro	7	10,61	0	0,00	7	18,92
Paraná	5	7,58	3	10,34	2	5,41
Minas Gerais	4	6,06	3	10,34	1	2,70
Outros	12	18,18	6	20,69	6	16,22
Total	**66**	**100,00**	**29**	**100,00**	**37**	**100,00**
Industry Sector						
Capital Goods and Services	4	6,06	2	6,90	2	5,41
Construction and Transportation	26	39,39	9	31,03	17	45,95
Consumer Cyclical	7	10,61	6	20,69	1	2,70
Consumer Non Cyclical	14	21,21	4	13,79	10	27,03
Basic Materials	3	4,55	2	6,90	1	2,70
Oil, Gas and Biofuels	1	1,52	0	0,00	1	2,70
Information Technology	5	7,58	4	13,79	1	2,70
Telecommunications	1	1,52	0	0,00	1	2,70
Utilities	5	7,58	2	6,90	3	8,11
Total	**66**	**100,00**	**29**	**100,00**	**37**	**100,00**
Firm Age (years since foundation)						
Less than 5 years	4	6,06	1	3,45	3	8,11
Between 5 and 10 years	14	21,21	8	27,59	6	16,22
Between 11 and 20 years	13	19,70	5	17,24	8	21,62
More than 20 years	35	53,03	15	51,72	20	54,05
Total	**66**	**100,00**	**29**	**100,00**	**37**	**100,00**

Table 2
(Panel B)
Descriptive Statistics for the Sample of Brazilian IPO firms - Financial Characteristics

MM R$, unless otherwise stated	All firms N = 66			VC-backed firms N = 29			Non-VC-backed firms N = 37			t-Stat ‡
	Mean	**Median**	**Standard Deviation**	**Mean**	**Median**	**Standard Deviation**	**Mean**	**Median**	**Standard Deviation**	
Total Assets	1.021,7	447,8	1.840,8	1.048,8	445,9	2.248,6	1.000,5	449,6	1.478,0	0,10
Book Value of Equity	300,4	123,8	555,4	314,6	123,8	684,6	289,2	125,1	438,4	0,17
Net Operating Revenues	791,2	289,2	1.238,7	927,4	353,6	1.512,2	684,6	268,3	982,4	0,75
Net Income	36,3	20,5	93,4	24,8	20,1	117,0	45,4	20,9	70,1	-0,83
IPO Proceeds	614,9	534,7	274,7	591,2	540,3	205,6	633,4	527,3	320,2	-0,65
Market Capitalization†	1.875,0	1.435,5	1.363,2	1.916,2	1.284,0	1.608,2	1.842,6	1.440,0	1.158,2	0,21
Book-to-market (ratio)	0,158	0,078	0,204	0,161	0,080	0,233	0,155	0,077	0,181	0,10

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

† The market capitalization refers to the first day of listing at Bovespa.

Table 3
Sample Distribution along the Phases of the IPO

This table presents the sample distribution along the phases around the IPO date, described in section 2.2. The sample consists of 66 IPO firms going public at Bovespa from January/2004 to July/2007, comprising 356 firm-quarter observations.

Sample	All firms		VC-backed firms		Non-VC-backed firms	
	# firms	# obs.	# firms	# obs.	# firms	# obs.
All phases together	66	356	29	160	37	196
Pre-IPO	35	60	14	25	21	35
IPO	66	125	29	53	37	72
Lock-up	60	106	26	47	34	59
Post-lock-up	38	65	19	35	19	30

Table 4
Summary of the Control Samples Used to Calculate Discretionary Current Accruals

This table presents data of the control samples used to calculate discretionary current accruals for the sample of IPO firms. The control groups are composed of all firms listed on Bovespa with the exception of: 1) financial firms and real-state investment trusts; 2) firms that trade OTC; 3) firms that conducted either an IPO or SEO and were in the IPO or lock-up periods in that quarter; 4) firms for which balance sheets were not available in the specific quarter; and 5) firms for which the accruals were in the 1st and 99th percentiles. Table 4 presents the distribution of the control group per quarter. The table shows the number of observations, the mean and the standard deviation of the total current accruals (in % of lagged total assets) for each quartely sample.

