

Earnings Growth and Underpricing with Venture Capital Backed Initial Public Offerings

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Abstract

The literature on the certification role of venture capitalists in initial public offerings (IPOs) is mixed and quite often no significant effect is found. Similarly, we find no significant effect of venture capitalists on IPO-underpricing in The Netherlands, if we study the impact of venture capitalists on all IPOs. However, underpricing is affected positively in venture capital backed companies that exhibit large net earnings growth and negatively in venture capital backed companies that exhibit small net earnings growth. The large underpricing of large net earnings growth companies suggests that informed insiders are not impressed by past net earnings of venture capital backed IPOs, but that past net earnings growth attracts less informed investors to bid fiercely for the shares after the IPO.

EFM classification: 810, 230, 180

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1. Introduction

In an Initial Public Offering (IPO) incumbent owners would like to receive as much money as possible. New outside investors, however, may not easily provide money for shares if there are no foreseeable value increases. The incumbent owners face therefore a trade-off between the benefits of a higher return and the risk of not selling the issue. For a smooth transition from a private to a public company some underpricing seems on average to be necessary and it is not surprising that

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one observes that IPOs are usually associated with high initial day market returns (underpricing)². Too much underpricing, however, implies that incumbent shareholders leave money “on the table” and they may try to reduce underpricing by hiring high quality underwriters and accountants to certify the issue. Some literature, moreover, indicates that the backing by venture capitalists (VCs) can also reduce underpricing. In such a case, VCs are not only invited to participate in the company for their financial resources, advice and networks, but also for the benefits of lower underpricing in the future. In this paper we address the possible certification role of VCs³. For the Netherlands we find that backing by VCs increases underpricing in IPOs that showed large net earnings growth and decreases it in IPOs with small net earnings growth. These findings suggest that the incumbent owners and their underwriters and accountants choose to set the offer price much lower than the prices that uninformed outside investors are prepared to pay at the end of the first day. This is in particular the case with venture capital backed IPOs that showed large net earnings growth. We surmise that incumbent investors consider the earnings growth not to be persistent, while outside investors infer a consistent growth for these companies. In the final section we will relate such divergence of opinions to the existing literature.

The remainder of the paper is organized as follows. First we present in section 2 a review of the literature on the role of venture capital firms. Section 3 describes the data and the methodology used. The empirical results are presented in section 4. Robustness checks are presented in section 5. The limitations, a discussion and the conclusions are described in section 6.

2. Venture capitalists as certifiers

One group of studies of the role of VCs in IPOs finds less underpricing with venture capital backed IPOs. Barry et al. (1990) claim that VCs actively participate in their portfolio of companies and monitor their progress. These VCs specialize in a small set of industries for which they can develop expertise, and they hold large equity positions in the companies in which they invest. The authors argue that these findings imply that investors need less of a discount in order to purchase these shares, because the VC has monitored the quality of the offering. Megginson and Weiss (1991) also find that venture capital backing reduces the degree of IPO underpricing.

² An overview of the literature on underpricing is presented by Ritter (1998).

³ For an overview of the workings of the VC industry and on VC theories the reader is referred to Gompers and Lerner (2000).

Both studies conclude that VCs serve a certification role and diminish information asymmetries between the incumbent shareholders and new IPO investors.

A more recent group of authors, however, casts doubt on the certification role of VCs. Francis and Hasan (2001) find that the initial day returns of venture capital backed (VCB) IPOs are higher than for the non-VCB group. Also Hamao, Packer and Ritter, 2000 find that the initial day returns of VCB IPOs are larger in the Japanese case if the lead VC is at the same time the lead underwriter. Krishnan and Singh (2005) argue that VCB IPOs experience higher levels of underpricing because VCs invest in relatively young, high-tech/biotech industries that have a greater degree of uncertainty. Gompers (1996) proposes a “grandstanding hypothesis”: young venture capital firms bring companies to the public earlier than older venture capital firms in an effort to establish their reputation and to raise capital for new funds. Similar results are found by Wang, Wang and Lu (2003) and Lee and Wahal (2004). As these effects are not always relevant for all VCB IPOs, it is not surprising that other authors do not find statistically significant differences in the level of underpricing of VCB and non-VCB IPOs (Da Silva Rosa, Velayuthen and Walter, 2003; Lee and Wahal, 2004; Brau, Brown and Osteryoung, 2004).

