Public policy and Venture Capital: pursuing the disclosure goal

Abstract.

We aim to investigate to what extent VCs affect the disclosure practices of investee firms through the annual reports. We jointly aim to evaluate the impact of public policy –mainly Sarbanes-Oxley Act –in the same terms. Using a sample of US firms went public within 2000-2011, we conduct the text analysis and find that the annual reports of VC-backed IPOs are much more readable compared to those of their peers. This suggests that VCs do need to be clear as much as possible towards the market in order that the latter can recognize the value created. Similarly, the public policy in response to scandals of early 2000 forces firms to produce longer reports in order to revel more information.

JEL classification: G23, G24, G32, G38
Keywords: Venture capital, Public Policy, IPOs, Text analysis, Readability

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1. Introduction

The importance of the role of VC (venture capital) investments that goes beyond the mere firm financing project is well documented by the literature (e.g., Nanda *et al.,* 2018; Wonglimpiyarat, 2016; Casamatta, 2003; Hellman and Puri, 2002; Chemmanur *et al.*, 2011; Gompers and Lerner, 2001). Specifically, in addition to money provision and lower cost of capital (financial effect) VCs carries within the firm know-how (knowledge effect); and network of relations with banks, customer and suppliers (network effect) that spur the growth of firm. Moreover, VC is also a signal device, insofar is often associated with high worthiness and potential growth firm (e.g., Puri and Zarutskie, 2012). Regularities on the association between VC and High-Tech firm generate a common wisdom so much to perceive, especially among policy makers and regulators, the VC as a catalyst of innovation that providing benefits to an economy as a whole. In line with this belief, several studies have documented the ability of VCs in fostering innovation and economic growth (e.g., Hellman and Puri, 2000; Kortum and Lerner, 2000). Conversely, recent literature has raised the question of how to measure the magnitude of the aptitude to innovate (e.g., Popov and Roosenboom, 2012; Bertoni *et al.,* 2011) and find a possible expiation trough the capability to create new patents. However, the role of VC in the economy overall process of innovation is still unexplored field. On the premise that VCs innovate firm process (Chesbrourgh *et al.,* 2011), organization structure and process including planning and development of informative flow (Caselli and Negri, 2018), we aim to investigate at what extent VCs affect the disclosure practices of investee firms by conducting a textual analysis over the annual reports jointly to evaluate the impact of public policy –mainly Sarbanes-Oxley Act –in the same terms. Stated differently, we aim to explore the following questions: do VCs play a role for the annual reports in term

of readability? And what is the impact of the public policy for investor protection in term of firm reports readability?

Using a sample of US firms went public within 2000-2011, we find that the annual reports, in the form of 10-Ks, of VC-backed IPOs are much more readable compared to those of their peers. Aside the role of *"value creator"* of VCs, an important asset is represented by their reputation. In fact, a body of research (e.g., Megginson and Weiss, 1991) argues that VCs also indirectly support investee firms through their reputation. It is in the interest of VCs making sure that market recognizes as much as possible, also through readable documents, the value created. Having created value and seeing recognized it by the market, feed the process able to improve the VCs reputation. Equally, we find that a public policy for investor protection— i.e. Sarbanes-Oxley Act in response to scandals of early 2000 — forces firms to produce longer reports in order to revel more information. As well-known, VCs show a special attitude to invest in certain kind of sectors, such-as High-Tech, and prefer certain geographic area. As such, VC investments cannot be considered as a result of a random process. In turn, this may generate some endogeneity concerns. To deal with this issue, we employ the following empirical strategy. We first run *OLS* regressions on a starting sample where no matching techniques is applied. Then, we replicate the same analysis on a sample of 108 VC-backed IPOs matched, one to one, with a control group of non- VC-baked IPOs chosen on the basis of propensity score approach by Rosenbaum and Rubin (1983). At least partially, this matching techniques allows us to overcome the issue above described. We also conduct a robustness check to address the issue of reverse causality between dependent and independent variables. Specifically, we re-run the regressions by using on-time lagged the independent ones. The results are qualitatively the same. From a different prospective, our findings show that the presence of VC investments ameliorate information asymmetry problem, that should arise especially in start-up and SMEs context, making communication of results, through mandatory disclosure, more effective. Moreover, the results also offer an alternative to see VC not only

as a catalyst of innovation but also as a prism from which open innovation spreads, insofar they provide a wide wealth of external knowledge "*that companies assimilate and integrate into their business*" Chesbrourgh *et al* (2011, p.5.). Our paper contributes to the existing literature by showing for the first time how public policy for investors protection and private investments in term of innovation, i.e. the case of VC, can work together towards the same goal of disclosure. Specifically, the Government, through public policy, tries to pursue transparency goals in order to safeguard the investors. On the other, VCs, in order to safeguard its reputation towards the market, is forced to spread the annual reports of investee firms as much as readable.

The rest of the paper is organized as follows. The next section introduces the theoretical background and research questions. Section 3 describes data and summary statistics. Section 4 introduces the methodology. Section 5 discusses results, and final section concludes.

2. Theoretical background

We first provide a brief review of studies that relate to VC and innovation and then discuss on the relevance of VCs in the knowledge transfer process. Second, we describe major regulatory innovations that modify the mandatory requirements for financial disclosures. Finally, we introduce how to measure the readability of financial reports.