	Current Accruals ($CAcc_{i,t}$)		
Quarter	# observations	Mean	Standard Deviation
3th Quarter 2003	223	0,76%	4,68%
4th Quarter 2003	180	-1,03%	7,69%
1st Quarter 2004	183	1,02%	4,96%
2nd Quarter 2004	230	0,66%	4,90%
3th Quarter 2004	225	0,72%	5,30%
4th Quarter 2004	189	-2,47%	6,32%
1st Quarter 2005	189	0,85%	6,43%
2nd Quarter 2005	227	-0,17%	4,76%
3th Quarter 2005	225	-0,16%	4,58%
4th Quarter 2005	195	-2,49%	6,41%
1st Quarter 2006	195	0,32%	5,57%
2nd Quarter 2006	226	0,40%	5,20%
3th Quarter 2006	223	0,47%	4,21%
4th Quarter 2006	191	-1,74%	6,80%
1st Quarter 2007	191	0,93%	4,21%
2nd Quarter 2007	223	0,70%	4,95%
3th Quarter 2007	221	0,04%	4,86%

Table 5
(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 66 IPO firms going public at Bovespa from January/2004 to July/2007, totalizing 356 firm-quarter observations. Discretionary current accruals (in % of lagged total assets), proxy for the level of earnings management, are calculated using the Jones, Modified Jones and Modified Jones with ROA models (Appendix A presents a full description of these models). The t statistics refer to the test of the null hypothesis of no difference between the mean discretionary current accruals 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 described in section 2.2.

Model	Sample	N	Mean	Standard deviation	25th percentile	Median	75th percentile
Jones	All observations	356	4,78%	15,30%	-0,77%	1,94%	6,09%
	VC-backed	160	2,89%	10,70%	-0,97%	1,58%	4,89%
	Non-VC-backed	196	6,31%	18,09%	-0,64%	2,44%	8,11%
	t statistic		-2,22*				
Modified Jones	All observations	356	4,72%	15,10%	-0,86%	1,90%	5,90%
	VC-backed	160	2,93%	10,48%	-1,04%	1,42%	5,13%
	Non-VC-backed	196	6,18%	17,92%	-0,66%	2,22%	8,33%
	t statistic		-2,13*				
Modified Jones with ROA	All observations	356	4,26%	14,93%	-1,37%	1,75%	5,56%
	VC-backed	160	2,44%	10,36%	-1,40%	1,20%	4,94%
	Non-VC-backed	196	5,75%	17,70%	-1,31%	1,97%	7,67%
	t statistic		-2,20*				

Table 5
(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

Model	Sample	Pre-IPO		IPO		Lock-up		Post-lock-up	
		N	Mean	N	Mean	N	Mean	N	Mean
Jones	All observations	60	3,18%	125	8,31%	106	3,15%	65	2,10%
	VC-backed	25	3,12%	53	3,50%	47	2,69%	35	2,09%
	Non-VC-backed	35	3,23%	72	11,86%	59	3,52%	30	2,11%
	t statistic		-0,05		-2,16*		-0,55		-0,01
Modified Jones	All observations	60	3,28%	125	8,20%	106	3,08%	65	2,02%
	VC-backed	25	3,36%	53	3,49%	47	2,83%	35	1,92%
	Non-VC-backed	35	3,22%	72	11,67%	59	3,28%	30	2,14%
	t statistic		0,07		-2,15*		-0,29		-0,15
Modified Jones with ROA	All observations	60	2,56%	125	7,79%	106	2,73%	65	1,54%
	VC-backed	25	2,67%	53	3,00%	47	2,45%	35	1,40%
	Non-VC-backed	35	2,49%	72	11,32%	59	2,95%	30	1,71%
	t statistic		0,08		-2,23*		-0,32		-0,21

* denote significance at the 5% level (for a two-tailed test)

Figure 1
Level of Earnings Management by the Phases of the IPO

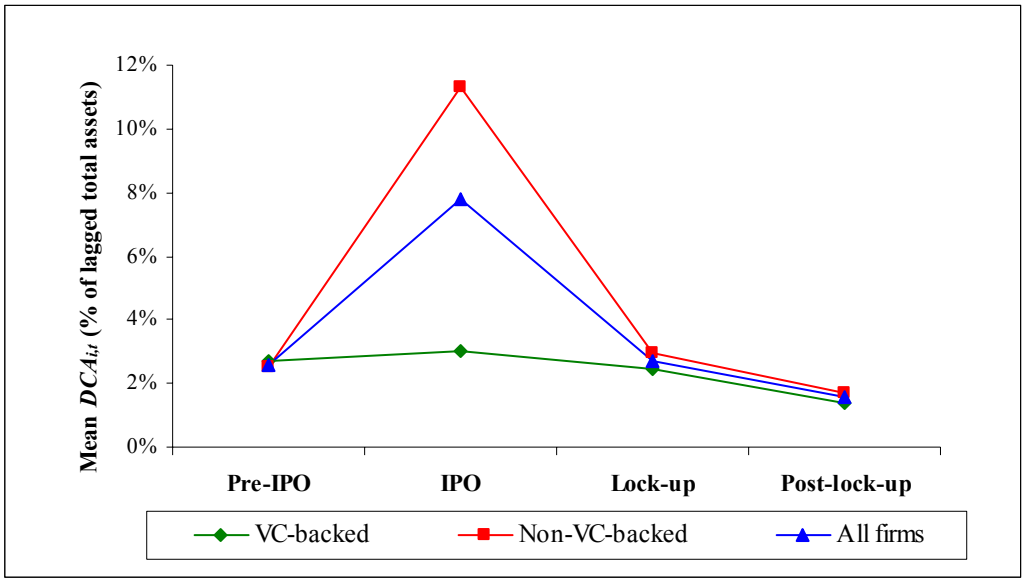

Table 6
Mean Comparisons for the Level of Earnings Management by Phases of the IPO – VC-backed Sub-sample

