

RESEARCH REPORT

VALUING ENTREPRENEURIAL INVESTMENTS:
THE VENTURE CAPITALISTS' APPROACH

VINCENT THOEN & CHRIS LEFEBVRE

OR 0351

Valuing entrepreneurial investments: the venture capitalists' approach

Vincent Thoen & Chris Lefebvre
Department of Applied Economics
Katholieke Universiteit Leuven

Autumn 2003

Valuing high-growth, high-uncertainty firms, characterised by a unique business concept, significant growth opportunities, and/or no real positive cash flows to show the profit potential of the venture, is a major challenge faced by most venture capitalists (Gompers (1995)). Unlike for an investment in publicly traded securities for which there exists a well-defined pricing mechanism, it is difficult to find an objective valuation for the investment holdings of a venture capital fund. The valuation of individual unquoted investments is, thus, a very complicated process. subject to the discretion and judgment from the part of the venture capitalist. Recently, growing criticism and increasing interest are observed regarding the valuation of the private equity and venture capital portfolios of high-tech, high risk, high growth venture investments (EVCA (2001), Millner (2002), Blaydon & Horvath (2002)). Consequently, the underlying goal of the empirical analyses included in this paper corresponds exactly with revealing the valuation methodology operated by venture capitalists when determining or reconsidering the valuation for each venture investment held in portfolio.

Key words: venture capital; investment portfolio; valuation method.

JEL Classification: G24, G31, M21

Vincent Thoen is a doctoral student in Accounting at the K.U. Leuven, Chris Lefebvre is a full professor in Accounting at the K.U. Leuven. Corresponding address: Vincent Thoen, K.U.Leuven, Department of Applied Economics, Naamsestraat 69, B-3000 Leuven, Belgium, Vincent.Thoen@econ.kuleuven.ac.be. All errors remain ours.

Valuing entrepreneurial investments: the venture capitalists' approach

1. Introduction

Valuing high-growth, high-uncertainty firms, characterised by a unique business concept, significant growth opportunities, and/or no real positive cash flows to show the profit potential of the venture, is a major challenge faced by most venture capitalists (Gompers (1995)). Recently, more interest has emerged regarding the valuation of the private equity and venture capital portfolios of high-tech, high risk, high growth venture investments (EVCA (2001), Millner (2002), Blaydon & Horvath (2002)). Consequently, the underlying goal of the empirical analyses included in this paper corresponds precisely with revealing the valuation methodology operated by venture capitalists when determining or reconsidering the valuation for each venture investment held in portfolio.

It should be stressed, however, that there exists a regulatory framework consisting of legal requirements as well as professional guidelines accompanying the valuation process. Although the requirements and recommendations following respectively the prevailing Belgian accounting standards and the EVCA Valuation guidelines (EVCA, 2001) were conceived to provide guidance when valuing for both internal and external purposes, their application for internal objectives cannot be legally enforced. Indeed, the interpretation and development of the internal valuation is mainly left to the venture capitalist's judgment. All in all, we expect this framework to have a crucial impact on the valuation practice developed by venture capitalists active on the Belgian VC market.

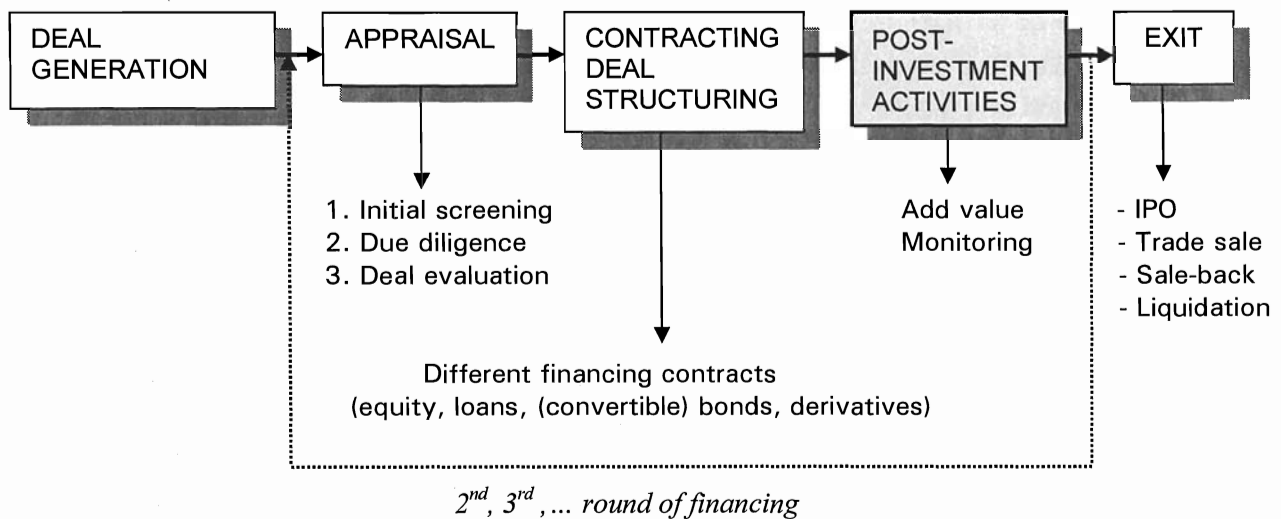
The next section of this empirical paper briefly presents the valuation process and valuation methodology as part of the venture capitalists' management strategy. The third section documents and motivates our research methodology. The main results of our analyses detailing the valuation process and revealing the valuation methodology are discussed in the following section. Finally, we conclude with summarizing the main findings of our study.