Related to the idea of Gompers (1996), that less well known VCs may accept more underpricing, is the idea that the quality of the VC reduces underpricing. For example, Espenlaub, Garrett and Mun (1999) suggest that VCs, that repeatedly bring companies to the market, have to commit themselves to the accuracy and completeness of disclosed information since false certification would lead to the loss of valuable reputation built up over time. Also Hamao, Packer and Ritter (2004) find significant less underpricing with higher quality VCs in a 2SLS regression analysis of Japanese firms. Finally, Krishnan and Singh (2005) proxy VC quality with the dollar market share of all IPOs backed by the VC. Interestingly, Krishnan and Singh (2005) find that higher reputation VCs are associated with significantly higher IPO initial returns.

3. Data and methodology

The initial sample consisted of all Initial Public Offerings from the 1st of January 1994 until the 30th of June 2005 on the Amsterdam Stock Exchange (AEX). The prospectuses of IPOs were collected from Thomson Financial Research. From 1994, adequate -though not full- prospectus collection was possible. Financial institutions were excluded from the sample. If we found no prospectus in the Thomson Financial Research database, we approached the investor relations

manager of the company to obtain the prospectus. After eliminating the companies for which the latter was not successful, the sample consisted of 55 IPOs.

To identify VC firms in the Netherlands, information was collected from the 'Venture Capital Gids, Jaarboek'⁴. Prospectuses were used to collect the information regarding the company, the IPO characteristics, the offer price and whether a company was backed by VCs. In cases where only a price range was mentioned for the offer price in the prospectus of the company and not a fixed offer price, *Het Financieele Dagblad* was used to find the final offer price. Information concerning stock returns, the closing rate on the first trading day, and the price-to-book ratio were collected from DataStream.

Values recorded in Dutch Guilders were multiplied by 2.20371 to obtain the values in Euros⁵. Other currencies were multiplied by the exchange rate that was mentioned in the prospectus to convert the specific currency into Euros. The annual consumer price index was collected from the website of the Organisation for Economic Co-operation and Development and all relevant data were adjusted for inflation⁶.

There were problems with measuring growth rates of net earnings of companies: if net earnings were negative in the base period, an increase of net earnings from negative to positive resulted in negative growth rates. We therefore measured growth of net earnings using the change in the ranking of a company's net earnings. The IPO-companies were ranked according to their net earnings two years before the IPO-year. The same companies were also ranked according to their net earnings in the IPO-year. The change in the ranking was taken as a measure of net earnings growth. Companies that showed the largest increase in ranking were classified as high net earnings growth companies and the others as low net earnings growth companies⁷.

We also measured the quality of the VCs in two ways. First, we calculated the number of IPOs in which the VC was involved. The VCs that were involved in only one IPO received a

⁴ NVP Venture capital Gids, Peat Marwick Nederland, The Hague.

⁵ 1 € = 2.20371 Dutch guilders. <http://www.ecb.int/bc/exchange/nl/html/index.en.html> (access date 2005-06-19).

⁶ Website OECD: www.oecd.org (access date: 2005-07-18)

⁷ As our earnings growth dummy measures performance from the recent past, we also tested whether this dummy was related to future growth. We calculated the coefficient of correlation of the net earnings growth dummy with the market to book value of equity of the IPO-company at the IPO-date, as the market to book value of equity can be considered to be an important measure of expected future growth. As the coefficient of correlation proved to be small (0.183) and with a t-value of 1.241 not significantly different from zero, we conclude that the earnings growth dummy does not proxy for expected future growth. Consequently, if the earnings growth dummy proves to be significant in regressions on underpricing, it is not at the same time an indicator of future growth prospects.

ranking of 1, and if a VC was involved in more IPOs it received a higher ranking. In our sample three VCs were involved in only one IPO and received a rank of 1. The highest ranking was given to two VCs that were involved in five IPOs and each of these received a rank of 5. Second, we calculated the amount of participation of each VC in all IPOs. In our sample the VC with the highest total participation (of 29.7 million euros) received a rank of 11 and the VC with a total value invested of 3.2 million received the rank of 1. By ranking in this way a higher rank implied a higher quality on both measures.