This table presents univariate comparisons for the level of earnings management in the sub-sample of 29 VC-backed IPO firms, totalizing 160 firm-quarter observations. Discretionary current accruals (in % of lagged total assets), proxy for the level of earnings management, are calculated using the Modified Jones Model with ROA (Appendix A presents a full description of this model). The table presents t statistics of the test of the null hypothesis of no difference between the mean discretionary current accruals between each pair of IPO phases (described in the section 2.2). P-values are shown in brackets.

	Pre-IPO	IPO	Lock-up
Pre-IPO	-	-	-
IPO	-0,13 (0,8968)	-	-
Lock-up	0,11 (0,9155)	0,22 (0,8231)	-
Post-lock-up	0,79 (0,4347)	0,73 (0,4677)	0,71 (0,4774)

Table 7
Correlation Matrix of the Independent Variables

This table presents the correlation matrix of the independent variables in the earnings management regression models (section 3.2 presents a full description of the variables). The p-values of the significance test of correlation coefficients are shown in brackets.

	VC	Auditor	Underwriter	Size	Growth	Leverage	ROA	SEO
VC	1							
Auditor	0,1379*** (0,009)	1						
Underwriter	0,1151** (0,030)	0,3396*** (0,000)	1					
Size	-0,0004 (0,994)	0,0767 (0,149)	0,3401*** (0,000)	1				
Growth	-0,0832 (0,117)	-0,0034 (0,949)	-0,1345** (0,011)	-0,0702 (0,186)	1			
Leverage	0,0041 (0,939)	-0,0985* (0,063)	0,0985* (0,063)	0,1304** (0,014)	-0,0127 (0,811)	1		
ROA	0,0260 (0,624)	0,1215** (0,022)	0,0908* (0,087)	-0,2126*** (0,000)	0,0584 (0,272)	-0,0105 (0,843)	1	
SEO	0,2321*** (0,000)	-0,0100 (0,851)	0,0612 (0,249)	0,1287** (0,015)	-0,0252 (0,636)	0,0399 (0,453)	0,0062 (0,907)	1

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

Table 8
Earnings Management Regressions: IPO and Lock-up Periods

This table presents panel regressions for the level of earnings management in a sample of 66 IPO firms going public at Bovespa from January/2004 to July/2007. The regression model is specified in (1). The dependent variable is the discretionary current accruals (in % of lagged total assets) for firm i in the quarter t ($DCA_{i,t}$), calculated using the Jones, Modified Jones and Modified Jones with ROA models. The independent variables are described in Section 3.2. The tests use Pooled OLS and GLS with fixed effects (FE) and random effects (RE) estimation models. t (or z) statistics heteroskedastic-consistent by White (1980) are shown in brackets. The total number of observations is 356 firm-quarters. The results of the Breusch-Pagan LM test for random effects and the Hausman Test for comparing FE and RE regressions models are presented at the bottom of the table.