2. Uncovering the valuation process

Several researchers have studied venture capitalists' decision-making from a process perspective (Tyebjee & Bruno (1984), Fried & Hisrich (1994)). Based on their result, they all agreed that the investment decision-making process venture capitalists go through when evaluating a venture proposal consisted of multiple stages and can be structured as in Figure 1. They further examined the investment process in order to identify the activities the venture capitalists undertake to avoid the

adverse selection problem. Each of the steps in the investment process has gained extensive research attention. There also exist some feedback loops from the later stages to the earlier ones, thereby continuously improving the venture capitalist's expertise. Moreover, a proposal may be rejected at any stage in the investment process. The vast majority of proposed deals fails to survive the first two stages and is turned down before the venture capitalist invest too much time, effort and money in them.

Figure 1.4. The venture capitalists' investment decision process
(based on Tyebjee & Bruno (1984), Fried & Hisrich (1994))



The execution of the investment process is vital since it determines largely how successful the final outcome of the venture capitalist's business will be. A crucial ingredient in this investment decision-making process concerns the valuation process. The valuation process itself often recurs during various stages in the venture capital cycle and investment process. The valuation determined in view of investment or divestment decisions generally constitutes only a starting point for further negotiations between the buyer-investor and seller-venture. Although a lot of attention was given to discovering the underlying dimensions of the valuation issue with respect to the "in"¹ and "out decisions"², strikingly little attention was given, however, to the valuation issue in a post-investment, pre-exit situation in the venture capital industry. After all, next to the valuation for investment and exit decision taking, several distinct reasons necessitate the recurrent valuation of the individual venture investments. First of all, follow up and monitoring activities from the part of the venture capitalist demand a regular review of the investments' values. Based on these reviewed valuations, the venture capital manager may decide to take action regarding a particular venture

¹ See e.g. Dixon (1991), Wright & Robbie (1996), Manigart et al. (1997, 1999).

² See e.g. Barry et al. (1990), Megginson & Weiss (1991), Lerner (1994), Loughran & Ritter (1995).

investment. Secondly, venture capital managers need to carry out periodic valuations in view of their proper reporting activities to their own investors. These investors need these valuations in order to be able to assess the performance of the venture capital fund and its management or to undertake actions regarding the fund or its management (Fried & Hisrich (1994), Gompers & Lerner (1999)). Other interested parties, such as potential investors, supervisory and tax authorities, and researchers, will also make use of this valuation related information.

The valuation process entails the different considerations and decisions a venture capitalist has to go through whenever determining an initial value for or reconsidering the value of a venture investment in portfolio. Besides, similar to the investment decision-making process, the valuation activity can be modeled as a sequential process. Each stage requires a number of decisions and actions which will be influenced by many different elements, in particular by characteristics of the individual venture capital fund. Inspired by existing research dealing with the valuation problem³, discussions with practitioners as well as our own knowledge and insights in the venture capital industry and corporate finance field, we distinguish the following chronologically ordered steps in the venture capitalists' valuation process:

- (1) identify which venture investment needs to be (re)valued;
- (2) choose an appropriate valuation method or set of methods;
- (3) gather information and calculate data required to apply method;
- (4) implement the valuation method and calculate a basic value;
- (5) apply a number of value corrections to the basic value;
- (6) make use of the final value.

Unlike for an investment in publicly traded securities for which there exists a well-defined pricing mechanism, it is difficult to find an objective valuation for the investment holdings of a venture capital fund. The valuation of individual unquoted investments is, thus, a very complicated process. After all, the venture companies in which the VC fund invests concern generally high-growth firms characterized by a lot of uncertainty, a unique business concept, significant growth opportunities, and no real positive cash flow to show the profit potential of the venture (Gompers (1995)). As a result, the valuation of non-quoted securities turns the valuation issue into a real challenge subject to the discretion and judgment from the part of the venture capitalist.

³ E.g. Bruno & Tyebjee (1985), Bygrave & Timmons (1992), Fried & Hisrich (1994), Manigart et al. (1997).

In this study, we concentrate precisely on a number of these considerations and decisions relating to the valuation process applied by venture capital providers. More precisely, based on our empirical data, we provide a clear and profound insight into the practical dealing with the valuation issue by the venture capital industry. We will focus on the valuation process of ventures that are held in portfolio, so in a post-investment, pre-exit stage. Consequently, we will not consider the initial valuation process for investment or contracting purposes, nor the valuation for exit objectives, but instead we will concentrate on the subsequent valuations reviewing the initially determined valuation.

A wide diversity of elements relating to the valuation methodology developed to deal with the valuation issue will be clarified. Most attention will, however, be paid to anatomizing the valuation methodology and analyzing different related aspects. For that reason, we firstly determine the funds' general approach to the valuation methodology and, secondly, we focus on the actual use that venture capitalists make of various specific valuation techniques. Thirdly and lastly, we reveal whether and to what extent venture capital providers apply corrections to the valuations calculated accordingly to obtain the final valuations that will ultimately serve several practical purposes.