2.1 Venture capital as open innovation

For a long time, the literature has devoted its efforts in evaluating the impact that VC has for the financial effectiveness (e.g., Gompers, 1995; Cochrane, 2005; Cumming and MacIntosh, 2007 and Berger and Schaeck, 2011). Among others, it is a common belief to see the VC industry as a catalyst of innovation. Despite the relevance of the topic only few researches explore the link between VC, innovation, and economic growth. Specifically, Hellmann and Puri (2000) provide regularities on the

association between VCs and firm young and high-tech profile. But they leave open the problem of causality relation. Do VCs pay a special attention to high-tech firms or these one are chosen as an alternative form of financing? Kortum and Lerner (2000) address directly the concern about causality relation between VC investment and innovation in terms both of R&D and patents. Their findings show that VCs spur innovation. In line with this view, Gompers and Lerner (2001) highlight many policy makers have the perception that VC contributes to US leadership in high-tech sector. Similarly, Engel and Keilbach (2007) find that VCs have a special aptitude towards innovative firms. However, they also show that VC-backed firm do not differ significantly, in term of innovation, from their peers; and, more recent studies (Popov and Roosenboom, 2012; Bertoni *et al.,* 2011) have raised the issue regarding the potential endogenous problem that may affect the innovation considering also dynamic nature of data (Faria and Barbarosa, 2014). Early literature defines the VC as a key element of *"a broad social structure of innovation"* and exploit its function of connecting different stakeholders through networks and linkages (e.g., Florida *et al.,* 1990).

VCs sustain innovation development through non-financial resources as well. As noted by Caselli and Negri (2018), investee firms experience important changes also in term of improvement of organization structure and process, including planning and development of informative flow.

We focus on this latter aspect. In particular, we test the hypothesis that VCs bringing financial knowledge and managing the informative flows are better in accomplish financial disclosure requirements. In this way they ameliorate information asymmetry among firm and investors making communication of results, through mandatory disclosure, more effective.

2.2 The impact of Public policy on annual reports disclosure

The disclosure of company information has been a relevant task for authorities. Since the '30 and in the aftermath of the crisis the Form 10-K has been the way to transfer company information to

investors and analysts establishing a minimum content. Then regulators and policy makers promoted initiative to ameliorate information environment. In this context, several measures were adopted to achieve the goal of greater disclosure in financial statements. At the beginning of new millennium, a major disclosure regulation was promulgated: the so-called Sarbanes-Oxley Act (SOX). The SOX ratified the needs to improve the disclosure of financial documents with the section 401 listed under title IV *"enhanced financial disclosures"* in response to scandals of early 2000. As noted by Romano (2004), SOX represents a significant change in the securities regulation insofar it introduces the prescription of corporate practices, instead of the disclosure of these practices. In addition, SOX enhance transparency, executive accountability and investor protection. It requires to declare such information over the reports, including audit clients of public company, fees and quality of control procedures. Public companies are also required to disclose the balance sheet transaction, arrangements and obligations. The wave of studies on major regulatory change in the US—mainly, the Sarbanes-Oxley Act— primarily focuses on the economic consequences for firms (e.g. Zhang, 2007; Li *et al.*,2008; Rezaee and Jian, 2004) and leaves partially uncovered the field of externalities that investors and consumers pay. The rationales for financial disclosure justify its existence in a wider set of motives that broad from financial and real externalities, agency costs, optimal accounting standards, conservative accounting and economies of scale. Berger *et al.* (2010) highlight how the disclosure regulation has a different effect for several class of stakeholder and how mandatory disclosure is desirable by depending on *"how we value welfare effect of different constituents"* (Beyer *et al.,* 2010, p. 315). Despite the efforts of regulators, the complexity of financial statements and the costs relate to the associated information process have increased due to continuously changes in disclosure requirements (KPMG, 2011).

The complexity of documents and its readability concerns not only regulators but also managers given that it affects negatively the information environment. In particular, the extant empirical research

documents a negative effect among the different users of company information: investors, analyst and rating agencies. From a different prospective, the complexity of financial documents implies lower trading volume and dispersed ownership among investors (e.g., Miller 2010; Lawrence, 2013) as well as can impact negatively on the forecast accuracy (Lehavy *et al.,* 2011; Bozanic and Thenevot, 2015) and lead to a discordant valuation among rating agencies. Conversely, a recent wave of study (e.g. Guay *et al.,* 2016) focuses on the benefits of the voluntary disclosure undertaken by the managers as alternative action to mitigate these negative effects.

A line of research interprets the complexity of financial statement in light of information-based agency problems. For example, Li (2008) finds that longer and complex financial statement are associated with lower performance. The author advocates the opportunistic behavior of manager in structuring the annual reports to hide relevant information to the investors.

On the other hand, the literature considers the complexity of financial statement reflecting the complexity of an organization. If so, this does not support the obfuscation hypothesis where longer documents are realized to hide poor performance (e.g., Bushee *et al.,* 2015). In addition, poor performance might need more explication from managers as pointed out by Bloomfield (2008).