Variable	Expected Sign	Model used to calculate $DCA_{i,t}$								
		Jones			Modified Jones			Modified Jones with ROA		
		Pooled OLS	Fixed Effects	Random Effects	Pooled OLS	Fixed Effects	Random Effects	Pooled OLS	Fixed Effects	Random Effects
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Intercept	+	0,2583**	1,4433**	0,3096**	0,2418**	1,4295**	0,2881*	0,2205**	1,2832**	0,2589*
		(2,31)	(2,27)	(2,02)	(2,19)	(2,27)	(1,93)	(2,05)	(2,06)	(1,82)
IPO	+	0,0501***	0,0336**	0,0468***	0,0491***	0,0321**	0,0452***	0,0482**	0,0315**	0,0444***
		(2,64)	(2,30)	(2,68)	(2,58)	(2,21)	(2,61)	(2,57)	(2,17)	(2,59)
Lock-up	+	-0,0042	-0,0332*	-0,0144	-0,0056	-0,0339**	-0,0151	-0,0039	-0,0333*	-0,0132
		(-0,33)	(-1,91)	(-1,08)	(-0,45)	(-1,97)	(-1,14)	(-0,32)	(-1,94)	(-1,01)
Auditor	-	-0,0578	-	-0,0734	-0,0564	-	-0,0712	-0,0584	-	-0,0721
		(-1,47)		(-1,42)	(-1,45)		(-1,41)	(-1,50)		(-1,44)
Underwriter	-	0,0157**	-	0,0172**	0,0158**	-	0,0172**	0,0156**	-	0,0168**
		(2,31)		(1,99)	(2,32)		(2,00)	(2,31)		(2,00)
Size	+ / -	-0,0205**	-0,0906**	-0,0221*	-0,0194*	-0,0897**	-0,02078	-0,0175*	-0,0793**	-0,0184
		(-2,00)	(-2,16)	(-1,66)	(-1,93)	(-2,17)	(-1,61)	(-1,82)	(-1,94)	(-1,50)
Growth	+	0,0160**	0,0094	0,0139**	0,0165**	0,0098	0,0145**	0,0166**	0,0101	0,0148**
		(2,04)	(1,46)	(2,02)	(2,08)	(1,49)	(2,06)	(2,09)	(1,52)	(2,07)
Leverage	+ / -	-0,0808	-0,3493**	-0,1273*	-0,0811	-0,3459**	-0,1238*	-0,0829	-0,3355**	-0,1234*
		(-1,43)	(-2,57)	(-1,87)	(-1,45)	(-2,54)	(-1,84)	(-1,49)	(-2,46)	(-1,86)
ROA	+ / -	0,0015	0,0033	0,0022	0,0012	0,0031	0,0019	-0,0009	0,0010	-0,0003
		(0,56)	(1,07)	(0,78)	(0,47)	(1,00)	(0,69)	(-0,36)	(0,32)	(-0,10)
SEO	+	0,0112	0,0240	0,0179	0,0062	0,0146	0,0110	0,0034	0,0090	0,0073
		(0,65)	(0,75)	(0,95)	(0,40)	(0,49)	(0,65)	(0,22)	(0,30)	(0,44)
Number of observations		356	356	356	356	356	356	356	356	356
R^2		9,25%	15,22%	11,03%	9,07%	15,06%	10,70%	8,59%	13,52%	9,44%
Breusch-Pagan LM Test for Random Effects (RE): H_0: VAR (c_i) = 0			p-value:	0,0013			0,0035			0,0049
Hausman Test H_0: Difference in FE and RE coeff. not systematic			p-value:	0,6526			0,4575			0,0005

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

Table 9
Earnings Management Regressions: Venture-Backing Impact

This table presents panel regressions for the level of earnings management in a sample of 66 IPO firms going public at Bovespa from January/2004 to July/2007. The regression model is specified in (2). The dependent variable is the discretionary current accruals (in % of lagged total assets) for firm *i* in the quarter *t* ($DCA_{i,t}$), calculated using the Jones, Modified Jones and Modified Jones with ROA models. The independent variables are described in Section 3.2. The tests use Pooled OLS (with and whitout quarter dummies) and GLS with random effects (RE) estimation models. t (or z) statistics heteroskedastic-consistent by White (1980) are shown in brackets. The total number of observations is 356 firm-quarters. The results of the Breusch-Pagan LM test for random effects are presented at the bottom of the table.

Variable	Expected Sign	Model used to calculate $DCA_{i,t}$								
		Jones			Modified Jones			Modified Jones with ROA		
		Pooled OLS	Pooled OLS with quarter dummies	Random Effects	Pooled OLS	Pooled OLS with quarter dummies	Random Effects	Pooled OLS	Pooled OLS with quarter dummies	Random Effects
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Intercept	+	0,3141**	0,3351**	0,3757**	0,2950**	0,3150**	0,3510**	0,2726**	0,2969**	0,3205**
		(2,48)	(2,22)	(2,18)	(2,36)	(2,11)	(2,09)	(2,24)	(2,04)	(1,99)
VC	-	-0,0334*	-0,0292	-0,0329	-0,0311*	-0,0277	-0,0305	-0,0308*	-0,0271	-0,0302
		(-1,90)	(-1,47)	(-1,43)	(-1,79)	(-1,41)	(-1,36)	(-1,79)	(-1,39)	(-1,37)
Auditor	-	-0,0528	-0,0568	-0,0678	-0,0518	-0,0556	-0,0659	-0,0540	-0,0575	-0,0672
		(-1,30)	(-1,38)	(-1,26)	(-1,28)	(-1,35)	(-1,25)	(-1,09)	(-1,40)	(-1,29)
Underwriter	-	0,0175**	0,0154**	0,0189**	0,0176**	0,0159**	0,0189**	0,0173**	0,0157**	0,0185**
		(2,40)	(2,00)	(2,05)	(2,40)	(2,05)	(2,06)	(2,39)	(2,04)	(2,05)
Size	+ / -	-0,0242**	-0,0243**	-0,0272*	-0,0230**	-0,0233**	-0,0257*	-0,0211**	-0,0216**	-0,0231*
		(-2,16)	(-2,14)	(-1,86)	(-2,10)	(-2,09)	(-1,81)	(-1,99)	(-2,01)	(-1,71)
Growth	+	0,0168**	0,0169**	0,0149**	0,0173**	0,018**	0,0155**	0,0174**	0,0177**	0,0157**
		(2,10)	(2,11)	(2,09)	(2,15)	(2,17)	(2,13)	(2,16)	(2,18)	(2,14)
Leverage	+ / -	-0,0644	-0,0549	-0,1035*	-0,0643	-0,0576	-0,0999*	-0,0675	-0,0584	-0,1019*
		(-1,27)	(-0,91)	(-1,70)	(-1,28)	(-0,95)	(-1,66)	(-1,35)	(-0,97)	(-1,71)
ROA	+ / -	0,0006	0,0008	0,0011	0,0003	0,0004	0,0008	-0,0017	-0,0016	-0,0013
		(0,20)	(0,26)	(0,34)	(0,12)	(0,14)	(0,27)	(-0,60)	(-0,57)	(-0,41)
SEO	+	0,0138	0,0201	0,0164	0,0083	0,0140	0,0095	0,0054	0,0127	0,0059
		(0,67)	(0,98)	(0,78)	(0,43)	(0,73)	(0,49)	(0,29)	(0,67)	(0,31)
Number of observations		356	356	356	356	356	356	356	356	356
R^2		7,78%	10,42%	7,54%	7,53%	9,93%	7,31%	7,16%	9,76%	6,93%
Breusch-Pagan LM Test for Random Effects (RE):										
H_0: VAR (c_i) = 0			p-value =	0,007			0,016			0,020