3. Research methodology

Our research goal is, thus, clearly to search for the contemporary practices developed by venture capital organizations to manage the valuation problem. The nature of our research question was fundamental to the determination of the research methodology (Yin (1994)). Since we want to realize this with a defensible level of generalisability, we opted for the usage of a cross-sectional questionnaire based survey strategy (Verschuren & Doorewaard (1998)).

Since our research objective was to obtain a comprehensive insight into the valuation practice implemented by venture capitalists in a post-investment and pre-exit stage in the financial year covering 2001, we decided to limit our population to the Belgian venture capital industry. After all, international differences (e.g. fiscal, corporate and accounting related) may be expected to be present in the approaches to the valuation of venture investments in portfolio. As a result, foreign VC organizations active on the Belgian venture capital and private equity market, but without a legal entity or a separate office in Belgium were not included. Previous research (Amit et al. (1998)) already noted that the venture capital industry is more difficult to study than other financial industries such as the banking, insurance, and stock markets business. Little of the relevant information is in the public domain since the firms financed by venture capitalists as well as most venture capitalist firms are privately held and, thus, subject to less demanding disclosure requirements.

After pre-testing the questionnaires, the survey was effectively carried out during the last trimester of 2002 by mailing the questionnaire to senior investment managers or CEOs of all 112 investment funds or companies identified. All in all, we obtained by the end of February 2003 a total of 50 complete and useable questionnaires each representing an individual venture capital fund or company. Consequently, an overall response rate of 44,6% with respect to the individual venture capital funds was obtained. The main reasons underlying the non-participation by generally relate to confidentiality issues, time restrictions and an overall policy not to answer questionnaires. No reliable tests for the representativeness of the response group were possible given the absence of an exhaustive inventory of all active venture capital funds on the Belgian market and the lack of reliable data on the non-respondents. Nonetheless, we can assume with a considerable level of confidence that the obtained results and insights are valid and applicable to the entire population of venture capitalists present on the Belgian market.

It should be stressed that, although venture capital managers may apply their individual skills and judgment to each particular case, they are likely to operate within the framework of an organizational policy. Our research was precisely concerned with revealing these general company-wide policies adopted in view of the valuation of the investment portfolio.

4. Main findings regarding the valuation practice

Based on the data collected as described in the previous section, a wide diversity of elements relating to the practical implementation of the valuation process were clarified. In this section, we describe the main findings relating to the fund's attitude regarding the EVCA Valuation and Reporting Guidelines and accounting standards, the fund's overall approach to the valuation issue, the frequency of (re)valuing the investments, and the valuation responsibility. Most attention will, however, be paid to analyzing the valuation methodology itself. After all, revealing the valuation methods applied in practice actually constituted the core of our research objective.

4.1 Attitude towards regulatory and advisory framework

First of all, we asked the respondents whether or not they were aware of the existence of the EVCA Valuation and Reporting Guidelines, which were conceived to provide guidance in the valuation and disclosure processes. Apparently, the management of 90% of the funds is acquainted with the existence of these sets of guidelines. Secondly and more importantly, only 72% of all venture capital funds pointed out to effectively implement these guidelines in their valuation and reporting

activities. In addition, we questioned the funds on their intentions to implement these guidelines in the near future. The management of a total of 76% of funds claimed to continue or intend to start implementing the EVCA guidelines in the coming years. No clear significant relationship was present between membership of this industry association and the implementation of the guidelines or intention to do so in the future⁴. Note that the implementation of these guidelines was and is, however, no prerequisite for EVCA membership.

Table 1. Overall attitude with respect to the EVCA guidelines

	Nr of respondents	%
Aware of EVCA guidelines	45	90,0 %
Implement EVCA guidelines in 2001	36	72,0 %
Intention to implement EVCA guidelines in future	38	76,0 %

Total number of respondents = 50.

In addition to the EVCA Valuation and Reporting Guidelines, a venture capital fund has to comply with a specific set of accounting standards prevailing in the jurisdiction in which the fund is established. All in all, 88% of our response group is keeping their books and preparing their financial statements in accordance with the Belgian GAAP, while the remaining funds implement other sets of accounting standards. This is no surprise since nearly all funds in our response group are Belgian incorporated funds (78%) or departments of Belgian incorporated firms (14%). The remaining funds comply with some other set of accounting standards, as depicted in Table 2

Table 2. Accounting standards applied

	Nr of respondents	%
Belgian GAAP	44	88,0 %
US GAAP	1	2,0 %
IFRS	2	4,0 %
UK GAAP	3	6,0 %
<i>Total</i>	<i>50</i>	<i>100,0 %</i>

4.2 Overall approach to the valuation issue

Next to understanding how the venture capital providers feel about the guiding framework, we wanted to obtain an impression of the overall approach they developed towards the valuation process. Table 3 summarizes the reactions to a number of questions inquiring this issue.

