BANK AND NON-BANK PRIVATE EQUITY FUNDS: WHAT ARE THE DIFFERENCES IN THE POST-IPO PERFORMANCE OF VENTURE BACKED COMPANIES?

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ABSTRACT

The aim of the paper is to establish whether the post IPO performance of companies with bank-owned private equity backing was significantly different from that of companies backed with non bank-owned funds. The analysis is focused on the IPOs of Italian venture backed companies during the years from 1999 to 2005. Starting from the prior studies, the paper shows that there are significant differences in performance calculated for the entire time span under examination and in six-month performance after IPO, where companies with non-bank funds backing prove to have a better performance than those backed with bank-owned private equity.

INTRODUCTION

The peculiar relationship that is established between company and private equity fund has attracted the attention of researchers and scholars who, through numerous papers, have analysed the impact of private equity on companies, comparing the performance of venture backed and non venture backed companies.

This paper accepts as already demonstrated, in national and international literature, the positive contribution of the institutional investor to the company, and it focuses solely on the venture backed sample. This research project springs from the reflection that to calculate the post IPO performance of the venture backed company group, without making distinctions relative to the characteristics of the fund investing in the company, might prove to be too general an approach. For this reason, the post IPO performance has been analysed, considering the different ownerships of the fund. In detail, the paper proposes an analysis of the Italian market and in particular of the IPOs of venture backed companies made during the period dating from 1999 to 2005, with the aim of establishing whether the performance of companies with bank-owned private equity backing was significantly different from that of companies backed with non bank-owned funds, subsequent to listing on the Stock Exchange. The paper analyses, with different methodologies, short- medium- and long-term performance after IPOs.

First and foremost, an analysis is made of the literature published on the subject of the short- and medium-long term post IPO performance of venture backed and non venture backed companies, after which some studies that have analysed the performance in relation to the type of private equity involved are quoted. Last but not least, after the presentation of the method of analysis and the sample, the results emerging and their relative implications are discussed.

ANALYSIS OF THE LITERATURE

The presence of private equity in a company constitutes financial backing in terms of own capital but also support in terms of organisational and management skills as well as the transfer of knowledge (Gompers and Lerner, 2004a; Kaplan and Strömberg, 2002). This combination generates a positive effect on the capacities and growth potential of the company and on the performance of the same. Balboa et al., (2006) carried out an investigation on the Spanish market analysing a sample of companies in the expansion phase and ascertained the extent to which the trend of sales and employment figures is strongly affected by the presence of the venture capitalist. Compared to a traditional backer, private equity assumes very special connotations: as demonstrated by Hellmann and Puri (2002) in addition to the role of monitoring and gathering of information, often the private equity investor is directly involved in the running of the company, occupying top management positions and adjusting the governance balance of the venture backed company. In addition to the role of financial backer, the role of certifier is also important, given the fact that for venture backed companies it is possible to use the reputational capital of the private equity fund in order to "certify the company" and obtain external financing at more advantageous conditions. As demonstrated by Corigliano (2001), the smaller the company becomes, the more important the private equity fund's role as certifier becomes.

The investment activity, which consists of the analysis, evaluation and choice of the company in which to acquire an equity interest, is of fundamental importance; however, also the divestment activity by means of which the institutional investor should fully or partially recover its own investment must be properly assessed. The choice of exit strategy is fundamental for the venture capitalist; among the possible alternatives – the one on which this paper focuses is the IPO.

The IPO market represents an important exit or investment reduction strategy for the private equity investor (Black and Gilson, 1998). Through the listing of the company, the institutional investor can

divest itself in a single operation of its entire shareholding or it can keep a proprietary share and recover the investment only partially (Barry et al., 1990; Megginson and Weiss, 1991).

The relation that is established between the company and the private equity fund is substantially different from the relationship that is generally created with a traditional financial backer. For this reason, the attention of researchers and scholars is focused on the impact that private equity has on companies, comparing the performance of the so-called venture backed companies with that of non venture backed companies.

The analysis of the performance can be made considering short term or medium-to-long term time horizons, generally calculated as a time period subsequent to the date of listing.

With reference to the study of short run performance, the phenomenon most closely analysed is that of underpricing, defined as issue discount.[2] The studies available in literature present conflicting opinions on the greater or lesser underpricing in venture backed companies.

Barry et al. (1990) affirm that the underpricing practised by venture backed companies is inferior to that practised by non venture backed ones since the investor assumes a monitoring role which affects the offering price. Megginson and Weiss (1991) compare a sample of venture backed companies with a sample of non venture backed companies between January 1983 and September 1987: thanks to the certification effect, the underpricing after 1 day shows lower values for venture backed companies. Lee and Wahal (2004) conducted an analysis on a sample of companies between 1980 and 2000 sustaining that considerable underpricing exists also as regards the venture backed companies. The study conducted by Bradley e Jordan (2002) reaches a different conclusion, sustaining that there are no particular differences in underpricing between venture backed and non venture backed companies. Also Ljungqvist (1999) demonstrates that the different degree of underpricing is attributable to the different behaviour of the old shareholders rather than to the presence of the venture capitalist. Rindermann (2005) analyses a sample of IPOs from 1985 to 1998

[2] Normally this is calculated as the difference between the market price on the first day of closure after the IPO and the offering price of the share issue. In actual fact, other studies compare the offering price with the price of a week or month subsequent to the IPO.

belonging to different markets: French, German and English, highlighting how, as a rule, less underpricing is recorded after one day for venture backed companies but also pointing out that this value is not statistically significant. Some studies take the opposite approach from those quoted above. Smart and Zutter (2003) indicate a greater underpricing for venture backed companies compared to non venture backed ones and also in a study carried out by Franzke (2005), based on German IPOs, a greater degree of underpricing is discovered for companies funded with private equity. Gompers and Lerner (2004b) demonstrate, in a further study conducted on 350 companies in the biotechnology sector between January 1978 and December 1992, the existence of a positive return in the 60 days prior to the IPO and of a negative return in the 60 days following it.