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

Table 10
Earnings Management Regressions with Dummies for All IPO Phases

This table presents panel regressions for the level of earnings management in a sample of 66 IPO firms going public at Bovespa from January/2004 to July/2007. The regression model, with dummies for the phases described in Section 2.2 and interactive terms of the phases and the variable VC_i, is specified in (2). The dependent variable is the discretionary current accruals (in % of lagged total assets) for firm i in the quarter t ($DCA_{i,t}$), calculated using the Jones, Modified Jones and Modified Jones with ROA models. The independent variables are described in Section 3.2. The IPO Phase is the omitted category to avoid perfect colinearity. The tests use Pooled OLS and GLS with random effects (RE) estimation models. t (or z) statistics heteroskedastic-consistent by White (1980) are shown in brackets. The total number of observations is 356 firm-quarters. The results of the Breusch-Pagan LM test for random effects are presented at the bottom of the table.

Variable	Expected Sign	Model used to calculate $DCA_{i,t}$					
		Jones		Modified Jones		Modified Jones with ROA	
		Pooled OLS	Random Effects	Pooled OLS	Random Effects	Pooled OLS	Random Effects
		(1)	(2)	(3)	(4)	(5)	(6)
Intercept	+	0,3319**	0,3581**	0,3120**	0,3353**	0,2914**	0,3088**
		(2,56)	(2,15)	(2,44)	(2,07)	(2,35)	(1,99)
Auditor	-	-0,0507	-0,0671	-0,0498	-0,0655	-0,0518	-0,0663
		(-1,26)	(-1,25)	(-1,25)	(-1,25)	(-1,30)	(-1,28)
Underwriter	-	0,0159**	0,0172**	0,0161**	0,0171**	0,0159**	0,0168**
		(2,39)	(2,02)	(2,39)	(2,03)	(2,38)	(2,03)
Size	+ / -	-0,0199*	-0,0193	-0,0186*	-0,0179	-0,017*	-0,0159
		(-1,90)	(-1,44)	(-1,82)	(-1,39)	(-1,73)	(-1,30)
Growth	+	0,0142*	0,0126*	0,0148*	0,0132*	0,0149*	0,0134*
		(1,82)	(1,81)	(1,87)	(1,86)	(1,88)	(1,86)
Leverage	+ / -	-0,0909	-0,1514**	-0,0923	-0,1485*	-0,0926	-0,1458*
		(-1,46)	(-1,96)	(-1,49)	(-1,94)	(-1,51)	(-1,94)
ROA	+ / -	0,0016	0,0024	0,0013	0,0021	-0,0008	-0,0001
		(-0,60)	(0,86)	(0,51)	(0,76)	(-0,33)	(-0,04)
SEO	+	0,0269	0,0298	0,0222	0,0240	0,0185	0,0193
		(1,31)	(1,47)	(1,16)	(1,28)	(0,99)	(1,05)
Pre-IPO	-	-0,0735**	-0,0588**	-0,0710**	-0,0573*	-0,0729**	-0,0597**
		(-2,24)	(-2,02)	(-2,18)	(-1,97)	(-2,27)	(-2,07)
Lock-up	+ / -	-0,0857**	-0,0975***	-0,0866***	-0,0977***	-0,0849**	-0,0956***
		(-2,53)	(-2,93)	(-2,58)	(-2,95)	(-2,54)	(-2,90)
Post-lock-up	-	-0,0913***	-0,0985***	-0,0892***	-0,0961***	-0,0865***	-0,0929***
		(-2,77)	(-3,08)	(-2,73)	(-3,01)	(-2,67)	(-2,93)
VC x Pre-IPO	-	0,0002	-0,0041	0,0028	-0,0009	0,0046	0,0008
		(0,01)	(-0,17)	(0,13)	(-0,04)	(0,21)	(0,03)
VC x IPO	-	-0,0775**	-0,0773*	-0,0758**	-0,0755*	-0,0768**	-0,0765*
		(-1,99)	(-1,84)	(-1,97)	(-1,83)	(-2,02)	(-1,88)
VC x Lock-up	-	-0,0107	-0,0036	-0,0062	0,0004	-0,0046	0,0018
		(-0,63)	(-0,18)	(-0,36)	(0,02)	(-0,27)	(0,10)
VC x Post-lock-up	-	-0,0114	-0,0052	-0,0120	-0,0061	-0,0131	-0,00745
		(-0,59)	(-0,25)	(-0,62)	(-0,30)	(-0,69)	(-0,37)
Number of observations		356	356	356	356	356	356
R^2		11,63%	11,15%	11,42%	10,99%	11,00%	10,59%
Breusch-Pagan LM Test for Random Effects (RE):							
H_0: VAR (c_i) = 0	p-value:		0,0015		0,0033		0,0049