⁴ No significant relationships were found between EVCA membership and guidelines implementation (Pearson chi-square= 0,077; $p > 0,05$) or the intention to implement them (Chi-square= 0,119; $p > 0,05$).

All in all, 90% of the respondents have developed and implement a formal procedure to value their investments. Furthermore, 86% of all funds asserts to handle the valuation of the investments on a case-by-case basis. Of this group of funds, 93% (or 40 funds) claims that this occurs in a broader formal valuation approach. This implies that a restricted number of funds use a strict formal valuation to all of their investments without wondering about the characteristics of the individual investment projects.

Furthermore, about 38% of all funds point out that their pre-investment valuation approach, in view of the due diligence and investment decision steps of the investment process, differs from the approach developed to value investment projects to which financial resources were actually granted. This supports our intuitive assumption that the VC's approach to the valuation process in a pre- investment stage differs from that in a post-investment situation and, thus, provides a solid motivation for our research effort. Furthermore, for one fifth of the funds the valuation approach used for external objectives differs from the one applied in view of internal purposes. Consequently, a considerable number of funds implements a sort of dual approach regarding the valuation process.

Table 3. Overall approach with respect to the valuation process

	Nr of respondents	%
Formal valuation procedure	45	90,0 %
Valuation on a case-by-case basis	43	86,0 %
Post- and pre-investment valuation approach differ	19	38,0 %
Valuation for external and internal objectives differs	10	20,0 %

Total number of respondents = 50.

4.3 Fund's valuation frequency

An important element in the valuation process concerns the funds' overall frequency of revaluing investments (Table 4). By valuing the investment portfolio at least on a quarterly basis, the behavior of almost one half of our respondents corresponds to the 'Level Two' recommendations prescribed in the EVCA Reporting Guidelines and which considered quarterly basis as best practice. A small fraction of funds even claims to reconsider the valuation of its investments on a weekly basis. Another third implements a semi-annual revaluation policy, in accordance with the "Level One" reporting profile, regarded as the minimum standard. Four more funds only reconsider the values of their investments on an annual basis, in line with the requirements set forth in the Belgian accounting regulation. The remaining funds review a venture investment's value only when the venture achieves specific milestones (e.g. positive income, first turnover) or is confronted with certain far-reaching problems (e.g. legal proceedings, liquidity problems). Two funds, finally, claim to never reconsider their investments' valuations.

Table 4. General revaluation frequency of investment projects

	Nr of respondents	%	Cum%
Monthly	4	8,0 %	8,0 %
Quarterly	20	40,0 %	48,0 %
Semi-annually	16	32,0 %	80,0 %
Annually	4	8,0 %	88,0 %
Not fixed (achieving milestones, experiencing problems)	4	8,0 %	96,0 %
Never	2	4,0 %	100 %
<i>Total</i>	<i>50</i>	<i>100,0%</i>	

4.4 Valuation responsibility

Whereas the valuation process is generally the joint responsibility of a team of investment managers, it is in about a quarter of the cases performed by the individual manager responsible for the follow-up of a specific venture. The contracting of the valuation task is only exceptionally contracted out to a third party. Also, in two thirds of the cases an internal body, like for instance a valuation committee or audit committee as recommended in the EVCA Valuation Guidelines, assesses or reviews the valuation calculated by the investment manager or management team. On the other hand, an evaluation by an external auditor appears to be almost as popular.

4.5 Valuation methodology

With respect to the methodology implemented by the venture capital providers to value the individual investments held in portfolio, we distinguished three essential decision steps the venture capital fund management has to go through. First of all, the venture capitalist has to determine a general approach to the valuation methodology. In addition, the venture capital fund will have to select one or more specific valuation methods to calculate a valuation for each investment project held in portfolio. However, in a final step, the person(s) executing the valuation process can carry out a number of corrections to this valuation to take account of distinct value-impacting considerations.

4.5.1 General approach to the valuation methodology

As Table 5 indicates, about a quarter of all funds makes use of only one single valuation method. All other funds determine their investments' values by using several distinct or related methods next to each other. A majority uses other methods as a check for the valuation calculated on the basis of the preferred valuation method. The remaining funds are almost equally distributed over the class of funds opting for the lowest or most conservative value, the funds preferring the median value, and, finally, the funds applying different valuation methods to calculate the average of these values and use this average as the final valuation.

Our results are in line with those obtained by Manigart et al. (2000) in their comparative country study. Given the subjectivity of valuations, they concluded that VCs in the different countries prefer to place the greatest weight on one particular valuation method and to use the others as a check. The unpopularity of utilizing multiple methods and selecting the highest, lowest or median value was demonstrated in their study as well. However, their study revealed that in Belgium and the Netherlands the use of an averaged value was significantly more important as well, which obviously contrasts our results.

Table 5. General approach to the valuation methodology

	Nr of respondents	%
One single valuation method used	13	26,0 %
Multiple methods used as check	27	54,0 %
Multiple methods used and highest selected	0	0 %
Multiple methods used and lowest selected	3	6,0 %
Multiple methods used and median selected	3	6,0 %
Multiple methods are used and average is selected	4	8,0 %
<i>Total</i>	<i>50</i>	<i>100,0 %</i>

4.5.2 Specific approach to valuation methodology

The selection of a specific valuation method that will be used to calculate the valuation for the individual investments held in portfolio is a crucial aspect in the valuation process. Therefore, we also examined the use that is made of distinct valuation techniques in the venture capital industry commonly used in business practice⁵. In fact, we questioned the venture capitalists on the frequency of using each of 32 distinct valuation methods identified. Respondents were given the option to record additional methods supplementary to those listed, but only one fund did make use of the option. This provided confidence that our list included all major and commonly used techniques.