2.3 Measuring annual reports readability

The other side of the complexity of financial documents, that only recently has been addressed by the literature, is their readability. Stated that, a question that immediately arises is what readability stands for. In the finance context, Loughran and McDonald (2014) argue that rather than provide a definition of readability, that look hard, is much more relevant and easy to identify which are its goals. In line with this, the authors (p.1644) define the readability goals as *"the effective communication of valuation-relevant information, whether it is directly interpreted by individual investors or assimilated and distributed by professional analysts"*. We next introduce the main measures of readability and

discuss around their weaknesses by borrowing the insights of Loughran and McDonald (2014). The *Fog index* by Gunning (1952) is the most widespread measure of readability in literature. It is a combination of the average sentence length and the proportion of complex words, i.e. those words with more than two syllables. Similar to *Fog index,* in terms of components, are two others indexes known as i) *Flesch-Kinkaid* and ii) *Flesch Reading Ease score*. They differ from *Fog index* both for count of syllables and the estimation of grade level in 0-100 scaled measure. Numerous criticisms have arisen around the usage of *Fog index* and its peers especially in financial context. More specifically, Loughran and McDonald (2014) study the consistency of several readability measures by questioning how easy and appealing these latter capture the communication of financial information. By referring to *Fog index*, the authors argue that the average words per sentence, as a proxy of sentence complexity, is more suitable for traditional prose text instead of business documents. The criticism became more severe on the number of syllables used to identify complex words. They point out in the financial context the most common words are composed of more than two syllables. In fact, *"words like corporation, company, agreement, management, and operations are predominant complex words occurring in 10-Ks, yet are presumably easy for investors to comprehend. One of the longest words occurring with reasonable frequency in 10-Ks is telecommunications, a word not likely to force most readers to consult their dictionaries"* p1645. Loughran and McDonald conclude that document size, in term of gigabytes, can adequately proxy their readability. They also state that the document size is: i) not affected by measurement error; ii) easily determinable, and iii) reflect the firm complexity structure. Based on these insights, we use the length of document to estimate the readability of 10-Ks. Specifically, our variable, called *Readability*, is composed as follows. We first determinate the total number of words per 10-K (e.g., Li, 2008) that, as noted by Loughran and McDonald, is highly correlated with the *Fog index* (about 56%). Then we calculate our variable by scaling the total number

of words for the corresponding year total assets. We decide to use this ratio since the length of document should vary greatly according to firm complexity.

3. Data, sample and summary statistics

3.1 Data and sample description

Our sample consists of US IPOs completed in the 2000-2011 period. The data related to firms, names, characteristics and balance sheet data come from COMPUSTAT. The information to determine whether a firm has been backed by VCs are retrieved form Thomson One. We match these two databases via ticker symbol and exclude any firms that do not show a valid one for COMPUSTAT. As is standard, we also exclude financial firms, i.e. those belonging to the following SIC code: 6000-6999, and that show an offer price less than $5 and an amount offered less than $3 million. We get a starting dataset, called *Full Sample*, of over 750 IPOs. Specifically, 297 are VC-backed and 459 are not. Considering that VCs choice related on what firms to invest is not a random, this may generate same endogeneity issues and the sample above described could be not correctly matched for a suitable analysis. As such, we implement the propensity score methodology described in section 4.2 that allow to, at least partially, overcome this issue. The process yields a sample, called *P-score*, of 108 VC-backed IPOs matched with 108 control firms. Since our primary goal is to analyze the impact of VC on the disclosure of annual reports jointly to the effect of government reform, we conduct the analysis on the 10-Ks. We hand-collect them from EDGAR by Securities and Exchange Commission starting from the IPO year up to five years after (e.g., firms went public in 2011 the database includes data up to 2016).

3.2 Summary statistics

Table 1 reports the time-series distribution of VC- and non-VC- backed IPOs sample, gathered implementing propensity score methodology (see section 4.2), by calendar year. Specifically, it is organized on two levels. A first level shows the number of firms went public within the following time windows: 2000-2003, 2004-2007 and 2008-2011. The second level split that frequencies into two parts: High-Tech, i.e. those firms belonging to one of the following SIC code: 28, 35, 36, 38, 48, and 73; Low-Tech, i.e. those firms belonging to any sectors that is not High-Tech. As noted, over 60% of VC backed sample is represented by High-Tech. This is in line with previous studies (e.g., Krishnan *et al.*, 2011) and confirms that VCs tend to concentrate their investments along certain kind of sectors.

****** Insert Table 1 about here ******

Table 2 reports the summary statistics of our depended variable, *Readability*. As noted, a lower level of this ratio, *ceteris paribus*, indicates a better readability and disclosure of the annual report. The idea behind is that firms increase reports length to hide bad information and performance. Panel A provides means and standard deviations of VC- and non-VC-backed IPOs starting from the IPO calendar year up to five years later, along with associated *t*-statistics, both overall (i.e., 2000-2011) and per sub-periods. Statistics are based on a sample gathered by implementing the propensity score matching. The results show that VC-backed firms have better readability compared to their peers. In fact, means among the two groups are always different and the concerning variable show a lower value for VC-backed firms. From a certain prospective, this result seems to be in line with the expectation. In fact, it seems quite sharable to believe that VCs pay a special attention to the annual reports since it is desirable, on their side, to be clear as much as possible towards the market in order that the latter can recognize the value created. In turn this should feed VCs reputation. Panel B provides the same statistics of the previous one but the analysis is restricted to solely High-Tech firms. The results show smaller means for high-tech VC-backed IPOs compared to those of all sectors. This seems to suggest in those sectors where VCs show a higher aptitude to invest, the same pay a special attention to the

readability of the reports. This because in that sectors VCs wishes to build a considerable reputation since highly probable, for the results of Table 1, the same will invest in that sectors again. Panel C is based on the same sample of Panel A and shows the same statistics. Differently, it tests the *Readability* by splitting the sample Before and After Sarbanes-Oxley Act. In this case the statistics supports the belief that the reform has forces firms to reveal much more information and this, on one hand, has increased the length of the reports and, consequently, affected negatively the readability of the same. However, it can be noted that the mean of control firms has increased much more compared to VC-backed IPOs after the Sarbanes-Oxley Act. Stated differently, the negative effect of the reform has shown a higher magnitude for non-VC backed IPOs. Panel D is based on the same sample of Panel B and shows the same statistics. Differently, it tests the *Readability* by splitting the sample Before and After Sarbanes-Oxley Act by referring solely to High-Tech firms.