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

Table 11
Earnings Management Regressions: VC-backed Sub-Sample

This table presents panel regressions for the level of earnings management in the VC-backed sub-sample of 29 IPO firms going public at Bovespa from January/2004 to July/2007. The regression model is specified in (1). The dependent variable is the discretionary current accruals (in % of lagged total assets) for firm *i* in the quarter *t* ($DCA_{i,t}$), calculated using the Jones, Modified Jones and Modified Jones with ROA models. The independent variables are described in Section 3.2. The tests use Pooled OLS and GLS with fixed effects (FE) and random effects (RE) estimation models. t (or z) statistics heteroskedastic-consistent by White (1980) are shown in brackets. The total number of observations is 160 firm-quarters. The results of the Breusch-Pagan LM test for random effects and the Hausman Test for comparing FE and RE regressions models are presented at the bottom of the table.

Variable	Expected Sign	Model used to calculate $DCA_{i,t}$								
		Jones			Modified Jones			Modified Jones with ROA		
		Pooled OLS	Fixed Effects	Random Effects	Pooled OLS	Fixed Effects	Random Effects	Pooled OLS	Fixed Effects	Random Effects
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Intercept	+	0,2444	0,0209	0,2444	0,2186	0,0662	0,2186	0,1966	-0,0345	0,1966
		(1,18)	(0,06)	(1,18)	(1,09)	(0,19)	(1,09)	(0,97)	(-0,09)	(0,97)
IPO	+	0,0105	0,0026	0,0105	0,0094	0,0012	0,0094	0,0069	-0,0011	0,0069
		(0,53)	(0,16)	(0,53)	(0,48)	(0,08)	(0,48)	(0,36)	(-0,07)	(0,36)
Lock-up	+	-0,0004	-0,0101	-0,0004	0,0003	-0,0093	0,0003	0,0027	-0,0073	0,0027
		(-0,02)	(-0,56)	(-0,02)	(0,02)	(-0,53)	(0,02)	(0,18)	(-0,42)	(0,18)
Auditor	-	-0,0776	-	-0,0776	-0,0734	-	-0,0734	-0,0732	-	-0,0732
		(-0,96)		(-0,96)	(-0,92)		(-0,92)	(-0,92)		(-0,92)
Underwriter	-	-0,0093	-	-0,0093	-0,0070	-	-0,0070	-0,0070	-	-0,0070
		(-0,45)		(-0,45)	(-0,34)		(-0,34)	(-0,35)		(-0,35)
Size	+ / -	-0,0054	0,0008	-0,0054	-0,0054	-0,0023	-0,0054	-0,0036	0,0049	-0,0036
		(-0,78)	(0,03)	(-0,78)	(-0,79)	(-0,10)	(-0,79)	(-0,52)	(0,20)	(-0,52)
Growth	+	0,0250	0,0273	0,0250	0,0291	0,0316	0,0291	0,0313	0,0334	0,0313
		(0,42)	(0,43)	(0,42)	(0,51)	(0,50)	(0,51)	(0,54)	(0,53)	(0,54)
Leverage	+ / -	-0,0014	-0,0377	-0,0014	0,0006	-0,0426	0,0006	-0,0015	-0,0359	-0,0015
		(-0,03)	(-0,34)	(-0,03)	(0,01)	(-0,39)	(0,01)	(-0,03)	(-0,33)	(-0,03)
ROA	+ / -	0,0038	0,0073***	0,0038	0,0040*	0,0073***	0,0040*	0,0013	0,0046***	0,0013
		(1,61)	(4,83)	(1,61)	(1,76)	(4,84)	(1,76)	(0,53)	(2,83)	(0,53)
SEO	+	0,0053	0,0180	0,0053	-0,00004	0,0100	-0,00004	-0,0032	0,0045	-0,0032
		(0,30)	(0,60)	(0,30)	(-0,00)	(0,35)	(-0,00)	(-0,21)	(0,16)	(-0,21)
Number of observations		160	160	160	160	160	160	160	160	160
R^2		6,81%	7,18%	5,89%	7,17%	7,64%	6,37%	5,02%	3,91%	2,19%
Breusch-Pagan LM Test for Random Effects (RE): H_0: VAR (c_i) = 0			p-value:	0,1616			0,1356			0,1406
Hausman Test H_0: Difference in FE and RE coeff. not systematic			p-value:	0,9871			0,9246			0,9664