On the Italian market Fabrizio (1999) analyses IPOs from 1988 to 1998, confirming that, considered as a whole, they manifest an underpricing of 11%. He also demonstrates how the presence of the venture capitalist, in at least 1/3 of the companies with shares of 39% at the moment of the IPO determines a considerable reduction in the underpricing phenomenon. A subsequent empirical inspection of the Italian market was carried out by Cenni et al. (2000), analysing 41 IPOs made in the period from 1995 to 1998. The underpricing is calculated at different points in time, examining the differences between venture backed and non venture backed companies. The venture backed companies included in the sample manifest less underpricing compared to the non venture backed companies calculated at periods of a day, a week and a month. Considering a time horizon of three months, the venture backed companies manifest underpricing and the non venture backed companies overpricing. A further analysis focused on establishing whether exit time and the methods of the same could be the cause of the different returns between venture backed and non venture backed companies. IPOs which manifest overpricing in the course of a month are characterised by a longer equity position holding time of the venture capitalist within the company. There is also a positive correlation between performance (overpricing and underpricing) and the time the venture capitalist remains within the company (-0.1775). Longer equity position holding of the venture capitalist among the shareholders of the newly-listed companies with overpricing

indicates, on the one hand, a fence-sitting decision aimed at obtaining better performance from the exit strategy and, on the other, an important signal that the venture capitalist believes in the company's potential.

Angelini (2006) points out how venture backed companies manifest less underpricing and lower direct issue costs. The mean underpricing of the venture backed companies in the period under investigation is 2.44% and 5.74% for the non venture backed, with variations according to the market phases.

With reference to the short run performance of venture backed companies, there are therefore different results in literature. In particular, as regards the Italian market, the main studies highlight lower underpricing in the short term for the venture backed companies compared to the non venture backed ones.

Numerous studies, in addition to assessing the underpricing, also focused their attention on an analysis of the medium-to-long term performance post IPO.

Brav and Gompers (1997) analysed a sample of 934 venture backed companies between 1972 and 1992 and 3407 non venture backed ones between 1975 and 1992. A post IPO period of 5 years is considered. This analysis shows better performance for venture backed companies as opposed to non venture backed companies. However, the value of the results obtained changes in accordance with the method of evaluation applied[3]. The study also demonstrates that any underperformance is linked to smaller companies with a low book-to-market ratio. This phenomenon may be connected to various aspects such as information asymmetry or the quality of the underwriters. Corigliano (2001) maintains that the certification of the success of an IPO should be made by a third party, other than the founding partner or the institutional investor. The underwriter's agreement to make the placing may already be considered as a sign of the good quality of the operation. Carter et al. (1998) affirm that the real role of the certifier in the context of the United States is played by the underwriting bank and not by the venture capitalist and that the market return in the three post IPO

[3]For a more in-depth analysis see attachment 1.

years is better for companies with prestigious underwriters. The IPOs managed by these underwriters also have less underpricing in the short term. In actual fact there is a certain connection between the quality of the venture capitalist and that of the underwriter as it is easier for a prestigious venture capitalist to involve an underwriter with an excellent reputation. Doukas and Gonenc (2000) highlight how analysing mixed IPOs, i.e. cases in which only the venture capitalist or only the investment bank have a good reputation, high prestige and experience, it can be seen that it is the venture capitalist who gives the greatest contribution with its own reputational characteristics. Analysing the German, English and French markets, Rindermann (2005) underlines the better performance of the venture backed companies with respect to the market in the three post-IPO years, in contrast with the non venture backed companies which display an underperformance compared to the benchmark.

On the Italian market, an analysis of the medium-to-long term performance was presented by Cenni et al. (2001) who analysed the period from one to forty-eight months subsequent to the IPO, always encountering extra negative returns, in line with the numerous studies conducted in the USA. Generally speaking, the trend of the Italian IPOs from 1995 to 1998 presents lower values to those of the market even although the venture backed companies display better performances than the non venture backed ones.

Numerous studies have focused on the analysis of the different performances between venture backed and non venture backed companies. It would, however, be far too general to define companies funded by private equity indiscriminately as “venture backed” without making distinctions relative to the characteristics of the public equity fund involved. Adopting a different analytical approach, attention was then focused on the same of venture backed companies in order to establish whether a change in the type of private equity fund could bring about a change in the performance of the company. The reflection that gave rise to the writing of this paper is that different types of private equity can probably have a different impact on the reduction of

information asymmetry and on incentivation of the company, thereby having an indirect effect on performance.

A recent study (Tykvovà and Walz, 2007), developed with reference to the German market analysed the underpricing and the post-IPO performance of a number of venture backed companies that had access to listing from 1997 to 2002, focusing on the differences between the following types of venture capitalist: independent, banking, corporate and governmental. Among the main results emerging, it is clear that there are no particular underpricing differences, while differences are found with regard to medium-to-long term performance. Companies benefiting from independent, foreign funds with a prestigious reputation, display better performance and less instability as regards returns.

Tykvovà (2006) sustains that bank-owned private equity funds often use this form of investment as a relational bridge in order to subsequently develop the financing as a debt; they are therefore generally less involved in the management of the company. In contrast, independent funds are typically active investors with wider time horizons: this helps reduce information asymmetry. The managers of the bank-owned funds undoubtedly endeavour to maximise returns but they often enter into a conflict of interests with the fund owners, e.g. the reference bank, which might have different objectives, especially if it is among the placers of the operation. This issue has been the subject of numerous studies, which have analysed the consequences of the conflict of interests that may arise when the venture capitalist is an emanation of the underwriting bank. Hamao et al. (2000) draw attention to the greater return on the first day of listing for enterprises backed by a venture capitalist associated with an underwriting bank, while there are no significant differences three years after the IPO. The conflict of interests seems, therefore, to affect the initial price but not the medium-to-long term performance. Other authors (Gompers and Lerner, 1999b; Espenlaub et al., 1999), on the other hand, point out how the companies in which a conflict of interests of this type actually manifests itself achieve better performance in the medium-to-long term. Under these circumstances, investors should demand a greater issue discount due to the effect of the information asymmetry.

Among the various reasons attesting to the better performance of non bank-owned funds is the greater degree of specialisation of independent funds which generally focus their investments on a given sector, hence acquiring greater skills (Barry, 1994; Bottazzi et al., 2004; Tykvovà, 2006). Hellmann et al. (2007) analysed the role of banks on the US venture capital market, pointing out how – in contrast with independent funds – banks can seek complementarity between venture capital and loan activities. Banks use the investment in risk capital to create a relation (known as a "relation hypothesis") in order to then develop loan activities. For the bank, venture capital is only one of the services it can provide but it is by no means the only one it can offer.

In an analysis of the German market, Tykvovà (2006) demonstrates how banks tend to have a particular method of investment compared to other funds. They typically invest in the advanced stage of the company, they tend to bring the company to the listing stage within a short time, after which they keep a minimum fraction of the capital.