We also added control variables. Firstly, we used company age (based on Megginson and Weiss, 1991) as a control measure for information asymmetry. Secondly, we added company size. Large firms are assumed to be more well known and may need less underpricing because of information asymmetry (Brau, Brown and Osteryoung, 2004). As we intend to compare the differences between small and large companies, and companies that showed large and small net earnings growth, we measured company size also with a dummy variable (1 being larger or equal to the median, zero otherwise). Thirdly, we incorporated a time variable for the IPO-year, as the more recent literature finds greater underpricing with VCB IPOs. Fourthly, we used a technology dummy if the IPO-company belonged to the technology sector, as technology companies may be associated with a higher level of risk and concomitantly larger underpricing. Fifthly, we included a dummy for underwriter quality based on the approach taken by Carter and Manaster (1990). As the leading underwriter in The Netherlands (ABN-AMRO) dominates the IPO-market with 16 IPOs, which was twice as much as the second company (Mees Pierson with 8 IPOs), we gave the value of 1 to the ABN-AMRO and 0 to other underwriters. This approach was also taken by Van Frederikslust and Van der Geest (2000) in another context. Sixthly, we measured auditors as possible quality guarantors. Like Balvers, McDonald and Miller (1988) we considered an auditing firm to be a high quality firm if it belonged to the Big Eight (due to mergers now reduced to the Big Four); in that case the dummy received a value of 1, and zero otherwise. Table 1 presents the characteristics of our dataset, while the meaning of the variables is set out in Appendix 1.

Table 1 about here

As table 1 indicates, non-VCB IPOs were generally larger (with higher proceeds, more assets, larger average for the size dummy, more employees, larger average net earnings before

and in the IPO-year) as well as older. Surprisingly, the market to book value of equity and the average of the net earnings growth dummy of non-VCB IPOs were also larger than for VCB IPOs. The underpricing of non-VCB IPOs was lower than for VCB IPOs. However, none of these differences between VCB and non-VCB companies are significant, if equal variances are assumed; but, many of these variables do show significant differences in variances. When we tested on equality of means, while taking care of unequal variances, however, only the difference in gross proceeds proved to be significant at the 5% level. Though the underpricing was slightly larger for VCB IPOs (20%), it did not differ significantly from that of non-VCB IPOs (18%). Generally, the underwriter quality was less with VCB IPOs, but again the difference was not significant. The auditor quality of VCB IPOs hardly differed from that of non-VCB IPOs, and the difference was not significant. With respect to the other variables, there was no difference in the average IPO-year and the average offer price. The main reason for the lack of significant differences between the means of VCB IPOs and non-VCB IPOs is the large dispersion of the variables, especially for the non-VCB IPOs. Notable aspects of the dataset are that some companies were very young and/or very small, and that some companies showed negative profits in the IPO-year.

Panel A of Table 1 also includes some additional information on VCB IPOs. The most notable is that VCs had only a small percentage of the original shares, namely 14.63%. Ultimately, the 12 companies -for which the retention rate is known- retain 10.0% of the shares.

4. Empirical results

Table 2 indicates the impact of the explanatory variables on underpricing found from the ordinary least squares estimates⁸. Regression A uses a VCB dummy, while regressions B and C use indicators of venture capital quality; namely the ranking of the VC with respect to the number of IPOs (regression B) and with respect to the amount of participation of each VC in all IPOs (regression C). It was found that only the variable for the underwriter quality was significant in all three regression equations with the expected sign at the 10% significance level.