Although a considerable level of variation may exist within each class, the various methods were grouped into four main classes. The first class consists of several accounting based methods. The input for these methods mainly relate to the asset's historical book value. All methods included in the second class, the class of multiples based methods, are calculated using a specific financial ratio. In turn, the discounted earnings methods determine the value of a venture by discounting a future income stream using a discount factor derived from a capital markets theory model, like the famous CAPM, that includes a risk premium. Finally, under

⁵ For a comprehensive overview of available valuation techniques, see e.g. DeAngelo (1990), Brealey & Myers (2000), Ross, Westerfield & Jaffe (2001), Fernandez (2001).

the heading of other methods a diverse collection of methods is classed varying from the Economic Value Added (EVA®) method to the more academic real options based valuation method, which applies an option valuation model. Three valuation methods relying on a recent third party transaction are included as well. Table 6 presents the mean score on a five point scale ranging from 'never' to 'always' and the standard deviation obtained for each of the 32 distinct methods.

Overall, the valuation method based on a recent third party transaction's price with respect to the venture is undoubtedly the most popular valuation method among the Belgian venture capitalists. The historic cost or book value based method, which in fact comes down to maintaining the initial book or investment value, closely follows on the second place. Four distinct valuation methods, which are mutually equally popular, represent the third most frequently used method. These methods are actually the price-earnings multiple method, the adjusted book value technique, the method using a recent transaction price in the venture's industry as well as that based on a recent transaction price for comparable firms. Note that for each of these most frequently used methods we obtained a rather substantial standard deviation, implying that no overall consensus is present among the respondents. As a result, not all fund managers make equally frequently use of these methods.

On the other hand, the least frequently used methods generally speaking are the real options based method, the residual income based method, the cash value added, and the economic profit based method. They all share the same characteristic, namely their complexity in view of practical implementation resulting from their more theoretical than practical origin. The fairly small standard deviations for these methods clearly demonstrate that there is a general agreement among the respondents. Consequently, very few, if any, venture capital managers are making use of these methods. Other methods with a low popularity are the dividend based methods, replacement value method, and the EVA valuation base.

Our results also indicated other interesting observations. For instance, among the multiples based methods, the price/earnings multiple is clearly the most frequently utilized. The second most accepted multiple methods are all variants of this P/E-multiple. The enterprise value (EV) based multiples are less popular. Note that these multiples based methods can be calculated using historical or current earnings, cash flow or sales data, but as well on forecasted financial figures. It appears that the multiples using current historical data (average score equal to 3,6) as input are more frequently used than those using prospective or forecasted financial information (average score of 3,0). Furthermore, distinctions between multiples methods can also arise as a result of the determination of the group of comparables with which the venture is compared.

Table 6. Valuation methods: Use made of the distinct valuation methods

	Mean	S.D.
Asset based		
Historic cost or book value	3,48	1,43
Adjusted book value	3,00	1,57
Liquidation value	2,06	1,19
Net asset value	2,68	1,42
Replacement or substantial value	1,52	0,86
Full write-off (value equal to zero)	2,42	1,43
Multiples		
Price/Book Value	1,78	1,49
Price/Earnings (P/E)	3,04	1,48
Price/EBIT	2,36	1,15
Price/EBITDA	2,50	1,51
Price/Cash Flow	2,52	1,44
Price/Sales	2,36	1,49
PEG ratio (P/E divided by projected growth rate)	1,66	1,50
EV/Book Value	1,60	1,54
EV/EBIT	2,30	1,10
EV/EBITDA	2,46	1,05
EV/Operating Cash Flow	1,74	1,53
EV/Sales	1,86	1,57
Dividend return	1,26	1,16
Sales multiples	2,28	1,26
Discounted future earnings		
Discounted free cash flows	2,76	1,57
Discounted equity cash flows	1,88	1,21
Discounted capital cash flows	1,56	0,95
Dividend yield based	1,32	0,51
Other		
EVA (Economic Value Added®)	1,60	1,14
Economic profit	1,22	0,58
Cash value added	1,22	0,58
Residual income based	1,20	0,50
Real options based	1,18	0,39
Recent third party transaction's price with respect to the venture	3,64	1,50
Recent transaction prices for acquisitions in the industry	3,02	1,41
Recent transaction price for comparable firms	2,98	1,44

Mean scores, S.D. (standard deviation) on a 5-point scale (1="never", 2="almost never", 3="occasionally", 4="almost always", to 5="always"). Total number of respondents = 50.

Secondly, the only somewhat regularly used discounted future earnings method (DCF) is the discounted free cash flow method. Although this is one of the central valuation techniques conventionally taught in and prescribed by finance textbooks, it was a surprise that its popularity is lower than perhaps expected. As demonstrated by Dittmann et al. (2002), it is highly probable that the majority of DCF users apply subjective ad hoc adjustments when putting these corporate finance related methods into practice to take account of the methodological constraints.