SAMPLE AND METHOD

The sample was created by analysing all the IPOs made on the Italian market (MTA and MTAX) between 1999 and 2005, and selecting the enterprises which had a private equity fund in their ownership structure when they went public. The number of IPOs considered was 37; excluded from the sample were enterprises listed within the context of a privatisation process, banks, insurance companies and financial intermediaries[4], as well as enterprises listed on the Expandi[5] market. The group was divided into two *pools* according to the ownership of the private equity fund investing in the company. In particular, for each fund it was checked whether the majority ownership share, absolute or relative, belonged to a banking group. In this way, two groups were obtained: bank venture backed IPOs, in which the private equity fund belonged to a banking group and non bank venture backed IPOs in which the fund might be the expression of an industrial, public or

[4] In accordance with the methods adopted by Cenni et al. (2001), Brav and Gompers (1997).

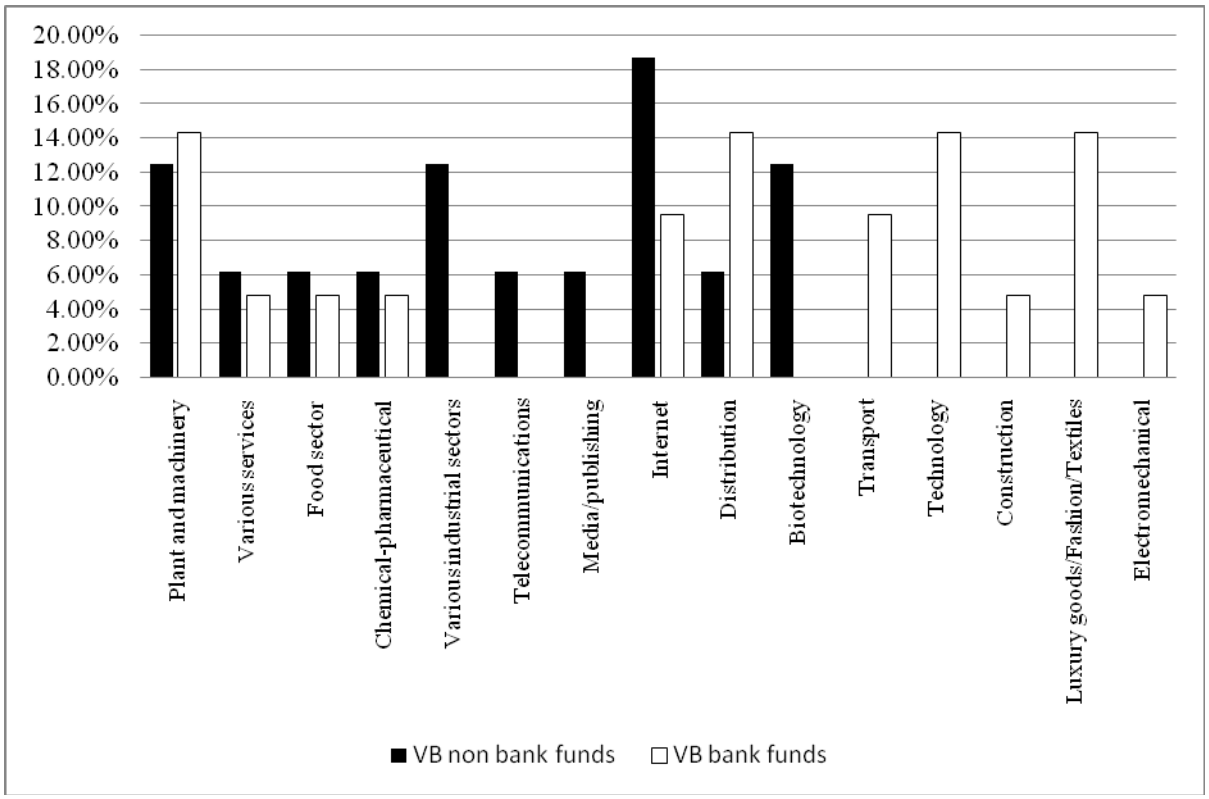
[5] It was decided to eliminate from the sample companies listed on the Expandi market due to their possible lack of liquidity.

independent company. If the company in question had more than one private equity fund, the fund with the higher number of shares was considered for the purpose of allocating the company to one of the two groups. The bank venture backed group was composed of 21 companies, while the non bank venture backed group was composed of 16. The following sources were used: the web sites of the Borsa Italiana (Italian Stock Exchange) and Consob (National Commission for Listed Companies and for the Stock Exchange), from which access was gained to the IPO prospectuses, a site specialised in IPOs[6], web sites owned by various private equity funds and the Zephyr database. The time series of the stock prices were retrieved through Bloomberg and Thomson Datastream[7].The two groups of companies were analysed in order to establish the sector to which they belonged as well as the turnover and profits made in the year prior to going public. As regards the sector to which they belong, Figure 1 shows how the attention of the bank and non bank funds, in the period under review, was focused on sectors that were sometimes different. It can be observed that both invested in the following sectors: various services, chemical-pharmaceutical, food, plant and machinery sectors. Nonetheless, the bank-owned funds are also characterised by investments in the transport, distribution, technology, construction, luxury goods and electromechanical sectors while non bank-owned funds tended to focus on companies belonging to the industrial, telecommunications, publishing, biotechnology and internet sectors.

[6] www.ipo.it

[7] The prices were corrected with adjustment factors for share capital increases and exceptional dividends published by AIAF (Italian Association of Financial Analysts).

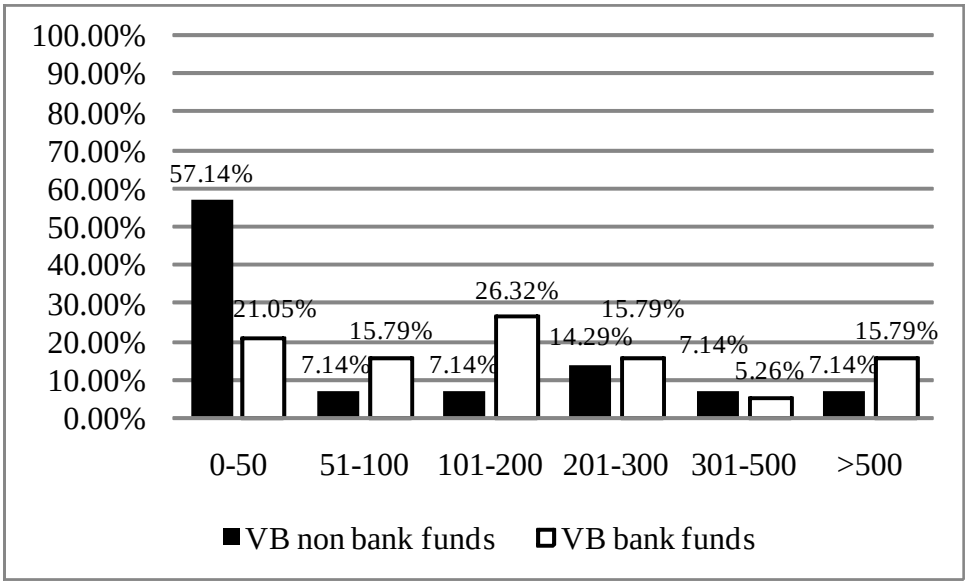
Figure 1- Sector to which the venture backed companies belong



Source: Consob and Borsa Italian prospectuses.