⁸ Though we focus here on the impact of reported earnings growth, we also regressed the 48 observations, for which the market to book value was available, with the log of assets and the price to book ratio (in stead of the asset size dummy and the net earnings growth dummy), but in these equations no variable explained underpricing significantly, not even at the 10% significance level.

Table 2 about here

We found, however, that high VCB IPOs with high net earnings growth had on average 51% of underpricing, while the underpricing of other VCB IPOs was only 6%. For non-VCB IPOs the results were the other way around: underpricing was 12% with high net earnings growth and 25% for low net earnings growth. This suggests that the informed parties in an IPO are not necessarily less optimistic about high net earnings growth IPOs than outside investors, but that this is the case with VCB companies. In order to test this proposition, we present further regression results in table 3.

Regression D in Table 3 shows that for non-VCB IPOs the net earnings growth dummy, the quality rankings of underwriters and the quality ranking of auditors were significant. Moreover, the impact of both underwriter quality and auditor quality had the expected signs. When we study the VCB underpricing, we find that regression F explains the underpricing best: the adjusted R-square is 0.58 in regression F, which is much larger than in regressions E (0.23) and G (0.13). Therefore, regression F merits close attention, though it is notable that in all three regressions the net earnings growth dummy is significant and positive. If we study the other significant variables of regression F, we find that the coefficient of the IPO-year is negative. This suggests that over time VCs became better in pricing IPOs. Regression F also shows that underpricing was smaller if the VC had more experience (measured by the number of IPOs it participated in). This suggests that the more IPOs a VC brings to the market, the less need there is for “grandstanding”. The remaining VCs, that are not experienced in bringing companies to the market, showed an extreme level of underpricing (of 64%) with high net earnings growth IPOs. 1 If we measured VC experience by the amount of participation of each VC in all IPOs (regression G) we did not find a significant relationship.

Table 3 about here

When comparing the non-VCB and VCB regressions, we found that the sign for the dummy for net earnings growth shifted: it was significantly negative in the non-VCB regression (D) and significantly positive in all VCB regressions (E, F and G). Despite the fact that net earnings growth had no impact on the whole population (according to the regressions of Table 2) it is a very important variable in explaining differences in the underpricing of IPOs when results are presented for VCB and non-VCB IPOs. Underpricing is lower for non-VCB IPOs with high net earnings growth, but higher if it is a VCB IPO⁹. This implies that the combination of setting offering prices and the reaction of investors after the IPO differ for earnings growth IPOs that are VCB or non-VCB. In section 6 we give a possible explanation for this phenomenon. For now we can already conclude from Table 3 that it may not be wise as a VC to sell high net earnings growth companies through an IPO, as the underpricing will be severe. Furthermore, if a VC has little experience with IPOs the underpricing becomes disastrous. This may even explain why VCs often have their own niches (Gompers and Lerner, 2000): some may focus on seed capital and other on more mature companies. Inexperienced VCs might be wise to sell companies to more experienced VCs, or to other experienced investors like the original owner(s) or a strategic investor. However, even more experienced VCs might be wise to sell companies with high net earnings growth to private equity capitalists, which focus on a later (and lower growth) stage of the companies in which they invest (Wright and Robbie, 1998, p. 528). In these cases the expected benefits of lower future underpricing for the buyer might be split and the revenues for the seller might be higher than if the seller takes the company to the public directly.

5. Robustness checks

In this section we provide some robustness checks. Table 4 splits the sample in two ways and presents the regressions with the explanatory variables used in regression A. First, it splits the sample between small and large IPOs. Company size must then be abandoned as an explanatory variable. Second, table 4 shows the regressions for the high and low net earnings growth IPOs. In that case the dummy for net earnings growth is excluded.

Table 4 about here

⁹ For the group of non-VCB IPOs the hiring of high quality underwriters and auditors also helps to reduce underpricing.

The regressions H and I show that there is no significant benefit of using quality enhancement mechanisms for either small or large companies. Though the coefficients have the expected signs, neither the quality of the underwriter, nor the quality of the auditor, nor the backing of a VC significantly reduces underpricing. However, when the companies show low net earnings growth (regression J), high quality underwriters, high quality auditors as well as VCs assist in reducing underpricing. For high net earnings growth IPOs (regression K) this is, however, not the case and being backed by a VC can increase underpricing significantly. These results provide further support for the suggestion that it may not be wise for VCs to take high net earnings growth companies to the public.