Thirdly, given that the ventures in which VC funds invest generally do not pay out dividends and that VC funds' performance mainly depends upon the realized capital-gains, it is in line with our expectations that none of the dividend based model appears to be very frequently used.

Finally, the more conceptual, rather theoretical valuation methods, like the EVA, residual income and real options based method, which share a high level of complexity are also infrequently or almost never used.

Unmistakably, our results do not support the conclusions obtained by Manigart et al. (2000)⁶. Based on their comparative country study, they concluded that in Belgium and the Netherlands the discounted cash free cash flow method was the most popular (with a score of 3,89 on a similar scale as ours). The DCF-method was followed by EBIT multiples (3,76), a discounted future cash flow method (3,74), P/E multiples (3,58) and the method using a recent transaction price for acquisitions in the industry (3,61). Although they also concluded that the liquidation value and replacement value based method are amongst the least popular methods in the Belgian venture capital industry, they also obtained surprisingly low scores for the historic cost or book value (2,63) and a method comparable to the method using the recent third party transaction's price with respect to the venture (2,76). However, the two latter methods are - according to our results - currently exactly the most popular ones. We identified three potential reasons which might help to explain this remarkable incongruity.

First of all, the time frame in which each of the studies were carried out. While our data were collected in the last trimester of 2002 and the first months of 2003, corresponding to a less prosperous macro-economic environment, Manigart et al. (2000) sent out their survey in late 1995-early 1996, when the economy and especially the venture capital industry underwent a steady mounting growth. Besides, at that time the latest version of the EVCA's Valuation Guidelines, prescribing amongst others the use of the fair value approach, did not exist yet. Nevertheless, as a result, we actually might have obtained evidence of a radical change in the valuation methods implemented by the industry over the years.

Secondly, the number of respondents on which the conclusions of Manigart et al. (2000) are based is considerably smaller than ours. Moreover, they combined the responses of the Belgian and Dutch respondents into one single set. Out of their response group of 38 venture capitalists, only 14 originated from Belgium (37%). Perhaps the larger share of Dutch respondents has distorted their results accordingly.

⁶ For a more detailed comparison with conclusions for other countries, see e.g. in Wright & Robbie (1996) for the UK; Manigart et al. (2000) for the US, UK, France, Belgium and the Netherlands; and Dittmann et al. (2002) for Germany.

Finally, Manigart et al. (2000) questioned the venture capitalists on their use of distinct valuation methods for pre-investment value determination for investment decision-making. Our study, on the contrary, focuses on the valuation calculation in a post-investment situation for follow-up or monitoring activities. This argument could thereby confirm – if it is found valid - our initial hypothesis that the valuation approach pre- and post-investment differs in a significant way.

4.5.3 Corrections applied to the valuation calculated

Once a value is calculated using one or more specific valuation methods, a number of value correcting actions can be executed to take account of certain elements that affect the value of a specific investment project. We identified two large sets of value correcting actions that can be undertaken and were also suggested in the EVCA Valuation Guidelines (EVCA, 2001). On the one hand, venture capital managers can apply discount factors on the calculated valuations to take account of a number of currently present value-impacting events. On the other hand, the valuations can be subjected to several mechanisms to allow for potential future value affecting incidents. Both are discussed here in more detail.

First of all, regarding the overall application of discount factors to correct the valuation for currently present distortions, one third of the responding funds point out not to apply any discount factor whatsoever on the valuations obtained using the specific valuation method(s) selected. This implies that the management of two thirds of the responding funds does effectively evaluate and correct the values obtained following the previous step. To adjust the valuation for an individual investment, these managers use one global discount factor or multiple discount factors successively on the calculated value (Table 7).

Table 7. Use of discount factors on calculated valuations

	Nr of respondents	%
Valuation is not discounted	17	34,0 %
One global discount factor is applied	19	38,0 %
Multiple discount factors are applied successively	14	28,0 %
<i>Total</i>	<i>50</i>	<i>100,0 %</i>

In addition, different events or aspects can have a significant impact on the valuation of distinct investment projects and, thus, motivate a correction of the valuation initially calculated. Table 8 indicates the importance of distinct motives applied by the funds effectively applying value corrections within the response group.

Almost four out of five do so to take into account the illiquidity problem of the venture investment, clearly the most popular argument. A related

motivation takes account of the marketability problem regarding the securities or the absence of profitable exit opportunities (IPO, trade sale...) resulting from unfavorable market conditions. A discount factor for this reason is used by about half of all funds. Other (il)liquidity related reasons relate to the presence of lock-up arrangements or blocking clauses or shareholder agreements restricting the transferability of the securities of the investment in the financing contracts. Discounting to take account of the ownership of a minority holding is also very popular. A value correction in this case is justified by the fact that the venture capitalist is not in the position to execute a direct controlling influence on the venture's management team. Other reasons underlying the decision to apply a discount include the venture's size, its performance, its maturity or development stage, and the industry the venture is operating in.