Considering the turnover made in the year prior to listing, it may be seen how the non bank-owned funds concentrated over half of their investments on companies with a turnover between 0 and 50 million euro, while the bank-owned funds tended to distribute their investments more evenly in companies belonging to different categories of turnover.

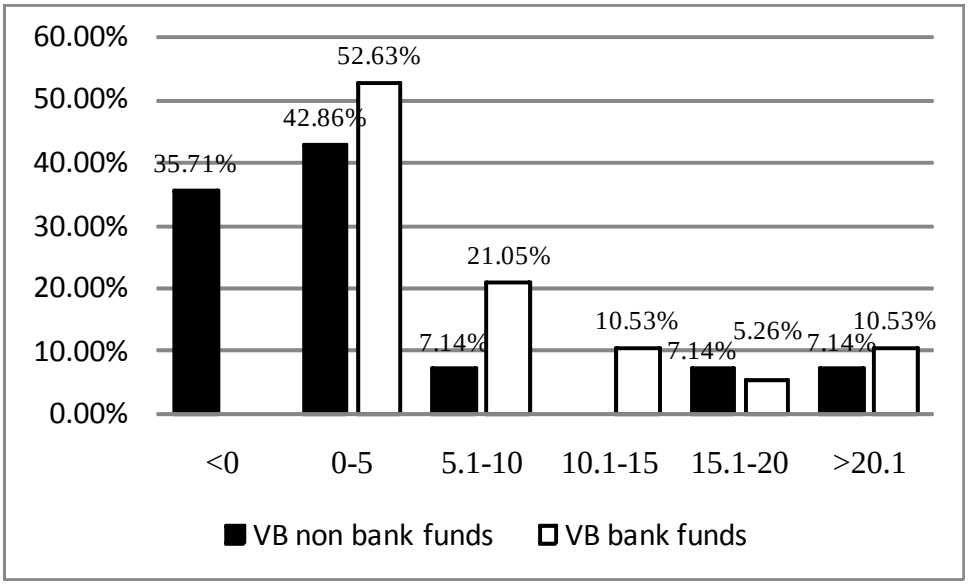
Figure 2 – Turnover made in the year prior to listing (million euro)



Source: Consob, Borsa Italiana prospectuses and web sites belonging to the companies.

Last but not least, analysing the profits made in the year prior to listing, it may be seen how the non bank funds prevalently invested in companies running at a loss or with low profits while the bank funds tended to concentrate their attention on companies running at a profit, mostly with moderate figures but, as per the previous graph, it may be seen how the investment is shared over different dimensional categories.

Figure 3 – Profit made in the year prior to listing (mln euro)



Source: Consob, Borsa Italiana prospectuses and web sites belonging to the companies.

To achieve the objective of this paper – which is to evaluate whether there are differences in the post-IPO performance of venture backed companies with bank private equity funds as opposed to those having non bank private equity funds – various methods have been adopted.

First of all, an investigation was carried out to establish whether there are differences between the mean daily, weekly and quarterly performance of companies financed by bank and non bank funds, considering the entire time horizon analysed between 23-03-1999 and 31-12-2007[8]. In this case, the aim of the analysis was not to check the performance at a given instant t from the date of listing, but the daily, weekly, monthly and quarterly performance in general throughout the entire period. To perform this analysis a *Cross Sectional Regression Analysis,* in particular a *Pooled Ordinary Least Square Regression*[9] was made. Two pools were created, one for the venture backed companies with bank-owned funds and one for the venture backed companies with non bank-owned funds, and the significant difference between the two groups was demonstrated by generating a *specific coefficient*

[8] For companies leaving the Stock market prior to 31-12-2007, the last recorded closing price was considered.
[9] The regression was generated with the Eviews 5 program.

for each of them. The regression was generated without particular weightings. Finally, the significant difference between the coefficients obtained was checked by means of the Wald test.

Next, the study attempted to highlight the existence of differences in the post-IPO short-run performance of venture backed companies.

In this analysis, the performance of each company was checked at a given instant t from listing, calculating a median value for the reference group.

As regards the short-run performance, the analysis was carried out calculating the underpricing (Cenni et al., 2001) after 1 day and then after 5, 21, 63 days of listing.

Two main methods of calculating underpricing are documented in literature. Ritter (1984a) calculates the underpricing through raw performances, i.e. without considering the effect of the market trend:

$$U_{t,i} = Ln\left(\frac{P_{i,t}}{P_{i,0}}\right) \quad (1)$$

Where:

$P_{i,t}$ = closing price of stock i on trading day t;

$P_{i,0}$ = offering price;

Other authors, as Cenni et al. (2001) and Tykvovà and Walz (2007), are convinced that an approach geared to adjusting underpricing from the market trend guarantees greater correctness. In particular:

$$U_{t,i} = Ln\left(\frac{P_{i,t}}{P_{i,0}}\right) - Ln\left(\frac{I_t}{I_0}\right) \quad (2)$$

Where:

$P_{i,t}$ = closing price of stock i on trading day t;

$P_{i,0}$ = offering price;

I_t = value of index used as adjustment to time t;

I_0 = value of the index at bid time.

This paper applies the method (2) that involves calculating the underpricing on time horizons of 1 day and then 5, 21, 63 days. The post IPO performance was calculated at the deadlines reported. The raw value of the variation in price was adjusted for the trend of the Mibtel index.

In this case, the statistical significance of the results obtained was demonstrated through a non parametric test, in particular through the Wilcoxon rank-sum test where the null hypothesis is that the two medians are equal. The sample is not normal distributed: for this reason a non parametric test is carried out to test the equality of the medians, instead of the equality of the mean values.