As a second robustness check we used interaction variables. Table 5 presents the relevant regressions.

Table 5 about here

In regression L we examined the interaction of the net earnings growth dummy with the backing of a VC and found a highly significant positive sign. This shows that the backing of high net earning growth companies by VCs results in a significant amount of underpricing (i.e. 39%). This finding implies that, irrespective of the experience of the VC, underpricing is likely for VCB IPOs that exhibit high net earnings growth. The question can then be raised whether these results are also present if more experienced VCs are backing IPOs. According to table 3, more experienced VCs (based on the number of previous IPOs) are able to reduce the underpricing. Regression M measured the interaction of the net earnings growth with the experience of the underwriter based on the previous number of IPOs. It shows that more VC experience is not enough to overcome the underpricing of high net earnings growth IPOs. The underpricing is 7% and significant at the 10% level. Regression N gives similar results when the experience is measured by the amount of participation of each VC in all IPOs. Also here underpricing (4%) is observed at the 10% significance level.

6. Summary, discussion and conclusions

We tested whether VCs are able to certify the quality of an IPO for new investors and to reduce the amount of underpricing of IPOs. The Dutch case showed that VCs do not influence underpricing when the whole sample of IPOs was considered. However, when we split the sample between low and high net earning growth IPOs the picture changed dramatically. With low net earnings growth IPOs, the participation of VCs (as well as high quality underwriters and high quality auditors) reduced underpricing. But with high net earnings growth IPOs, the backing by a VC increased underpricing, though the effects were mitigated for more experienced VCs. These findings suggest that there is an important difference between informed insiders and new outside IPO investors. Informed insiders are not impressed by past net earnings growth of VCB IPOs, but the less informed investors then bid fiercely for the VCB shares after the IPO. These main findings of this paper will now be discussed.

Our findings are based on a small number of observations. It is, nevertheless, the best available set of observations for The Netherlands. The small population and the specific cultural, economic and legal characteristics of the country (Megginson, 1994) might make it difficult to generalise these results to other countries. We, nevertheless, think that there are reasons why the main findings might be valid for other countries as well.

Firstly, our results are in line with the literature, which has found mixed evidence about the certification role of VCs in IPOs, as we do not find any effect on underpricing of VCB IPOs if we study the whole sample. Nevertheless, the fact that high net earnings growth VCB IPOs show significantly more underpricing may explain why earlier research found mainly lower underpricing, while the later literature has found greater underpricing, or at best, mixed results. If the sample mainly consists of low net earnings growth IPOs, it is more likely that venture capital backing reduces underpricing. However, if the sample consists of mainly high net earnings growth companies, underpricing may be larger for VCB IPOs. If VCs are increasingly backing high net earnings growth companies, it is likely that the researchers will find more underpricing in the more recent VCB IPOs.

Secondly, there is a possible explanation for our findings, which is consistent with other literature; i.e. they could be due to the fact that not all investors react the same to accounting information (Ekholm, 2006). For example, insiders are likely to know, better than outsiders, that companies often “manage” their earnings before selling shares. Earnings

management around share offerings is documented for seasoned equity offerings (Teoh, Welch and Wong, 1995) as well as for IPOs (Roosenboom, Van der Goot and Mertens, 2003). In our analysis we were unable to distinguish companies that managed their net earnings from companies that did not. Nevertheless, VCs strongly influence the companies in their portfolio and they are likely to be able to “manage” company earnings. If so, case informed parties like underwriters and accountants might suggest to reduce the offer price if the VCB IPO shows large net earnings growth. Uninformed outside investors, however, may be misled and be too optimistic about shares with high net earnings growth. Purnanandam and Swaminathan (2004), for example, found that shares for which analysts predicted strong growth tended to be overvalued and highly underpriced. Also, Cornelli, Goldreich and Ljungqvist (2006) found high levels of underpricing with overoptimistic investors. In this sense, our findings are in line with asymmetric information explanations for underpricing.