Table 8. Motives to apply one or more discount factors

	Nr of respondents	%
Discount for illiquidity	26	78,8 %
Discount for lack of marketability	16	48,5 %
Discount for lock-ups	6	18,2 %
Discount for blocking clauses, shareholder agreements	5	15,2 %
Discount for minority holding	10	30,3 %
Discount for size of venture	6	18,2 %
Discount for venture's performance	3	9,1 %
Discount for venture's development stage	3	9,1 %
Discount for venture industry	3	9,1 %

Total number of respondents = 33.

As discussed before, value correcting actions can also be undertaken to allow for potential future events that can impact the value of the venture capitalist's investment. One of the most important foreseeable events that can occur in the future is an increase of the venture's equity capital. At certain points in time or for certain venture investments, the venture capitalist decide not to continue investing into the venture. As a consequence of the decision not to follow the capital increase, the venture capitalist's ownership percentage will start diluting implying that his influence on the venture's management and the proportion of the revenues accruing to the fund will decrease. When executing a valuation or revaluation of a specific investment, the venture capitalist can, therefore, already incorporate the potential dilution effects in the valuation process. Several mechanisms are available to do so. Table 9 describes how our response group handles the anti-dilution issue.

Apparently, more than four out of every ten funds does not include any correction to account for the potential dilution danger whatsoever. The most popular solution, however, is to calculate a valuation based on a fully diluted basis, which comes down to considering all the conversion or subscription rights as being fully exercised. This approach corresponds to

the strategy recommended by the EVCA Valuation Guidelines (EVCA, 2001). Two funds calculate a separate value for these quasi-equity and equity linked instruments. One fund's tactic to the dilution problem is case-dependent. Remarkably, not a single fund appears to apply a sort of additional discount factor on the calculated valuation to take account of the dilution issue.

Table 9. Anti-dilution correction of the valuation

	Nr of respondents	%
No correction applied	21	42,0 %
Valuation on a fully diluted basis	26	52,0 %
Calculation of a separate value	2	4,0 %
Determined on a case-by-case basis	1	2,0 %
<i>Total</i>	<i>50</i>	<i>100,0 %</i>

5. Conclusion

The principal aim of this paper was to provide an exploratory study of the valuation practice developed and implemented by venture capitalists. More precisely, we were interested in revealing the valuation methodology operated by venture capitalist to value the venture investments held in portfolio. Using a systematic empirical investigation of our empirical survey data, we uncovered various crucial and interesting aspects regarding the multi-stage valuation process. Accordingly, we were able to add valuable insights to the venture capital literature.

It was stressed that while developing and implementing their valuation strategy, the venture capitalists are persistently faced with a regulatory and advisory framework following from the Belgian accounting standards and the EVCA guidelines. About seven out of ten responding funds declared to effectively implement the EVCA Valuation and Reporting Guidelines into their valuation activities. Besides, given that a large majority of funds are Belgian incorporated, it was no surprise to see that almost all funds pointed out to comply with Belgian GAAP. In addition, we found that, whereas most funds implement a formal valuation procedure, they still handle the valuation of investments on a case-by-case basis. One fifth of the funds implement a valuation approach for internal objectives that differs from the one used for external purposes.

Furthermore, whereas the valuation process is generally the joint responsibility of a team of investment managers, in about a quarter of cases an individual manager is liable for the investment's valuation. While a small fraction of funds applies a monthly valuation review basis, the largest fraction of funds (40%) implements a quarterly valuation frequency. Consequently, about half of the funds do implement the most demanding EVCA recommendations. An additional third opts for a semi-

annual valuation frequency, corresponding with the minimum standard prescribed in the EVCA guidelines. Whereas two funds point out to never review their portfolio valuations, the rest is equally spread between funds revaluing on an annual basis, as required by the Belgian accounting standards, and the funds with no fixed revaluation timing.

Whereas about a quarter employs only one single valuation method, the majority of funds applies multiple methods successively to check the valuation calculated using the preferred valuation method. The valuation method relying on a recent third party transaction price with respect to the venture is overall definitely the most frequently used among Belgian venture capital providers. The second most popular one is the historic cost or book value. Other fairly frequently used methods include the price/earnings multiple, the recent transaction price for acquisitions in the industry and the adjusted book value. The least frequently used methods consist mainly of more complex, theoretical valuation methods, like the real options and real income based methods. Also, the discounted cash flow methods appeared to be less popular than a priori expected given their popularity in conventional corporate finance textbooks.

Our observations contrasted the conclusions of the comparative country study of the VC industry by Manigart et al. (2000). After all, they found the discounted cash flow methods to be the most frequently used, closely followed by several multiples based methods. They also obtained surprisingly low scores for the historic book value and recent third party transaction's price method. These two methods are according to our results currently exactly the most popular ones. Possible explanations may be found in the study's timeframe, the fact that their focus is on the pre-investment valuation for investment decision purposes, and in the restricted number of responses on which their conclusions are based. These conflicting results may strengthen our expectation that the VCs' approach to the valuation process in a pre-investment and post-investment differ significantly. On the other hand, it may also be true that over the years VC funds have adapted their valuation methodology. These two undecided findings clearly demand additional research efforts to allow unambiguous statements.