****** Insert Table 2 about here ******

****** Insert Figure 1 about here ******

4. Methodology

4.1 Empirical analysis

In this section we model our hypotheses that the VC jointly to Sarbanes-Oxley Act should exert a significant impact on the readability of annual reports. In order to test them, we use the following baseline specification model:

$$Readability_{i,t} = \alpha + \beta\, Venture\ Capital\ dummy_i + \gamma\, Sarbanes - Oxley\ Act\ dummy_{i,t} + \delta\, Control_{i,t} + \varepsilon_{i,t} \quad (1)$$

where *i* denotes a firm (*i* =1,2,3…); *t* denotes the time dimension represented by the five fiscal years after the listing (*t* =0,...,5). Our depended variable is *Readability*. The main independent variables of interest are *Venture Capital dummy* which is set at 1 when firms are backed by a VC investor and 0 otherwise and *Sarbanes-Oxley Act* dummy which assume value 1 in the years after the promulgation of Sarbanes-Oxley Act of 2002 and 0 otherwise. We also control for specific firm characteristics by using a set of control variables called *Control*. Here we explain the main ones. *ROA* (i.e., return on total assets) is a measure of firm profitability. According to the *"management obfuscation hypotheses"* (e.g. Bloomfield, 2008; Li, 2008) managers have more incentive to dilute information through longer and more complex documents in case of poor performance. Thus, good performance induce management to be more concise in information disclosure. Intuitively, poor performance needs more explication. *Log (Age*) is the natural logarithm of firm age. The expected sign is ambiguous. On one hand, older firm experience less asymmetry information with the investors since they are already known to these latter as well as should be more experienced in preparing documents and effectiveness of results divulgation. On the other, it appears equally sharable that older firms are those bigger in size and, in turn, should have "more things" to tell by producing longer annual reports. Taking into account this aspect, we introduce as a further control *Log (Assets)* i.e. the natural logarithm of total assets to proxy the size of firm. ε is a vector of heteroskedastic-robust standard errors. All variable definitions are reported in the appendix as Table A1. To properly estimate the equation (1), we first run the *OLS* regressions based on the full sample. Then, we run the analysis on a restricted sample, as descripted in the next section, to deal with endogeneity concerns.

4.2 Endogeneity issues

A well-known issue within VC study is the so called "selection effect", i.e. the recurrence of particular conditions under which the firm will be *"willing and able to accept"* the participation of VC

investments (Megginson and Weiss, 1991) that, in turn, could compromise the random selection condition. From a different prospective, high growth firms seek for VC funding and VCs invest in high profitable firms that, often, belonging to certain industry (e.g., High-Tech). This induce a problem of sample selection bias and a concern about causality relation among independent variables. To overcome the issue of "selection effect", we adopt the propensity score matching approach by Rosenbaum and Rubin (1983) which should ameliorate the potential arising bias. As is standard, we first run a probit regression where the depend variable is *Venture Capital dummy* and the explanatory variables are: *Log (Age), Log(Asset), industry* and *state dummies*. Then, for each VC-backed IPOs, we choose a control firm that shows the closest value of propensity score. This yields a sample, that we call *P-score*, of 108 VC-backed IPOs matched with 108 non-VC backed IPOs. We perform the analysis both on the *P-score* sample and on the *Full sample*, where no matching technique is applied.

5. Results

This paper aims to investigate the impact of VC on the disclosure of annual reports jointly to the effect of government reform –namely, Sarbanes-Oxley Act, on a sample of US firms went public within 2000-2011. Stated differently, we aim to explore the following questions: do VCs play a role for the annual reports in term of readability? And what is the impact of the reform, mainly Sarbanes-Oxley for annual reports readability? Table 3 reports estimation results for models constructed on the basis of model 1 using pooled OLS regression for panel data with robust standard errors. The analysis is conducted both on the *Full sample* (columns 2,4,6 and 8) where is not applied any matching techniques and on those called *P-Score* (columns 1,3,5 and 7) where each VC-backed IPO is matched with control firms using the propensity score method. In addition, the analysis is run both on a sample composed of all sectors (columns 1,2,3 and 4) and restricted to solely High-Tech firms (columns 5,6,7 and 8). All the regressions test the impact of VCs and Sarbanes-Oxley Act on *Readability*. Our primary exoplanetary