Last but not least, in order to respond fully to the research question, it is essential to calculate the medium- and long-run performance. To this end, two different methods were applied: the CAR (Cumulative Abnormal Returns) and the B&H (Buy and Hold), applied to a time interval of 6 months, 1 year and 2 years.

The CAR method provides initially for the calculation of the abnormal returns, in this particular case on a daily basis. Subsequently, the median abnormal return of the company for each instant t is determined by summing this result for the observation period selected.

$$ar_{t,i} = Ln\left(\frac{P_{i,t}}{P_{i,0}}\right) - Ln\left(\frac{I_t}{I_0}\right) \quad (3)$$

Where:

$P_{i,t}$ = closing price of the stock i on trading day t;

$P_{i,0}$ = offering price;

I_t = value of index used as adjustment to time t;

I_0 = value of the index at bid time.

$$AR_t = \frac{1}{n}\sum_{t=1}^{n} ar_{i,t}$$ [10] (4)

$$CAR_{t,s} = \sum_{t=q}^{s} AR_t$$ (5)

Where:

n= number of IPOs considered

t= time span considered.

The B&H method uses the following formula:

$$BHR_t = \left[\frac{1}{n}\sum_{i=1}^{n}\prod_{t=q}^{s}(1+ar_t)\right] - 1$$ [11] (6)

In the B&H method, the abnormal returns have been calculated as shown in the CAR method, proceeding, subsequently to a product of the same.

Literature presents conflicting opinions regarding the superiority and the better representativeness of the CAR method compared to the B&H method. Barber e Lyon (1997) point out how the CAR method might be a distorted estimator of medium- to long-run performance, while Fama (1998), Mitchell and Stafford (2000), Gompers and Lerner (2003) are convinced of the superiority of the CAR method, as they believe that the B&H method, through the product calculated on the single periods can improve underperformance.

[10] This is the traditional CAR formula, in this paper we calculate median value instead of mean value.
[11] This is the traditional B&H formula, in this paper we calculate median value instead of mean value.

EMPIRICAL RESULTS

1) Are there any differences between the daily, weekly, monthly and quarterly performance of venture backed companies financed with bank-owned and non bank-owned funds throughout the entire period of observation 1999-2007?.

To answer this question, a Cross Sectional Regression Analysis is made, with particular emphasis on the Pooled Least Squares Regression analysis, the results of which are shown in Table 1. The analysis of the tests carried out shows the significance of the coefficients obtained on each time horizon analysed. The negative coefficients always show underperformance of the venture backed companies compared to the Mibtel index. As regards the daily analysis, throughout the entire period considered, the companies with bank funds seem to display a poorer performance compared to those with non bank funds, even although the equality of means test was fairly weak: their hypothesis of equality may be rejected with a probability error of 10%. Analysing the weekly, monthly and quarterly performance throughout the entire period, this disparity remains among the venture backed companies with non bank funds compared to the venture backed companies with bank funds. In this analysis, the statistical significance of the coefficients is high and even the Wald test rejects the possibility of equality of the coefficients.

Table 1- Cross Sectional Regression Analysis

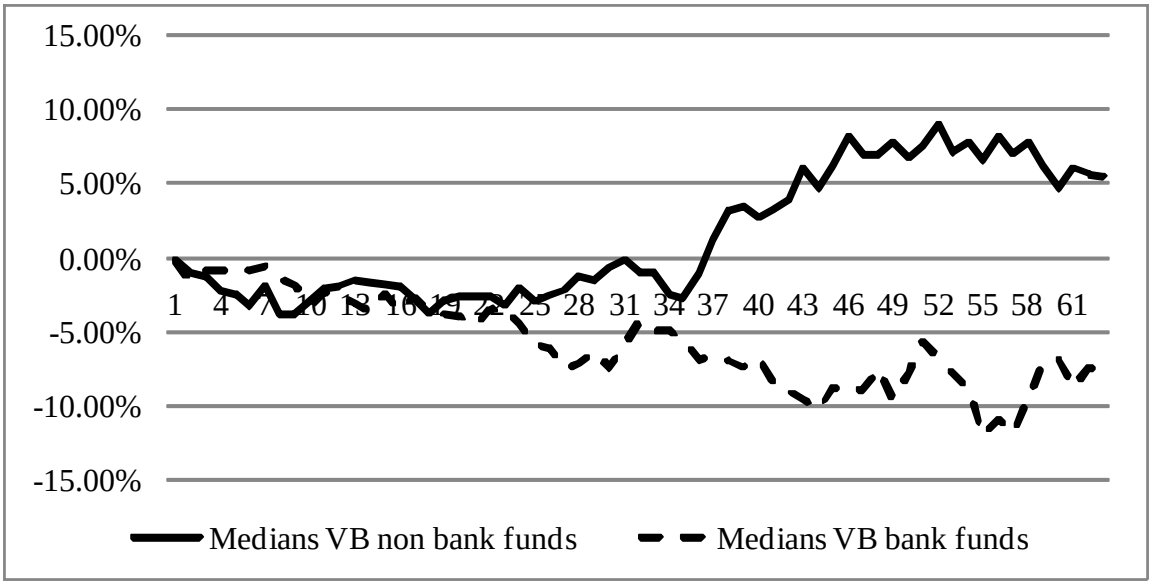
	Venture backed with non bank fund		Venture backed with bank fund		Wald coefficients test
	Coeff	*p-value*	Coeff	*p-value*	*p-value*
Daily performance	-0.000312 (-2.000699)	0.0454**	-0.000686 (-4.674317)	0.000***	0.0806*
Weekly performance	-0.001648 (-4.816852)	0.000***	-0.003565 (-11.06369)	0.000***	0.000***
Monthly performance	-0.007587 (-10.68303)	0.000***	-0.015316 (-22.88476)	0.000***	0.000***
Quarterly performance	-0.022994 (-18.55401)	0.000***	-0.043131 (-36.85104)	0.000***	0.000***

This table represents the results of the Pooled Least Squares Regression realised on the returns of the various stocks after 1 day and then after 5, 21 and 63 days adjusted for the market trend according to the formula $Perf_{t,i} = Ln (P_{i,t} / P_{i,0}) – Ln (I_t / I_0)$. These returns were calculated throughout the duration of the series after which a Pooled Regression was made in order to check for the existence of differences between the venture backed with bank funds group and the venture backed with non bank funds group. The t-statistics is shown in brackets. The significance of the coefficients is expressed with one, two or three asterisks, i.e. the rejection of the null hypothesis of the coefficients with a probability level of 10%, 5% and 1%, respectively. The significance of the Wald test is also reported, i.e. the rejection of the hypothesis of equality of the coefficients of the two samples.