Our findings are therefore in line with Tirole (2006, 262) who says that underpricing “... is a most primitive signalling device, used only when a good borrower [*here: stock issuer*] does not have cheaper means of setting herself apart from a bad one.” [*italics in brackets by the authors*]. This suggests that VCs might benefit by changing their behaviour. Despite the fact that gaining experience with IPOs is beneficial to VCs because of lower underpricing with future IPOs, VCs would be wise also to take into account the type of company for which it considers an IPO. If the company under consideration shows low net earnings growth, the underpricing in an IPO will be low and experience is gained. However, if the company under consideration shows high net earnings, experience will be gained, but at the cost of substantial underpricing. If the high net earnings growth is not “managed”, but real, a VC -and in particular one without experience- might be wise not to sell the company through an IPO to the public. An alternative would be selling the company over the counter to knowledgeable investors, who are able to evaluate the real prospects of the company. In such cases the expected benefits of lower future underpricing for the buyer might be divided by the seller and the buyer in their negotiations.

Table 1 Characteristics of venture capital backed and non-venture capital backed IPOs**Panel A Venture capital backed IPOs**

The description of the variables is presented in Appendix 1

Variable	#	Mean a)	Std. Dev.	Median d)	Min	Max
Underpricing	16	0.20	0.34	0.11	-0.14	0.98
IPO-year	16	1998	2.33	1998.5	1995	2005
Offer price (euros)	16	13.00	4.87	12.73	3.25	25
Gross proceeds (million euros)	16	56 b)	61 c)	35	7	235
Total assets (million euros)	16	312	803 c)	28	1	2980
Market to book value of equity	14	6.12	4.46	4	1.75	13.04
Company age	16	15	18 c)	9	1	77
Number of employees	16	949	1481 c)	167	24	5458
Net earnings (two year before the IPO; million euros)	16	5	14 c)	0.9	-7	49
Net earnings (IPO-year, million euros)	16	8	38 c)	2.28	-67	123
Technology company	16	0.19	0.40	0	0	1
Net earnings growth dummy	16	0.31	0.48	0	0	1
Size dummy	16	0.38	0.50	0	0	1
Underwriter quality	16	0.13	0.34	0	0	1
Auditor quality	16	0.88	0.34	1	0	1
% of the original number shares owned by VCs	16	14.63	9.59	11.50	2.00	36.00
Relative retention rate by VCs in percent	12	61.50	25.53	61.00	20.00	95.00
% of shares retained by VCs after the IPO	12	10.08	4.60	10.00	4.00	20.00
VC experience based on number of IPOs	16	3.38	1.31	3.5	1	5
VC experience based on the amount of participation in IPOs	16	6.19	3.37	6	1	11

Legends: see below panel B

Table 1 continued

Panel B Non-venture capital backed IPOs

The description of the variables is presented in Appendix 1

Variables	#	Mean a)	Std. Dev.	Median d)	Min	Max
Underpricing	39	0.18	0.29	0.08	-0.06	1.38
IPO-year	39	1998	2.43	1998	1994	2005
Offer price (euros)	39	13.79	5.95	12.96	1.91	28
Gross proceeds (million euros)	39	238	548	51	3	3120
Total assets (million euros)	39	722	2280	65	1	11600
Market to book value of equity	34	7.44	6.13	5.67	1.18	27.29
Company age	39	25	33	10	1	115
Number of employees	38	5323	15915	269.5	18	78500
Net earnings (two years before the IPO; million euros)	39	16	327	2.01	-1210	1610
Net earnings (IPO-year, million euros)	39	69	291	6.91	-66	1800
Technology company	39	0.41	0.50	0	0	1
Net earnings growth dummy	39	0.51	0.51	1	0	1
Size dummy	39	0.54	0.51	1	0	1
Underwriter quality	39	0.36	0.49	0	0	1
Auditor quality	39	0.9	0.31	1	0	1