variables are *Venture Capital dummy*, which is set at 1 when firms are backed by a VC investor and 0 otherwise, and *Sarbanes-Oxley Act dummy*, i.e. a dummy variable which is set at 1 for the fiscal years after 2002 and 0 otherwise. To further evaluate the role of VCs, as per our research questions, we also conduct the analysis be replacing the dummy variable *Venture Capital* with *Venture Capital syndication*, i.e. a dummy variable which is set at 1 when firms are backed by more VCs i.e. VC syndication and 0 otherwise. Further, we control for various internal factors— e.g., *Log (Assets)* and *Log (Age)*; and external ones, e.g., *HHI* and *GDP growth* (see Table A.1 for description and details) that literature commonly uses as expletory variables (e.g., Li, 2008). We next discuss the signs and the relationships of these main variables to the annual reports readability and explore the related theoretical interpretation. First, the coefficient of *Venture Capital dummy* is negative and significant at 1% level or more in all the regressions (i.e. columns 1,2, 5 and 6) of Table 3. On the insights of section 3.2, this suggests that, *ceteris paribus*, VCs reduce the length of 10-Ks and, as such, contribute positively to their readability. What drives this result? A possible explanation is related to the need of VCs to be clear towards the market. Consequently, the hypothesis that this translates into the realization of annual reports as much as readable becomes sustainable. In fact, it is quite sharable to believe that it is in the interest of VCs making sure that market recognizes as much as possible, also through readable documents, the value created. Having created value and seeing recognized it by the market, feed the process able to improve the reputation of VCs. Second, the coefficient of *Sarbanes-Oxley Act dummy* is positive and significant at 1% and 10% level or more in all our main regressions—namely those run by applying the propensity score matching (i.e. columns 1,3,5, and 7). Consistently with the expectation, this finding suggests that Sarbanes-Oxley Act has forced firms, in order to be compliant with the law, to reveal more information and, in turn, produce longer documents to the detriment of readability. Third, we also conduct the analysis by replacing the variable *Venture Capital* dummy with *Venture Capital syndication* which differs from the previous one since it takes value one only in case that firm

under treatment is backed by more than one VCs. As noted, the results of columns 3 and 7 do not differ qualitatively from that discusses above. Although a large part of the variables of Table 3 are well known in literature (e.g., Loughran *et al.,* 2014), some concerns of endogeneity, related to the reverse causality between the dependent and independent variables, may affects our finding. To delve with this issue, we run a robustness check where the independent variables are one time lagged. As shown in Table 4, the results are resilient and completely in line with those presented and discussed in Table 3.

Conclusions

In this paper, we aim to investigate at what extent VCs affect the disclosure practices of investee firms by conducting a textual analysis over the annual reports. We jointly aim to evaluate the impact of public policy –mainly Sarbanes-Oxley Act –in the same terms. Stated differently, we aim to explore the following questions: do VCs play a role for the annual reports in term of readability? And what is the impact of the public policy for investor protection in term of firm reports readability? Using a sample of US firms went public within 2000-2011, we find that the annual reports of VC-backed IPOs are much more readable compared to those of their peers. Stated that, the question of what drives this result arises. The financial literature has more times documented the role that the VCs can play for the investee firms, especially in terms of financial effectiveness and profitability (more recently, Croce *et al.,* 2015). Aside the role of *"value creator"* of VCs– made up knowledge, financial skills and fresh money to investing— an important asset is represented by their reputation. In fact, a body of research (e.g., Megginson and Weiss, 1991) argues that VCs also indirectly support investee firms through their reputation. It is in the interest of VCs making sure that market recognizes as much as possible, also through readable documents, the value created. Having created value and seeing recognized it by the market, feed the process able to improve the VCs reputation. Equally, we find that a public policy for

investor protection— namely, Sarbanes-Oxley Act in response to scandals of early 2000 — forces firms to produce longer reports in order to revel more information.

Taken as a whole, our study sees involved two major actors: Government and VCs. On one hand, the Government, through public policy, tries to pursue transparency goals in order to, as highlighted so far, safeguard the investors. On the other, VCs, in order to safeguard its reputation towards the market, is forced to spread the annual reports of investee firms as much as readable. Stated that, VCs may support the policymaker to reach the goals of corporate disclosure and transparency. However, we are aware that our study could be affected by bias before any generalisation of the results can be made. Further research should be undertaken in other countries in order to capture differences that may exist among them.

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Table 1. Distribution of VC- and non-VC-backed IPOs by calendar year.
This table shows the time-series distribution of VC- and non-VC- backed IPOs sample, gathered implementing propensity score methodology, by calendar year. Specifically, it is organized on two levels. A first level shows the number of firms went public within the corresponding period. The second level split that frequencies into two parts: High-Tech, i.e. those firms belonging to one of the following SIC code: 28, 35, 36, 38, 48, and 73; Low-Tech, i.e. those firms belonging to any sectors that is not High-Tech.

	VC- Backed IPOs		non-VC- Backed IPOs	
Calendar Year	#		#	
	Level 1			
	29		30	
2000-2003	*Level 2*		*Level 2*	
	# High-Tech	# Low-Tech	# High-Tech	# Low-Tech
	21	7	25	5
	Level 1			
	58		56	
2004-2007	*Level 2*		*Level 2*	
	# High-Tech	# Low-Tech	# High-Tech	# Low-Tech
	35	23	39	17
	Level 1			
	27		24	
2008-2011	*Level 2*		*Level 2*	
	# High-Tech	# Low-Tech	# High-Tech	# Low-Tech
	17	10	13	11