2) Are there any differences in the post IPO short-run performance of the two groups analysed?

The second analysis carried out on the sample proposes to verify whether significant differences exist between the performance of the two groups of companies after the first day and after 5, 21, 63 days of listing. In contrast with the previous analysis, no calculation is made of the mean performance throughout the entire time horizon analysed but, quite simply, the performance of each company is checked at a time t from the listing event. Figure 4 summarises the trend of the performance of the two groups of stock from 1 day to 63 days after listing.

Figure 4 – Short-run performance



However, to assess the statistical significance of the values obtained, a number of tests need to be carried out, the results of which are reported in table 2.

Table 2 Statistical tests on underpricing and performance

	Venture backed with non bank fund (median)	Venture backed with bank fund (median)	Wilcoxon rank sum test (p-value)
Underpricing 1 day	-0.0020	-0.0027	0.6756
Performance 5 days	-0.0235	-0.0108	0.6678
Performance 21 days	-0.0256	-0.0462	0.2972
Performance 63 days	0.0544	-0.0779	0.3117

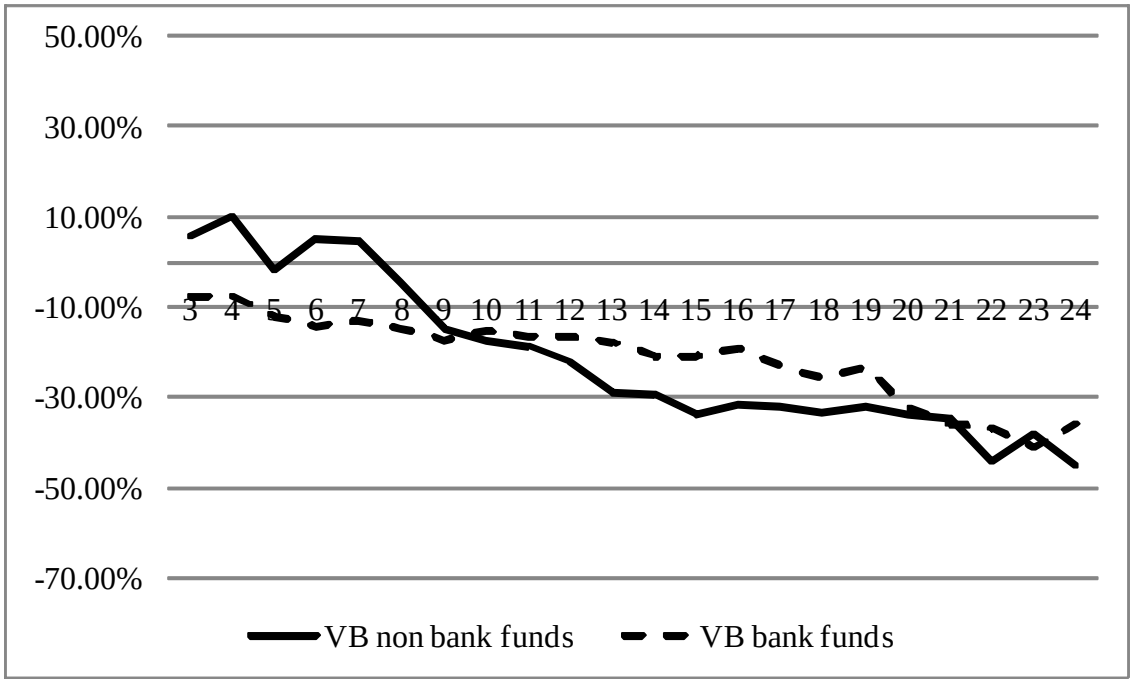
This table presents the results of the statistical tests carried out on the underpricing and on the performance of the stocks considered in the sample. The calculation of the underpricing and of the performances took place applying the formula $Perf_{t,i} = Ln\ (P_{i,t} / P_{i,0}) - Ln\ (I_t / I_0)$ verified for periods of 1 day and then 5, 21, 63 and 126 days of the listing date. The non parametric test used is Wilcoxon rank sum test where the null hypothesis is : the median of two observed groups are equal. The observation group consists of 16 non bank funded venture backed companies and 21 bank funded venture backed companies. The significance of the coefficients is expressed with one, two or three asterisks, i.e. the rejection of the hypothesis of equality of the coefficients with a probability level of 10%, 5% and 1%, respectively.

An analysis of the statistical tests shows that the differences in performance between bank funded venture backed companies and non bank funded venture backed ones are not statistically significant. This means that the difference in the medians of the two samples, considering a specific time after IPO, is probably casual and not relevant.

3) Are there any differences in the post IPO medium-to-long-run performance of the two groups analysed?

It is interesting to use other methods of analysis to check medium-to-long run performance, particularly 6 months, 1 year and 2 years after listing. The analysis is made using the previously described methods: CAR (Cumulative Abnormal Returns) and B&H (Buy and Hold). Figure 5 shows the trend of the CAR from 6 months to 2 years, calculated through an equally-weighted index. It may be observed how, the venture backed companies with non bank funding demonstrate overperformance compared to the benchmark at 6 months, but they tend to border on the underperformance of the bank funded venture backed companies at the 1- and 2-year time horizons.

Figure 5- Cumulative Abnormal Returns –CAR (Medians)



Through Table 3 the statistical significance of the results obtained may be checked. It can be seen that the two groups of companies show a statistically significant difference in performance at the 6 month time horizon only, with a significance of 10%. The median performance at 6 months of the non bank funded venture backed companies is equivalent to 5.16% while that of the bank funded

venture backed companies is equivalent to -14.28%. As regards performance at 1 year and at 2 years, no significant differences are detectable between the two groups.

Table 3 Analysis of the medium-to-long run performance using the CAR method

CAR	Venture backed with non bank fund	Venture backed with bank fund	Wilcoxon rank sum test (p-value)
Performance 6 months	0.0516	-0.1428	0.0860*
Performance 1 year	-0.2238	-0.1656	0.8062
Performance 2 years	-0.45320	-0.3620	0.8782

This table presents the results of the statistical tests carried out on the CAR at 6 months, 1 year and 2 years. The calculation of the CAR was made using an equally-weighted index. The non parametric test used is Wilcoxon rank sum test where the null hypothesis is : the median of two observed groups are equal. The observation group consists of 16 non bank funded venture backed companies and 21 bank funded venture backed companies.
The significance of the coefficients is expressed with one, two or three asterisks, i.e. the rejection of the hypothesis of equality of the coefficients, with a probability level of 10%, 5% and 1%, respectively.