- a) The means of these variables did not differ significantly at the 5% level if venture capital backed and non-venture capital backed companies are compared and with equal variances assumed
- b) The mean of this variable differed significantly at the 5% level of significance if venture capital and non-venture capital backed companies are compared and with unequal variances assumed
- c) The variances differed significantly at 5% level if venture capital backed and non-venture capital backed companies are compared
- d) The medians test did not give a significant difference at the 5% level if venture capital backed and non-venture capital backed companies are compared

Table 2 Regression results for underpricing of IPO-companies in The Netherlands (1994-2005)

The description of the variables is presented in Appendix 1

	Regression A		Regression B		Regression C	
	Coeff.	t-value	Coeff.	t-value	Coeff.	t-value
Company age	0.00	-0.29	0.00	-0.28	0.00	-0.28
IPO-year	-0.02	-1.10	-0.02	-1.14	-0.02	-1.13
Size dummy	-0.10	-1.06	-0.10	-1.06	-0.10	-1.04
Net earnings growth dummy	0.00	0.04	0.00	0.00	0.00	-0.06
Technology dummy	0.03	0.32	0.03	0.31	0.03	0.27
Underwriter quality	-0.18a)	-1.72	-0.19a)	-1.79	-0.19a)	-1.81
Auditor quality	-0.13	-0.93	-0.14	-1.01	-0.15	-1.04
Venture capital backed	-0.04	-0.36				
VC experience based on number of IPOs			-0.02	-0.65		
VC experience based on the amount of participation in IPOs					-0.01	-0.71
Constant	41.25	1.12	42.45	1.15	42.05	1.14
Number of observations	55		55		55	
Adjusted R-square	0.03		0.04		0.04	

A description of the variables is presented in Appendix 1

a) significant at the 10% level

Table 3 Regression equations for underpricing in non-venture capital backed and in venture capital backed IPO-companies in The Netherlands (1994-2005)

The description of the variables is presented in Appendix 1

	Non-venture capital backed		Venture capital backed					
	Regression D		Regression E		Regression F		Regression G	
	Coeff.	t-value	Coeff.	t-value	Coeff.	t-value	Coeff.	t-value
Company age	-0.00	-0.64	0.00	0.08	0.01	1.66	0.00	0.16
IPO-year	-0.02	-1.31	-0.07	-1.55	-0.07	-2.24a)	-0.06	-1.41
Size dummy	0.01	0.12	-0.14	-0.65	-0.04	-0.24	-0.13	-0.55
Net earnings growth dummy	-0.22	-2.28b)	0.52	2.88b)	0.64	4.55c)	0.51	2.65b)
Technology dummy	-0.01	-0.10	0.11	0.50	0.33	1.79	0.11	0.47
Underwriter quality	-0.29	-2.81c)	-0.14	-0.22	-0.72	-1.41	-0.17	-0.25
Auditor quality	-0.33	-2.14b)	0.02	0.08	-0.45	-1.59	-0.02	-0.05
VC experience based on number of IPOs					-0.19	-2.74b)		
VC experience based on the amount of participation in IPOs							-0.01	-0.25
Constant	48.88	1.33	131.73	1.55	141.99	2.25b)	128.84	1.42
Number of observations	39		16		16		16	
Adjusted R-square	0.22		0.23		0.58		0.13	

A description of the variables is presented in Appendix 1

a) significant at the 10% level, b) significant at the 5% level, c) significant at the 1 % level

Table 4 Regression equations for underpricing in small and large IPO-companies as well as in small and large net earnings growth IPO-companies in The Netherlands (1994-2005)