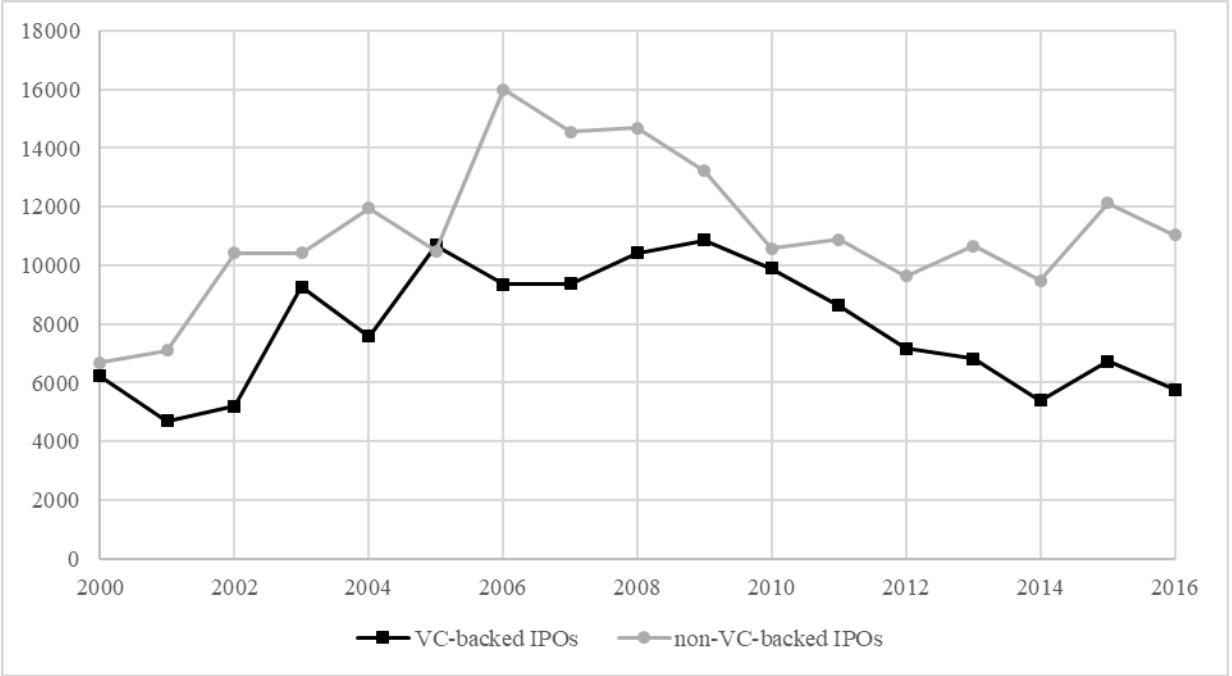
Table 2. Summary statistics of VC- and non-VC-backed IPOs.

This table shows the summary statistics of *Readability*, calculated as a ratio between total words per 10-K on total assets of the corresponding firm. Panel A provides means and standard deviations of VC- and non-VC-backed IPOs starting from the IPO calendar year up to five years later, along with associated *t-statistics*, both overall (i.e., 2000-2011) and per sub-periods. Statistics are based on a sample gathered by implementing the propensity score matching. Panel B provides the same statistics of the previous one but the analysis is restricted to solely High-Tech firms. High-Tech firms are those belonging to one of the following SIC code: 28, 35, 36, 38, 48, and 73. Panel C is based on the same sample of Panel A and shows the same statistics. Differently, it tests the *Readability* by splitting the sample *Before* and *After* Sarbanes-Oxley Act. Panel D is based on the same sample of Panel B and shows the same statistics. Differently, it tests the *Readability* by splitting the sample *Before* and *After* Sarbanes-Oxley Act by referring solely to High-Tech firms.

Readability

	Panel A: P-score sample- *all sectors*						
	VC- Backed IPOs			Non-VC- Backed IPOs			T-test
Calendar year	Mean	Std. Dev.	Obs.	Mean	Std. Dev.	Obs.	(P-value)
2000-2011	8623.106	8489.381	654	11785.46	13828.73	618	0.0000
2000-2003	6813.422	8424.512	154	9774.374	8480.309	164	0.0020
2004-2007	10290.73	9159.861	340	13539.67	16893.1	311	0.0021
2008-2011	6821.225	6034.579	143	10276.78	10567.13	160	0.0005
	Panel B: Sub-sample: High-Tech sectors						
2000-2011	7420.301	6363.07	420	11620.24	13275.03	437	0.0000
2000-2003	5613.97	5324.62	109	9971.05	9162.60	134	0.0000
2004-2007	9339.53	6966.71	210	13275.01	15371.55	226	0.0007
2008-2011	5379.24	4700.00	101	9633.38	4700.00	77	0.0015
	Panel C: Sarbanes-Oxley Act: P-score sample- *all sectors*						
Before	5348.273	4515.125	65	8277.065	6730.604	62	
After	8984.51	8746.495	589	12176.68	14355.81	556	0.0000
	Panel D: Sarbanes-Oxley Act: High-Tech sectors						
Before	4618.087	3689.339	51	6913.959	8297.185	58	0.0010
After	7807.599	6558.34	369	12128.78	13932.14	379	0.0000

Figure 1. Readability over time: VC- Vs. non-VC-backed IPOs
This graph shows the trend over time of the dependent variable, i.e. *Readability*, calculated as total words per 10-K on total asset, both for VC and non-VC backed IPOs. Per each year the graph reports the sample average value. The analysis is based on a sample gathered by implementing the propensity score matching.