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

Table 12
Earnings Management Regressions with Treatment of the Endogenous Choice of VC Investments

This table presents panel regressions for the level of earnings management in a sample of 66 IPO firms going public at Bovespa from January/2004 to July/2007. The regression model is specified in (2). The dependent variable is the discretionary current accruals (in % of lagged total assets) for firm *i* in the quarter *t* ($DCA_{i,t}$) calculated using the Modified Jones model. The independent variables are described in Section 3.2. The tests use an instrumental variables approach (IV) by Pooled 2SLS and G2SLS with random effects (RE) estimation models. The instruments are indicator variables for: firm industry (according to Economática® dataset classification), quarters and state where the company's headquarters is located. t (or z) statistics heteroskedastic-consistent by White (1980) are shown in brackets. The total number of observations is 356 firm-quarters. The results of the exogeneity test for the variable VC_i are presented at the bottom of the table.

Variable	Expected Sign	Instrumental Variables (IV)	
		Pooled 2SLS	Random Effects
		(1)	(2)
Intercept	+	0,2825** (2,31)	0,3267*** (2,78)
VC	-	-0,0526*** (-2,79)	-0,0522* (-1,88)
Auditor	-	-0,0498 (-1,23)	-0,0624** (-1,99)
Underwriter	-	0,0179** (2,49)	0,0190** (2,45)
Size	+ / -	-0,0217** (-2,05)	-0,0235*** (-2,70)
Growth	+	0,0167** (2,10)	0,0152** (2,15)
Leverage	+ / -	-0,0671 (-1,34)	-0,1009*** (-2,58)
ROA	+ / -	-0,0018 (-0,61)	-0,0013 (-0,71)
SEO	+	0,0182 (0,92)	0,0141 (0,35)
Number of observations		356	356
R^2		6,67%	6,81%
IV First Stage:			
F and χ^2 Statistics, respec.		8,82***	366***
p-value		0,000	0,000

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

Table 13
(Panel A)
Aggressive and Conservative Accounting Regressions

This table presents regression results of the analysis of aggressive and conservative accounting practices in a sample of 66 IPO firms going public at Bovespa from January/2004 to July/2007 (Panel A and B, respectively). The dependent variables $Aggressive_{i,t}$ and $Conservative_{i,t}$ equals one if the observation falls into the first and last deciles of discretionary current accruals (calculated using the Modified Jones Model with ROA), respectively, and zero otherwise. The independent variables are described in Section 3.2. The tests use Pooled Probit, Probit with random effects (RE) and IV Pooled Probit estimation models. The instruments are indicator variables for: firm industry (according to Economática® dataset classification), quarters and state where the company's headquarters is located. Z statistics heteroskedastic-consistent by White (1980) are shown in brackets. The total number of observations is 356 firm-quarters. The results of the Likelihood-Ratio test for random effects and the Wald exogeneity test for the variable VC_i are presented at the bottom of Panels A and B.