The description of the variables is presented in Appendix 1

	Regression H Small companies		Regression I Large companies		Regression J Low net earnings growth companies		Regression K High net earnings growth companies	
	Coeff.	t-value	Coeff.	t-value	Coeff.	t-value	Coeff.	t-value
Company age	0.00	-0.56	0.00	-0.03	0.00	0.39	0.00	-0.91
IPO-year	-0.03	-0.67	-0.02	-1.37	-0.01	-0.24	-0.04	-2.03
Size dummy					0.05	0.39	-0.13	-1.05
Net earnings growth dummy	0.05	0.30	-0.04	-0.48				
Technology dummy	0.04	0.17	-0.06	-0.69	0.13	1.06	-0.09	-0.64
Underwriter quality	-0.27	-0.94	-0.14	-1.88	-0.36	-2.56 b)	-0.14	-0.99
Auditor quality	-0.14	-0.60	-0.19	-0.95	-0.32	-1.87 a)	-0.01	-0.03
Venture capital backed	-0.05	-0.22	-0.08	-0.85	-0.28	-2.17 b)	0.32	2.18 b)
Constant	56.31	0.67	41.95	1.38	16.75	0.25	74.99	2.04
Number of observations	28		27		30		25	
Adjusted R-square	-0.17		-0.07		0.25		0.29	

A description of the variables is presented in Appendix 1

a) significant at the 10% level, b) significant at the 5% level, c) significant at the 1 % level

Table 5 Robustness checks on venture capital backed IPO-companies in The Netherlands (1994-2005)

The description of the variables is presented in Appendix 1

	Regression L		Regression M		Regression N	
	Coeff.	t-value	Coeff.	t-value	Coeff.	t-value
Company age	0.00	-0.02	0.00	-0.07	0.000	-0.07
IPO-year	-0.02	-1.31	-0.02	-1.14	-0.02	-1.06
Size dummy	-0.04	-0.49	-0.07	-0.70	-0.06	-0.70
Technology dummy	0.12	1.35	0.09	1.01	0.09	1.00
Underwriter quality	-0.15	-1.59	-0.16	-1.62	-0.16	-1.64
Auditor quality	-0.15	-1.18	-0.14	-1.06	-0.14	-1.07
Interaction of VC backing and net earnings growth dummy	0.39	2.77c)				
Interaction of VC experience based on number of IPOs and net earnings growth dummy			0.07	1.82a)		
Interaction of VC experience based on the amount of participation in IPOs and net earnings growth dummy					0.05	1.93a)
Constant	44.63	1.32	40.26	1.15	37.34	1.07
Number of observations	55		55		55	
Adjusted R-square	0.18		0.11		0.12	

A description of the variables is presented in Appendix 1

a) significant at the 10% level, b) significant at the 5% level, c) significant at the 1 % level

Appendix 1 Definition of variables used

Variable name	Description
Underpricing	The increase in share price (from offer price to first day closing price) on the first day of trading
IPO-year	Trending variable, 1994, 1995, etc.
Offer Price	The ask price of the shares that are brought to the market
Gross Proceeds	Number of shares sold in the IPO times the offer price
Total assets	Total assets in the year before the IPO
Market to book value of equity	Ratio of the (first-day) market capitalization and the post-issue book value of equity
Market capitalization	Market capitalization is calculated as the first day closing price multiplied with the number of post-IPO shares
Company age	The age of the company on the IPO date in years
Number of Employees	Number of employees directly prior to the IPO (most recent number)
Technology company	Equals 1 if the IPO-company belongs to the technology sector, 0 otherwise
Net earnings growth dummy	A dummy that equals 1 if the relative size of the earnings is equal to or above the median value of the earnings growth ranking, zero otherwise
Size dummy	A dummy that equals 1 if the relative size of the assets is equal to or above the median value of the assets, zero otherwise
Underwriter quality	A dummy that equals 1 if the underwriter was ABN AMRO, 0 otherwise
Auditor quality	A dummy that equals 1 if the auditor is one of the Big Four, 0 otherwise
VC backed	A dummy that equals 1 if the company is backed by a VC, 0 otherwise
VC experience based on number of IPOs	The VCs that participated in the largest number of IPOs (5 was the maximum) received the highest rank (5) and the VCs that participated in only one IPO received the rank of 1
VC experience based on the amount of participation in IPOs	The VCs that participated for the highest amount in IPOs received the highest rank (11) and the VCs that participated for the smallest amount in IPOs received the rank of 1

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