Appendix
Table A1. Description of variables

Variables	Description
Readability	Ratio between total words per 10-K on total assets of the corresponding firm [a, d]
Venture Capital dummy	Dummy variable which is set at 1 when firms are backed by a VC investor and 0 otherwise [b]
Venture Capital syndication	Dummy variable which is set at 1 when firms are backed by more VCs i.e. VC syndication and 0 otherwise [b]
Sarbanes-Oxley Act dummy	Dummy variable which is set at 1 for the fiscal years after 2002 and 0 otherwise
Log (Assets)	Natural logarithm of the total asset [a]
Log (Age)	Natural logarithm of the firm age [b]
ROA	Book value of Net Income normalized by total assets [a]
High-Tech dummy	A dummy variable which takes the value one if the firm belonging to one of following 2-digit SIC codes: 28, 35, 36, 38, 48, and 73; and zero otherwise [b]
HHI	The natural logarithm of Herfindahl-Hirschman Index, constructed per each sector (2-gisit SIC code) per each fiscal year in each State, based on the market share (sales) of each firm in Compustat [a]
GDP growth	The GDP growth rate between two consecutive years [c]
State dummies	A set of dummy variables describing the territorial differences and each equal to 1 if the firm operates in the corresponding State, and zero otherwise [a]
Year dummies	A set of dummy variables each equal to 1 if the firm went public in corresponding in the corresponding Year, and zero otherwise [a]

[a] *Source*: COMPUSTAT
[b] *Source*: THOMSON ONE
[c] *Source*: WORLD BANK
[d] *Source*: 10-K files

Table 3. Results from OLS regressions.

The analysis is conducted both on the full sample where is not applied any matching techniques and on those called P-Score where each VC backed IPOs is matched with one or more control firms using the propensity score matching. In addition, the analysis is conducted both on a sample composed of all sectors and restricted to solely High-Tech firms. The dependent variable is *Readability* i.e. the ratio between total words per 10-K on total assets of the corresponding firm. *Log (Age)* is the natural logarithm of the firm age; *Log (asset)* is the natural logarithm of the total assets; *Venture Capital dummy* is a dummy variable which is set at 1 when firms are backed by a VC investor and 0 otherwise; *Venture Capital syndication* is dummy variable which is set at 1 when firms are backed by more VCs i.e. VC syndication and 0 otherwise; *ROA* is book value of net income normalized by total assets; *High-Tech dummy* is a dummy variable which takes the value one if the firm belonging to one of following 2-digit SIC codes: 28, 35, 36, 38, 48, and 73; and zero otherwise; *HHI* is the natural logarithm of Herfindahl-Hirschman Index; *State dummies* is set of dummy variables describing the territorial differences and each equal to 1 if the firm operates in the corresponding State, and zero otherwise; *Year dummies* is a set of dummy variables each equal to 1 if the firm went public in corresponding in the corresponding Year, and zero otherwise*; GDP* is the GDP growth rate between two consecutive years.. Estimates are derived from OLS regressions with robust clustered standard errors. T-statistics are reported in round brackets. *, ** and *** indicate statistical significance at 10%, 5% and 1% levels, respectively.

	All Sectors				High-Tech Firms			
	P-Score	Full Sample	P-Score	Full Sample	P-Score	Full Sample	P-Score	Full Sample
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Readability $_t$	*Readability* $_t$	*Readability* $_t$	*Readability* $_t$	*Readability* $_t$	*Readability* $_t$	*Readability* $_t$	*Readability* $_t$
Venture Capital dummy $_t$	-4257.7***	-3843.9***			-4557.9***	-2757.3***		
	(-5.01)	(-7.19)			(-5.41)	(-4.39)		
Venture Capital syndication $_t$			-2261.8**	-706.8			-2105.1**	-1347.1
			(-2.51)	(-1.05)			(-2.07)	(-1.60)
Sarbanes-Oxley Act dummy $_t$	3189.8**	2471.5**	3180.1*	2459.2**	2919.7*	1671.5*	3013.0*	1560.6
	(2.41)	(2.20)	(1.95)	(2.17)	(1.67)	(1.78)	(1.73)	(1.23)
ROA $_t$	-4127.2*	2.612	-4973.0	-29.36	-2575.6	-123.0	-4447.3	-19.45
	(-1.89)	(0.02)	(-1.62)	(-0.24)	(-1.15)	(-0.95)	(-1.37)	(-0.14)
Log (Age) $_t$	-1174.0**	-1872.5***	-2700.7***	-2036.2***	-1422.8**	-191.6	-1249.3*	-113.0
	(-2.35)	(-5.10)	(-3.37)	(-3.27)	(-2.38)	(-0.38)	(-1.67)	(-0.11)
Log (Assets) $_t$	517.0*	621.8***	-4.593	340.2	347.0	1011.0***	23.43	557.3
	(1.82)	(3.05)	(-0.01)	(1.11)	(0.94)	(3.58)	(0.06)	(1.35)
High-Tech dummy $_t$	-1483.9	-1678.2	2446.0	786.1				
	(-0.74)	(-1.35)	(1.30)	(0.57)				
HHI $_t$	1048.0	1808.6**	4095.5***	3009.2***	6990.3***	8483.4***	5187.6**	8265.6***
	(0.82)	(2.21)	(2.60)	(3.15)	(4.02)	(7.89)	(2.49)	(5.36)
GDP growth $_t$	-191.5	-329.5*	50.16	20.88	-48.51	-319.0*	112.5	-75.06
	(-0.72)	(-1.77)	(0.21)	(0.11)	(-0.15)	(-1.71)	(0.43)	(-0.32)
State dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
_cons	1208.8	-1674.1	-18492.8*	-4786.5	-27680.5**	-18086.2***	9630.6	-49192.3***
	(0.13)	(-0.28)	(-1.81)	(-0.62)	(-2.56)	(-2.59)	(0.60)	(-5.53)
N	969	2381	622	1300	679	1520	467	889
Adj. R^2	0.2030	0.1583	0.2100	0.0992	0.2328	0.1449	0.2278	0.1113