The analysis was also repeated using the Buy & Hold method. Figure 6 shows the trend of the median performance from 6 months to 2 years, developed using the equally-weighted indexes. Also in this case, through an initial graphic analysis it may be seen that the differences become evident over a period of 6 months, after which they are drastically reduced.

Figure 6- Buy and Hold Returns – B&H (Medians)

Even so, the statistical tests do not confirm the significant difference between the two groups: over 6 months, 1 year and at 2 years the medians tend to coincide.

Table 5 Analysis of the medium-to-long run performance using the B&H method

B&H Equally Weighted	Venture backed with non bank fund	Venture backed with bank fund	Wilcoxon rank sum test (p-value)
Performance 6 months	-0.0284	-0.1543	0.2697
Performance 1 year	-0.2997	-0.1679	0.8062
Performance 2 years	-0.5289	-0.4595	0.9511

This table presents the results of the statistical tests carried out on the B&H at 6 months, 1 year and 2 years. The calculation of the B&H was made using an equally-weighted index. The non parametric test used is Wilcoxon rank

sum test where the null hypothesis is : the medians of two observed groups are equal. The observation group consists of 16 non bank funded venture backed companies and 21 bank funded venture backed companies.
The significance of the coefficients is expressed with one, two or three asterisks, i.e. the rejection of the hypothesis of equality of the coefficients, with a probability level of 10%, 5% and 1%, respectively.

CONCLUSION

The assumption on which this paper is based is that the stock exchange performance of venture backed companies does not only depend on the intrinsic characteristics of the company but also on those of the institutional investor who acquires the equity interest. The results presented respond to the question posed in the paper: do significant differences exist between the post IPO performance of companies with bank-owned private equity and that of companies with non bank-owned private equity? The paper commenced with an analysis of the mean performance of the two samples on a daily, weekly, monthly and quarterly basis for the entire period under study. The analysis shows how all the results obtained are statistically significant and hence how, in general, the mean performance of venture backed companies with non bank funding is better than that of venture backed companies with bank funding, even although both manifest negative extra-performance with respect to the market trend. The analysis was further refined by analysing the performance of the two groups of companies at given moments from the listing date. With reference to the short-run, after 1, 5, 21, 63 days, performance is not statistically significant. These results confirm those of a previous study relative to the German market (Tykvovà, Walz 2007) the aim of which was to assess the different performances according to the type of private equity involved, in which no differences in very short run underpricing were detected.

With regard to the analysis of the medium-to-long run performance, the CAR and B&H methods were applied, calculated on a time horizon of 6 months, 1 year and 2 years. Once again, the only significant period was found to be at 6 months, obtained through the CAR method only. The venture backed companies with non bank funding, in the 6 month period following listing, obtained a median value of 5.16% according to the CAR method, while the companies with bank funding

obtained a result of -14.28%. It is therefore possible to affirm that, at least within the medium-run time period following listing, companies with bank funding seem to stand out for their poorer performance.

This result inevitably stimulates curiosity as to why this should be the case. An initial response might be forthcoming from the affirmations made by Hellmann et al. (2007), i.e. that banks often use private equity not only as an investment in terms of own capital but also, as a bridge for subsequently developing the debt. Additionally, Tykvovà (2006) sustains that the banks typically tend to ensure that the companies to go public within a short space of time after which they hold a minimal fraction of the share capital, thus generating a negative effect on the market value. In actual fact it is important to remember the results of the analysis of the sample, i.e. that the methods for investing bank funds and non bank funds tend to be different in this analysis. In particular, as already explained, the two categories of institutional investors tend to invest in companies belonging to different sectors and with different characteristics as regards turnover and profit. The non bank funds mainly invest in companies which, the year prior to going public, registered a modest turnover, extremely low profits or even losses. In contrast with the above, the investing of bank funds seems to be characterised by a greater degree of diversification; such investors focus their attention on companies with different categories of turnover but always and unfailingly companies running at a profit. It may be observed that, all other conditions being equal, investment of bank funds might seem less risky or less “aggressive” than that of non bank funds. This is, however, a qualitative judgement, deriving from a simple observation of the composition of the sample but it could provide a possible explanation for the different performance. By investing in more risky, dynamic, growing companies, the non bank funds might produce better performance while the bank funds effecting more traditional investments, characterised by a lesser risk, might produce lower returns. This affirmation will be demonstrated in the research papers to follow in which a study will be made of the different performance between bank and non bank funds and their relative managerial implications. It might be particularly interesting to investigate the

following aspects: the different degrees of riskiness of venture backed companies, the possible conflict of interests involved with bank funds which, in addition to being among the placement agents of the operation, could also finance the company in terms of loans, the different way of investing the same, characterised by a greater or lesser interference in corporate management and by different shareholdings and different equity position holding times within the company.

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Attachment 1- The main studies relative to the short-run performance of venture backed IPOs.