Variable	Expected Sign	Dependent Variable: ***Aggressive*** $_{i,t}$				
		Pooled Probit		Random Effects		Instrumental Variables
		(1)	(2)	(3)	(4)	(5)
Intercept	+	2,3839***	2,3929***	3,6729**	3,2961*	2,6819***
		(2,79)	(2,78)	(2,15)	(1,75)	(3,14)
VC	-	-0,3197**		-0,3216		-0,8702***
		(-2,05)		(-1,17)		(-2,95)
Auditor	-	-0,4574*	-0,4544*	-0,6027	-0,6770	-0,3542
		(-1,80)	(-1,82)	(-1,48)	(-1,50)	(-1,38)
Underwriter	-	0,1414*	0,1377*	0,0944	0,0896	0,1528**
		(1,87)	(1,92)	(0,88)	(0,75)	(2,18)
Size	+/-	-0,2663***	-0,2325***	-0,3217***	-0,2344*	-0,2833***
		(-3,86)	(-3,26)	(-2,62)	(-1,70)	(-4,07)
Growth	+	0,2208	0,2217	0,2738**	0,2976***	0,1849
		(1,60)	(1,59)	(2,47)	(2,56)	(1,48)
Leverage	+/-	-0,2210	-0,5546	-0,5362	-1,2646**	-0,2181
		(-0,65)	(-1,39)	(-1,13)	(-2,16)	(-0,66)
ROA	+/-	-0,0042	0,0022	0,0127	0,0244	-0,0039
		(-0,23)	(0,12)	(0,61)	(1,06)	(-0,20)
SEO	+	-0,6527	-0,0124	-0,8509	-0,1984	-0,2789
		(-1,37)	(-0,02)	(-1,27)	(-0,26)	(-0,55)
Pre-IPO	+/-		-0,3799		-0,4790	
			(-1,40)		(-1,41)	
Lock-up	+		-0,4869**		-0,8319***	
			(-2,00)		(-2,71)	
Post-lock-up	+/-		-0,4818		-0,5413	
			(-1,51)		(-1,46)	
VC x Pre-IPO	-		0,2422		0,6226	
			(0,71)		(1,25)	
VC x IPO	-		-0,5194**		-0,6927*	
			(-2,11)		(-1,84)	
VC x Lock-up	-		-0,2311		-0,1410	
			(-0,81)		(-0,34)	
VC x Post-lock-up	-		-0,9013*		-1,0254*	
			(-1,85)		(-1,66)	
Number of observations		356	356	356	356	356
χ^2 Statistic of the regression		32,63	40,60	19,10	30,03	45,40
p-value		0,000	0,000	0,014	0,008	0,000
Likelihood-Ratio Test for Random Effects (H_0: $\rho = 0$):						
p-value				0,000	0,000	
Wald Exogeneity Test for the variable VC_i						
χ^2 Statistic						4,85
p-value						0,028

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

Table 13
(Panel B)
Aggressive and Conservative Accounting Regressions

Variable	Expected Sign	Dependent Variable: ***Conservative*** $_{i,t}$				
		Pooled Probit		**Random Effects**		**Instrumental Variables**
		(1)	**(2)**	**(3)**	**(4)**	**(5)**
Intercept	-	-0,4268 (-0,44)	-0,6316 (-0,61)	-0,4947 (-0,41)	-0,6422 (-0,52)	-0,5180 (-0,53)
VC	+	-0,0903 (-0,46)		-0,0852 (-0,42)		-0,1368 (0,41)
Auditor	+	-0,2098 (-0,71)	-0,1971 (-0,67)	-0,2199 (-0,72)	-0,2046 (-0,66)	-0,2545 (-0,87)
Underwriter	+	0,0186 (0,26)	0,0209 (0,30)	0,0168 (0,20)	0,0192 (0,22)	0,0108 (0,15)
Size	+/-	-0,0863 (-1,11)	-0,0974 (-1,16)	-0,0838 (-0,91)	-0,0960 (-1,00)	-0,0785 (-1,01)
Growth	-	-0,1562 (-0,78)	-0,1202 (-0,75)	-0,1690 (-0,85)	-0,1308 (-0,71)	-0,14509 (-0,73)
Leverage	+/-	0,7120 (1,61)	0,8466 (1,60)	0,7536* (1,66)	0,9010* (1,69)	0,7087 (1,60)
ROA	+/-	0,0245 (1,30)	0,0234 (1,18)	0,0257 (1,38)	0,0243 (1,29)	0,0255 (1,35)
SEO	-	0,2289 (0,53)	0,5946 (1,40)	0,2379 (0,53)	0,6219 (1,06)	0,1088 (0,24)
Pre-IPO	+/-		0,3062 (0,89)		0,2910 (0,83)	
Lock-up	-		0,4333 (1,37)		0,4465 (1,35)	
Post-lock-up	+/-		-0,0499 (-0,12)		-0,0468 (-0,10)	
VC x Pre-IPO	+		-0,2699 (-0,67)		-0,2428 (-0,55)	
VC x IPO	+		0,0870 (0,26)		0,0870 (0,26)	
VC x Lock-up	+		-0,1129 (-0,35)		-0,1199 (-0,36)	
VC x Post-lock-up	+		-0,3553 (-0,87)		-0,3661 (-0,57)	
Number of observations		356	356	356	356	356
χ^2 Statistic of the regression		7,49	21,75	6,97	10,89	42,70
p-value		0,485	0,084	0,540	0,694	0,000
Likelihood-Ratio Test for Random Effects (H_0: $\rho = 0$):						
p-value				0,317	0,339	
Wald Exogeneity Test for the variable VC_i						
χ^2 Statistic						0,77
p-value						0,379

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