Table 4. Results from OLS regressions: one time lagged independent variables.

The analysis is conducted both on the full sample where is not applied any matching techniques and on those called P-Score where each VC backed IPOs is matched with one or more control firms using the propensity score matching. In addition, the analysis is conducted both on a sample composed of all sectors and restricted to solely High-Tech firms. The dependent variable is *Readability* i.e. the ratio between total words per 10-K on total assets of the corresponding firm. *Log (Age)* is the natural logarithm of the firm age; *Log (asset)* is the natural logarithm of the total assets; *Venture Capital dummy* is a dummy variable which is set at 1 when firms are backed by a VC investor and 0 otherwise; *Venture Capital syndication* is dummy variable which is set at 1 when firms are backed by more VCs i.e. VC syndication and 0 otherwise; *ROA* is book value of net income normalized by total assets; *High-Tech dummy* is a dummy variable which takes the value one if the firm belonging to one of following 2-digit SIC codes: 28, 35, 36, 38, 48, and 73; and zero otherwise; *HHI* is the natural logarithm of Herfindahl-Hirschman Index; *State dummies* is set of dummy variables describing the territorial differences and each equal to 1 if the firm operates in the corresponding State, and zero otherwise; *Year dummies* is a set of dummy variables each equal to 1 if the firm went public in corresponding in the corresponding Year, and zero otherwise*; GDP* is the GDP growth rate between two consecutive years.. Estimates are derived from OLS regressions with robust clustered standard errors. T-statistics are reported in round brackets. *, ** and *** indicate statistical significance at 10%, 5% and 1% levels, respectively.

	All Sectors				High-Tech Firms			
	P-Score	Full Sample	P-Score	Full Sample	P-Score	Full Sample	P-Score	Full Sample
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
	Readability $_t$	*Readability* $_t$	*Readability* $_t$	*Readability* $_t$	*Readability* $_t$	*Readability* $_t$	*Readability* $_t$	*Readability* $_t$
Venture Capital dummy $_{t-1}$	-4811.3***	-4256.1***			-4970.8***	-3170.8***		
	(-5.00)	(-7.14)			(-5.45)	(-4.66)		
Venture Capital syndication $_{t-1}$			-2973.2***	-1100.9			-2744.7**	-1953.5**
			(-2.83)	(-1.46)			(-2.33)	(-2.12)
Sarbanes-Oxley Act dummy $_{t-1}$	5386.3**	4474.0***	6128.4*	1050.8	7898.1**	1887.2	7678.9*	-25.99
	(2.20)	(3.19)	(1.86)	(0.48)	(2.49)	(1.24)	(1.75)	(-0.01)
ROA $_{t-1}$	-3553.0**	55.18	-3181.5	-36.25	-1809.3	-64.98	-2455.8	-26.69
	(-2.04)	(0.50)	(-1.59)	(-0.28)	(-1.16)	(-0.50)	(-1.20)	(-0.18)
Log (Age) $_{t-1}$	-1462.5***	-2236.3***	-3218.9***	-2330.0***	-1831.6***	-290.4	-1978.7**	134.6
	(-2.71)	(-5.49)	(-3.43)	(-3.27)	(-3.05)	(-0.55)	(-2.51)	(0.12)
Log (Assets) $_{t-1}$	454.5	521.0**	-252.7	374.9	181.4	962.8***	-208.0	712.0
	(1.44)	(2.34)	(-0.63)	(1.05)	(0.45)	(3.12)	(-0.44)	(1.49)
High-Tech dummy $_{t-1}$	-2047.8	-2076.6	1864.4	721.0				
	(-0.90)	(-1.47)	(0.87)	(0.46)				
HHI $_{t-1}$	751.9	1824.4**	3812.2**	3137.7***	7320.0***	8858.4***	7013.9***	8734.1***
	(0.53)	(2.02)	(2.14)	(2.97)	(4.08)	(7.72)	(2.99)	(5.09)
GDP growth $_{t-1}$	463.1	67.15	558.2	475.1*	999.8**	552.2**	1044.1*	756.6**
	(1.25)	(0.30)	(1.18)	(1.69)	(2.22)	(2.12)	(1.67)	(2.08)
State dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
_cons	5480.3	-10742.3	-17369.9	-2448.5	-35907.3***	-43901.7***	-34019.7***	-50977.6***
	(0.54)	(-1.29)	(-1.52)	(-0.29)	(-3.43)	(-5.96)	(-2.60)	(-5.17)
N	809	2009	519	1090	567	1281	390	747
Adj. R^2	0.2115	0.1705	0.2195	0.1140	0.2539	0.1521	0.2540	0.1236