Finally, the application of value corrections on the values obtained using the valuation methods to correct for currently present value distorting effects is generally done by about two thirds of the respondents. Discounting for illiquidity is by far the most cited reason, followed by discounting for lack of marketability and for the presence of a minority shareholding. On the other hand, applying value corrections for future capital increase effects is less popular. Still, about half the funds in our response group, however, claims to calculate the value on a fully diluted basis, as suggested in the EVCA guidelines.

A number of extensions of the present research approach and results can be identified. Clearly, we can broaden the study's focus by applying the same research strategy on an international level. Questioning the venture capital population in other countries may result in interesting additional insights. Furthermore, we can attempt to investigate the influence of more specific characteristics of the individual investments on the valuation method selected. However, confidentiality reasons might make it very difficult to obtain this information and, thus, require the application of alternative data collection tools. Finally, as already initiated in the discussion on the inconsistency of the Manigart et al. (2002) study and our findings, examining the potential of a change over time in the overall approach to the valuation issue by the venture capital industry might yield interesting insights.

References

- Brealey, R. & Myers, S. 2000. Principles of Corporate Finance. 6th Edition. McGraw-Hill.
- Amit, R., Brander, J. & Zott, C. 1998. "Why do venture capital firms exist? Theory and Canadian evidence". *Journal of Business Venturing*, 13: 441-466.
- Barry, C., Muscerella, C., Peavy, J. & Vetsuypens, M. 1990. "The role of venture capital in the creation of public companies: Evidence". *Journal of Financial Economics*, 27: 447-471.
- Bruno, A. & Tyebjee, T. 1985. "The Entrepreneur's Search for Capital". *Journal of Business Venturing*, 1: 61-74.
- Blaydon, C. & Horvath, M. 2002. GPs say valuation standard is important but can't agree on one. *Venture Capital Journal*, October 2002.
- Bygrave, W. & Timmons, J. 1992. *Venture Capital at the Crossroads*. Harvard Business School Press, Boston.
- DeAngelo, L. 1990. Equity valuation and corporate control. *Accounting Review*, 65 (1): 93-112.
- Dixon, R. 1991. "Venture Capitalists and the Appraisal of Investments". *Omega*, 19(5): 333-344.
- Dittmann, I., Maug, E. & Kemper, J. 2002. How fundamental are fundamental values? Valuation methods and their impact on the performance of German venture capitalists. *Working paper, School of Business and Economics Institut für Konzernmanagement Berlin*.
- European Private Equity and Venture Capital Association. 2000. *EVCA Reporting Guidelines*. EVCA, Zaventem.

European Private Equity and Venture Capital Association. 2001. *EVCA Valuation Guidelines*. EVCA, Zaventem.

Fernandez, P. 2001. *Company valuation methods. The most common errors in valuations*. Working paper, IESE Business School – University of Navarra.

Fried, V. & Hisrich, R. 1994. "Towards a model of venture capital investment decision-making". *Financial Management*, 23: 28-37.

Gompers, P. 1995. "Optimal investment, monitoring, and the staging of venture capital". *Journal of Finance*, 50: 1461-1489.

Gompers, P. & Lerner, J. 1999. "The Determinants of Corporate Venture Capital Success: Organizational Structure, Incentives, and Complementarities". *Working paper*, NBER.

Lerner, J. 1994. "Venture capital and the decision to go public". *Journal of Financial Economics*, 299-316.

Loughran, T. & Ritter, J. 1995. "The new issues puzzle". *Journal of Finance*, 50: 23-51.

Manigart, S., Wright, M., Robbie, K., Desbrières, P. & De Waele, K. 1997. "Venture capitalists' appraisal of investment projects: An empirical European study". *Entrepreneurship Theory and Practice*, 21(4): 29-43.

Manigart, S. & Van Hyfte, W. 1999. "Post-investment evolution of Belgian venture-backed companies". *Paper presented at 19th Babson-Kauffmann Entrepreneurship Research Conference*. Columbia, USA, May 1999.

Manigart, S., De Waele, K., Robbie, K., Desbrières, P., Sapienza, H. & Beekman, A. 2000. "Venture Capitalists, Investment Appraisal and Accounting Information: A comparative study of the US, UK, France, Belgium and Holland". *European Financial Management*, 6 (3).

Millner, S. 2002. "Transparency as a Competitive Tool", in *DML – In the Spotlight*. October 17th, 2002.

Megginson, W. & Weiss, K. 1991. "Venture capital certification in initial public offerings". *Journal of Finance*, 46: 879-893.

Ross, S., Westerfield, R. & Jaffe, J. 2001. *Corporate Finance*. New York: McGraw-Hill.

Tyebjee, T. & Bruno, A. 1984. "A model of venture capitalists investment activity". *Management Science*, 30: 1051-1066.

Verschuren, P. & Dorwaard, H. 1998. *Het ontwerpen van een onderzoek*. Lemma, Utrecht.

Wright, M. & Robbie, K. 1996. "Venture Capitalists, Unquoted Equity Investment Appraisal and the Role of Accounting Information". *Accounting and Business Horizons*, 26 (2): 153-168.

Yin, R. 1994. *Case Study Research: Design and Methods*. Thousand Oaks, Sage.