Authors	Data sample	Methodology	Main results
Barry et al., (1990)	433 venture backed and 1123 non venture backed IPOs between 1978 and 1987. Market: USA	Underpricing= $(P_{i,t} - P_{i,0}) / P_{i,0}$	The IPOs of the venture backed companies had less underpricing after one day than the non venture backed. This result is due to the monitoring of the bid by the venture capitalist.
Megginson and Weiss (1991)	320 venture backed and 320 non venture backed, similar as regards sector and dimensions, between 1983 and 1987. Market: USA	Underpricing= $(P_{i,t} - P_{i,0}) / P_{i,0}$	This analysis shows less underpricing for venture backed companies (7.1%) compared with non venture backed companies (11.9%). Once more this is justified by the monitoring role of the venture capitalist.
Gompers and Lerner (1998)	731 quotations made by 135 venture capital funds between January 1983 and December 1993. Market: USA	Two-factor market model to calculate Abnormal Returns, subsequently aggregated by the CAR method.	The presence of positive returns accumulating in the 20 days preceding the IPO and negative returns in the 20 days after distribution may be observed. Additionally, negative returns are found in the period running from 0 to 100 days after distribution.
Fabrizio (1999)	IPO between 1988 and 1998 (77 companies). Market: Italy.	$U_{t,i} = Ln (P_{i,t} / P_{i,0}) – Ln (I_t / I_0)$ where the index used is the MIB. Calculation of the underpricing after 1 day.	The mean value of the Italian underpricing is 11.1%. The importance of the venture capitalists' role is clear. These figures exist in at least 1/3 of the companies with a share of 39%: At the time of the IPO, these companies presented less underpricing.
Cenni et al. (2001)	41 IPOs between 1 January 1995 and 31 December 1998, 17 of which venture backed. Market: Italy	Calculation of the underpricing after 1 day and then after 5, 21 and 63 days adjusted for the MIB $U_{t,i} = Ln (P_{i,t} / P_{i,0}) – Ln (I_t / I_0)$	The underpricing of the venture backed companies is less than that of the other companies, 5.75% compared to 9.43%. This difference persists for 1 week and 1 month then at three months the trend is inverted: The venture backed companies have an underpricing of 7.76%, the non venture backed an overpricing of 2.75%.
Bradley and Jordan (2002)	3325 IPOs between 1990 and 1999. Market: USA	Calculation of the return at n days from the bid, adjusted for the market yield.	The venture backed companies show a high level of underpricing the reason for which can be traced to the sector in which the venture capitalists are concentrated and to the frequent listing on Nasdaq.
Smart and Zutter (2003)	2622 IPOs from 1990 to 1998. Market: USA	Underpricing= $(P_{i,t} - P_{i,0}) / P_{i,0}$ calculated 1 day after listing.	The venture backed companies and those that have a prestigious bank as underwriter have greater underpricing.

Lee and Wahal (2004)	Samples of the venture backed IPOs from 1980 to 2000. For each venture backed company, a non venture backed company belonging to the same sector and with an IPO as close as possible to that of the non venture backed one is selected ("matched"), chosen from the period within the 2 previous and two successive years. Market: USA	Unadjusted first day return = $(P_{i,t} - P_{i,0}) / P_{i,0}$	The venture backed companies present an underpricing of 26.8% and the non venture backed of 19.4%.
Franzke (2005)	160 non venture backed, 79 venture backed, 61 bridge financed companies from March 1997 to March 2002. Market: Germany	The underpricing is calculated as a spread between the offering price and the price on the first day of listing.	The venture backed prove to have greater underpricing than the non venture backed.
Rindermann (2005)	106 IPOs from 1985 to 1998. Markets: French Nouveau Marché, to German Neuer markt to English techMARK.	The underpricing is calculated as $ar_{i,t} = r_{i,t} - r_{m,t}$ $r_{i,t} = (p_{i,t} - p_{i,0})/ p_{i,0}$ $r_{m,t} = (p_{m,t} - p_{m,0})/ p_{m,0}$ The market index used is the AMX share price index	There is less underpricing for venture backed companies compared to non venture backed, but this difference is not statistically significant.
Angelini (2006)	IPOs made between January 1995 and December 2004, 106 companies, 37 of whom venture backed. Market: Italy.	The two venture backed and non venture backed samples are then examined. The underpricing is calculated for each company ((closing price 1 day – offering price)/(offering price))*100. The underpricing of the venture backed and that of all the IPOs is evaluated for each year, and a mean value is then calculated for the time period considered.	It is demonstrated that the presence of a venture capitalist considerably reduces underpricing compared to the other IPOs, but it also determines a lower direct issue cost value. The mean underpricing of the venture backed companies in the period 1995-2004 is 2.44% and 5.74 for non venture backed companies. It is important to remember that in certain market phases 2000-2004 (market euphoria) even overpricing takes place.
Tykvovà e Walz (2007)	327 IPOs, 123 of which venture backed are divided on the basis of the type of fund involved: 38 bank-owned funds, 66 independent, 8 industrial, 10 governmental. Market: Germany	Underpricing= (closing price 1 day – offering price) /price. Cross section regression to establish the significance of the type of fund.	Among the most important evidence relating to underpricing, it is reported that the type of fund does not affect the underpricing while the reputation of the venture capitalist affects it positively.

Attachment 2- The main studies relative to the medium-to-long term performance of venture backed companies.

Authors	Data sample	Methodology	Main results
Brav and Gompers (1997)	934 venture backed companies between 1972 and 199, and 3407 non venture backed companies between 1975 and 1992. Market: USA	Calculation of the daily returns starting from the day of listing, collecting on a monthly basis, following by collection of 59 months. Application of two methods of weighting: equally and value weighted.	Differences in the long run performance of venture backed as opposed to non venture backed companies emerge. Applying the equal weighting system, the return on 5 years for the venture backed companies reaches 44.6% while that for the non venture backed is equivalent to 22.5%. With the value weighing method on the other hand the differences between the two samples are reduced.
Cenni et al. (2001)	41 IPOs between 1 January 1995 and 31 December 1998, 17 of which venture backed. Market: Italy	Method of analysis of the performance at 6 months, 1, 2 and 3 years after the IPO. CAR method and B&H method the abnormal returns compared to the Mib return.	There tends to be a general underperformance of all the stock compared to the market trend. In any case, the returns of the venture backed companies are better compared to the non venture backed ones in all the periods considered.
Rindermann (2005)	75 IPOs between 1985 and 1995, 28 of which were venture backed and 47 non venture backed, Markets: French Nouveau	Analysis of the performance in the three years after the IPO through the application of two methods. CAR method with the summing	Over the three years considered, the venture backed companies demonstrate better market performance compared to the

	Marché, to German Neuer markt to English techMARK.	up of the monthly returns for a period of 36 months. Wealth Relative Ratio method. Calculation of Buy&Hold returns. $R_{i,s} = \prod_{t=1}^{s}(1+r_{i,t})-1$ $R_s = \frac{1}{n}\sum_{i=1}^{n} R_{i,s}$ $WR = \frac{1+R_s}{1+R_m}$	market against the underperformance of the non venture backed.
Tykvovà e Walz (2007)	327 IPOs, 123 of which venture backed are divided on the basis of the type of fund involved: 38 bank-owned funds, 66 independent, 8 industrial, 10 governmental. Market: Germany	Analysis of the performance in the two years after the IPO through the application of two methods. 1.Cross section analysis of the returns calculated also considering the dividends at the end of the two years 2.Matching a venture backed company with a similar but non venture backed one, calculating the abnormal returns between the two 3. Fama Macbeth Regression	Better performance is shown by venture backed companies funded by independent venture capitalists, with a more prestigious reputation and foreign, compared to venture backed ones financed by other funds or non venture backed ones.